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SHORT BIOGRAPHY OF GUEST EDITOR PREDRAG DAŠIĆ

Predrag Dašić is a professor for Web design, Production information systems (PIS), Reliability engineering and Advanced machining processes at High Technical Mechanical School of Professional Studies in Trstenik (Serbia). He received a postgraduate thesis at University of Belgrade, Faculty of Mechanical Engineering in 1985. He was awarded an honorary Doctorate of Science by Donbas State Engineering Academy (DSEA) in Kramatorsk (Ukraine).

His research interests are: programming, information systems (IS), production engineering, advanced machining processes, cutting tools, ceramic cutting tools, reliability, reliability analysis, statistical analysis, response surface methodology (RSM), design of experiments (DoE), bibliometric and citation analysis.

Predrag Dašić is a member of the World Academy of Science, Engineering and Technology (WASET), member of the International Scientific Academy of Engineering and Technology (ISAET), Patron member of the New York Academy of Science (NYAS), foreign member of the Ukrainian Academy of Engineering Sciences (UAES) and member of the Ukrainian Technological Academy (UTA). Also, he is the member of the following international and national associations: American Association for the Advancement of Science (AAAS), International Neural Network Society (INNS), European Neural Network Society (ENNS), International Association for Statistic Computing (IASC), International Association for Management of Technology (IAMOT), International Society for Scientometrics and Informetrics (ISSI), International Association of Engineers (IAEng), American Statistical Association (ASA), Association for Computing Machinery (ACM), European Association for Programming Languages and Systems (EAPLS), European Association of Software Science and Technology (EASST), Danube Adria Association for Automation and Manufacturing (DAAAM) International, Association for Maintenance Professionals (AMP), Serbian Chemical Society (SCS) and etc.

He was elected for honorary general director of the International Biographical Centre (IBC) from Cambridge (England) in 2012. He placed in the staff of Advisory Directorate International (ADI) of the American Biographical Institute (ABI) from Raleigh (North Carolina – USA) in 2008.

He is the chairman of the organization committee for following international conferences: "Research and Development in Mechanical Industry" (RaDMI) and "Economics and Management-Based on New Technologies" (EMoNT). Further, he is a member of scientific and program committee of more than 30 international conferences.

He is the editor and chief of following international journals: "Journal of Research and Development in Mechanical Industry" (JRaDMI) and "Journal of Economic and Management Based on New Technologies" (JEMoNT), published by SaTCIP Publisher Ltd. from Vrnjačka Banja (Serbia). Also, he is a member of the editorial boards of more than 15 international journals. He is also the guest editor of reference journal indexed in SCI-E: "Strojniški Vestnik - Journal of Mechanical Engineering", Vol. 55, No. 2 (February 2009), and the technical editor of journals: "IMK-14 Research and development" in 2005 and 2009 and "International Journal for Quality Research" in 2013.

Predrag Dašić has published more than 500 scientific articles, of which 15 papers in reference journal indexed in SCI and SCI-E, 160 papers in journals, 45 invitation papers and 260 papers at international

and national conferences. He has also published 2 scientific monographs, 5 books and is the editor of more than 30 conference proceedings in printed and 15 in electronic form. His dictionary "100.000 technical and ICT abbreviations and acronyms" is currently in the publishing phase. His papers are cited in 60 articles without self-citation in the WoS and Scopus citation databases, more than 400 articles in the Google Scholar (GS) and more than 120 citations are in the doctoral dissertations and master's theses.

Also, the author has 3 patents and 3 technical improvements. He has developed 14 scientific software applications, for the application of theoretical and practical methods in solving practical engineering problems, which are successfully applied in practice and developed 2 Web presentations.

He has received numerous awards and honors most notably: Awards for innovation and technical improvement in 1984 and 1985 from company IMK "14 october" in Kruševac, Award for scientific-technical improvements and innovations in municipality Kruševac for the year 1987, Golden medal with character of Nikola Tesla for best patent in 2011 and 2013 from Association of Inventors and Author of Technical Improvements of Belgrade and etc.

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WEAR THE ELECTRODES TO TAPERED ROLLER BEARINGS THE PROCESSING BY ELECTRICAL EROSION

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Abstract: *The dielectric fluid must be circulated under constant pressure to flush (wash) away the metal particles and assist in the machining or erosion process. If red sparks occur during the cutting operation, the water supply is inadequate. To overcome this problem, increase the flow of water until blue sparks appear. Both wire and vertical EDM machines are equipped with a servo control mechanism that automatically maintains a constant gap of about the thickness of a human hair between the electrode and the workpiece. It is important for both machine types that there is no physical contact between the electrode and the workpiece, otherwise arcing could damage the workpiece and break the wire. The servomechanism advances the electrode into the workpiece as the operation progresses and senses the work-wire spacing and controls it to maintain the proper arc gap which is essential to a successful machining operation.*

Keywords: *dielectric fluid, EDM machines, electrode, servo mechanism, tool, wear.*

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1. INTRODUCTION

As the sole appointed UK distributors of the Mitsubishi EDM's range of die sinking machines, we know that they take performance to the next level, providing greater power than ever before and delivering enhanced levels of accuracy and productivity, with many innovative features ensuring exceptional benefits. Designed to deliver precision performance and the highest levels of accuracy, Mitsubishi EDM's new range of die sinking machines incorporates a raft of innovative features, such as thermal displacement compensation, a heat shielding cabin structure and multi position work tank. A new drive system makes tank operation easier and quicker, a fast fill/drain system keeps the tank height and fluid levels constant, and the new, easy-access triple-filter system allows filters to be changed without interrupting the machining process. With reduced set-up time, simplified maintenance and space-saving designs ensuring a more compact footprint, Mitsubishi EDM' leads the way in die sinking technology.

2. THE MACHINES PROCESSING ELECTRICAL EROSION

2.1. WIRE EDM DILECTRIC FLUIDS

The dielectric fluid must be circulated under constant pressure to flush (wash) away the metal particles and assist in the machining or erosion process. If red sparks occur during the cutting operation, the water supply is inadequate. To overcome this problem, increase the flow of water until blue sparks appear.

2.2. THE SERVO MECHANISM

Both wire and vertical EDM machines are equipped with a servo control mechanism thatautomatically maintains a constant gap of about the thickness of a human hair between the electrode and the workpiece. It is important for both machine types that there is no physical contact between the electrode and the workpiece, otherwise arcing could damage the workpiece and break the wire. The servomechanism advances the electrode into the workpiece as the operation progresses and senses the work-wire spacing and controls it to maintain the proper arc gap which is essential to a successful machining operation.

Figure 1: Electrical erosion processing machine EA12V

2.3. MACHINE SPECIFICATIONS

Machine specifications for electrical erosion processing machine EA12V are shown in table 1.

Table 1: Machine specifications

Maximum workpiece dimensions (W x D x H) [mm]	800 x 550 x 250
Maximum workpiece weight [kg]	700
Table dimensions (W x D) [mm]	600 x 450
Machine unit weight [kg]	3725
Machining travel (X x Y x Z) [mm]	400 x 300 x 300
Work Tank Internal Dimensions W x D x H [mm]	850 x 600 x 350

2.4. THE ELECTRODES FOR ELECTRICAL EROSION PROCESSING

On figures 2-9 are shown examples types of electrodes for electrical erosion.

Figure 2: Types of electrodes for electrical erosion

Figure 3: Types of electrodes for electrical erosion

Figure 4: Types of electrodes for electrical erosion

Figure 5: Types of electrodes for electrical erosion

Figure 6: Types of electrodes for electrical erosion

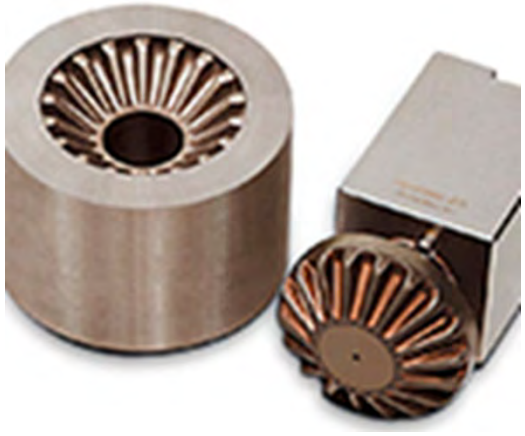


Figure 7: Types of electrodes for electrical erosion

Figure 8: Types of electrodes for electrical erosion

Tapered Roller bearings (TRB) (figures 9 and 10) are generally separable, which means the cone assembly, consisting of the inner ring with roller and cage, can be mounted separately from the cup (outer ring). Being separable, mounting becomes easier. The projection lines of all the tapered surfaces (Cup, Cone, and Roller) meet at a common point on the bearing axis, called the apex point, ensuring proper rolling motion of the roller on the track surfaces of cone and cup. NBC manufactures Single and Double Row Tapered roller bearings in Inch and Metric series. These bearings are mainly used in Wheels, Transmissions and Axle Centres of Passenger Cars, MUVs, Trucks, Tractors, Earthmovers, etc. where RPM is moderate and combination loads (i.e. simultaneously both axial and radial loads) are prevalent.

Figure 9: Tapered Roller Bearings

Figure 10: Tapered Roller Bearings

NBC Tapered Roller Thrust (TRT) (figure 11) bearings include rollers that have conical sections. These bearings are designed primarily to support axial loads at contact angles between 30˚ and 90˚. These bearing are suited for applications where extremely high thrust loads like in crane hooks, coal pulverizer .These bearings can be supplied with a full complement of rollers. Applications for full-complement bearings should be reviewed by your NBC representative to ensure selection of the proper bearing.

Figure 11: Tapered Roller Thrust

3. TAPERED ROLLER BEARINGS (TRB)

On figures 12-15 are shown examples types of Tapered Roller bearings (TRB).

Figure 12: Single Row (TRB)

Figure 13: Double Row (TRB)

Figure 14: Four Row (TRB)

Figure 15: Tapered Roller Thrust

3.1. THE BEARINGS TAPERED ROLLER THRUST TIMKEN

On figures 16-19 are shown examples types of Tapered Roller Bearings Timken.

Figure 16: Tapered Roller Bearings Timken mounting with Screw

Figure 17: Tapered Roller Thrust Bearings Timken simple effect

Figure 18: Tapered Roller Thrust Bearings Timken cross

Figure 19: Tapered roller thrust bearings tapered Timken

4. THE EXPERIMENTAL RESULTS PROCESSING ELECTRICAL EROSION

The parameters of electrical erosion processing are:

Uz - Tool wear,

R_a - Surface the roughness,

T_p - Time of pause,

T_i - Time of impulse,

Q_p - The productivity of accomplished,

U_{med} - The average stress.

On figures 20-32 are shown electrical erosion parameters.

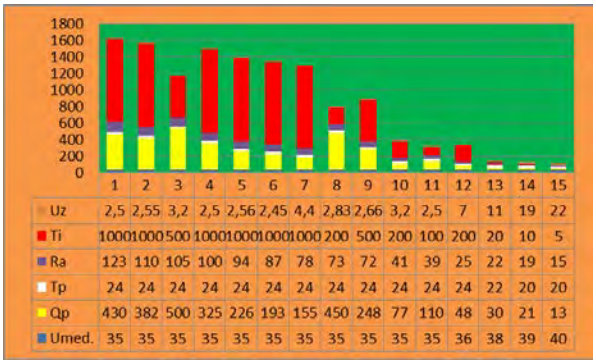


Figure 20: The table electrical erosion parameter values

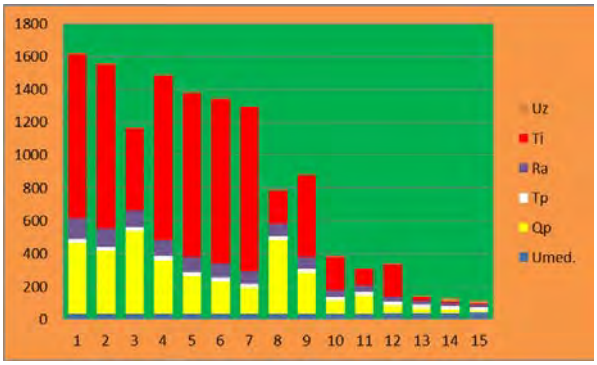


Figure 21: The shape 2D graphics parameters electrical erosion

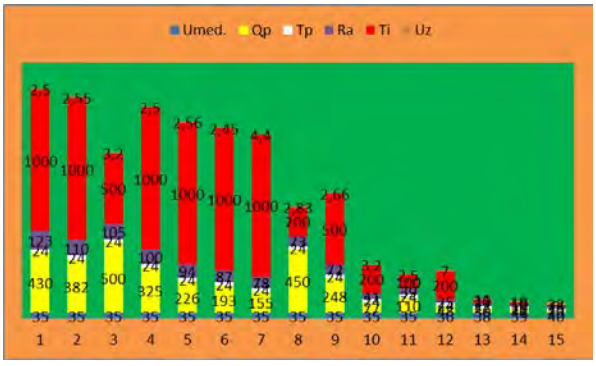


Figure 22: The values of and electrical erosion parameters in the form 2D graphics

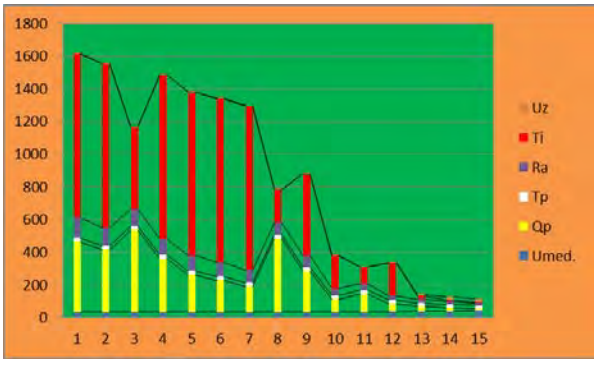


Figure 23: The connection between electrical erosion parameters

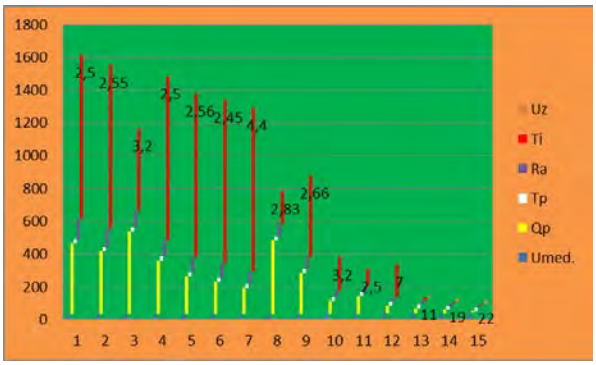


Figure 24: The values of and electrical erosion parameters in the form 2D graphics

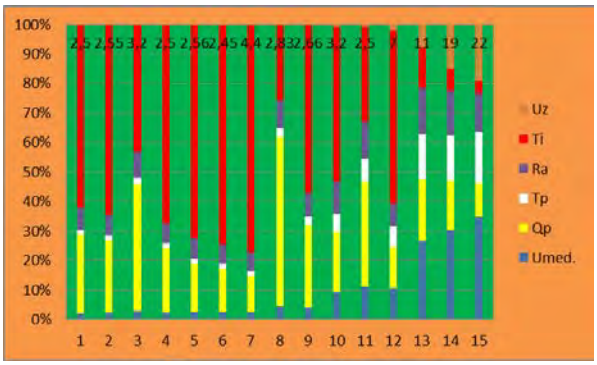


Figure 25: The shape 2D graphics parameters electrical erosion

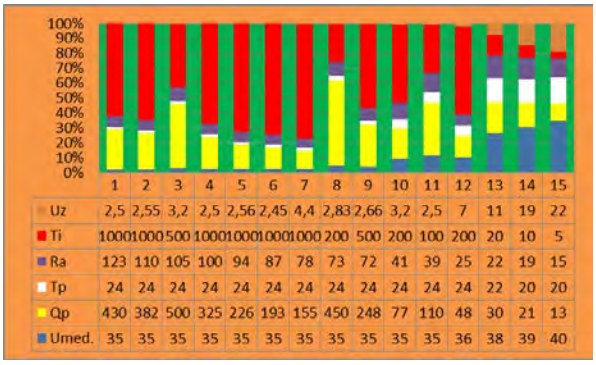


Figure 26: The table electrical erosion parameter values

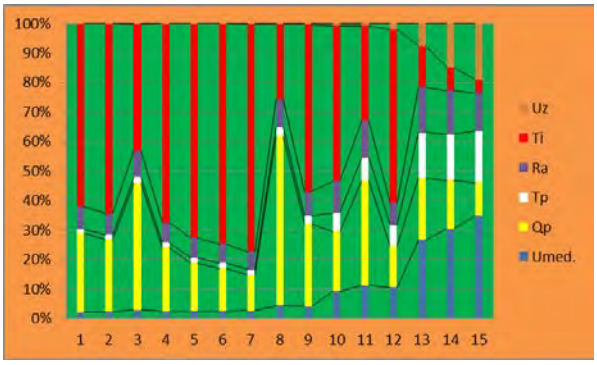


Figure 26: The connection between electrical erosion parameters

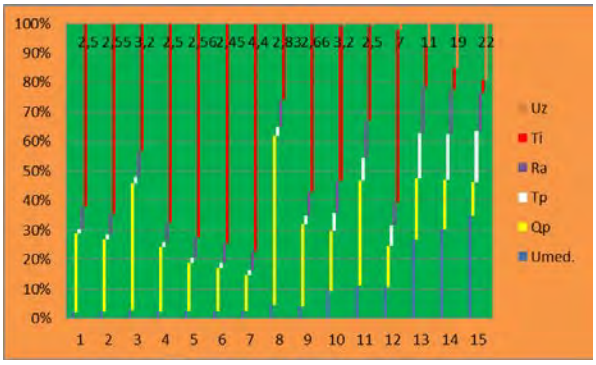


Figure 28: The reporting parameters electrical erosion to wear

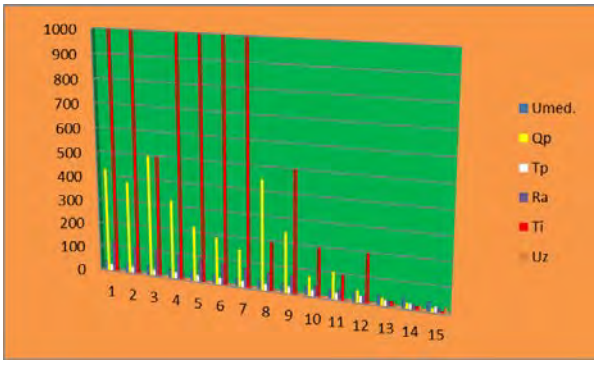


Figure 29: The shape 3D graphics parameters electrical erosion

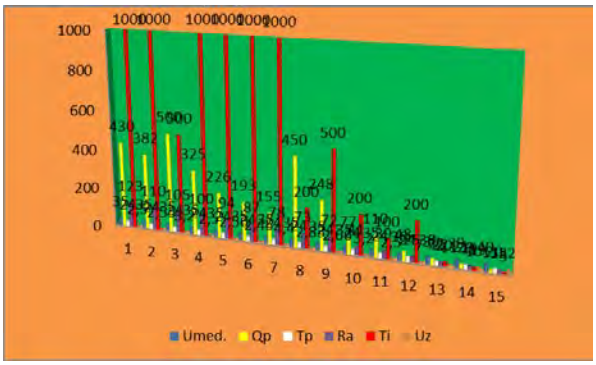
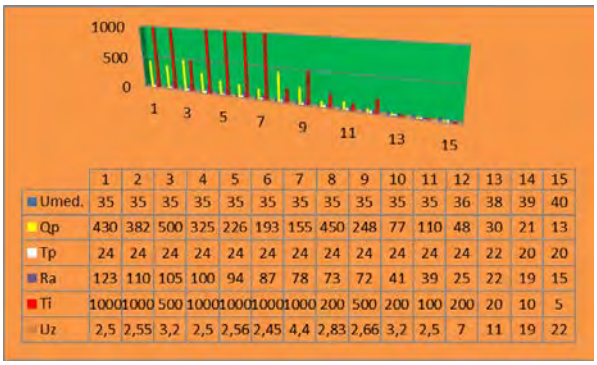


Figure 30: The values of and electrical erosion parameters in the form 3D graphics



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Umed.	35	35	35	35	35	35	35	35	35	35	35	36	38	39	40
Qp	430	382	500	325	226	193	155	450	248	77	110	48	30	21	13
Tp	24	24	24	24	24	24	24	24	24	24	24	24	22	20	20
Ra	123	110	105	100	94	87	78	73	72	41	39	25	22	19	15
Ti	1000	1000	500	1000	1000	1000	1000	200	500	200	100	200	20	10	5
Uz	2,5	2,55	3,2	2,5	2,56	2,45	4,4	2,83	2,66	3,2	2,5	7	11	19	22

Figure 31: The table electrical erosion parameter values

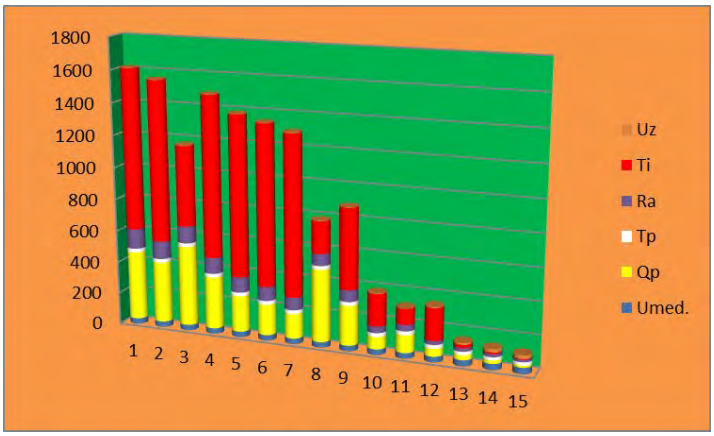


Figure 32: The shape 3D graphics parameters electrical erosion

5. CONCLUSIONS

Conventional EDM machines can be programmed for vertical machining, orbital, vectorial, directional, helical, conical, rotational, spin and indexing machining cycles. This versatility gives Electrical Discharge Machines many advantages over conventional machinetools.

Advantages of EDM:

- Any material that is electrically conductive can be cut using the EDM process,
- Hardened workpieces can be machined eliminating the deformation caused by heat treatment,
- X, Y and Z axes movements allow for the programming of complex profiles using simple electrodes,
- Complex dies sections and molds can be produced accurately, faster, and at lower costs,
- The EDM process is burr-free,
- Thin fragile sections such as webs or fins can be easily machined without deforming the part.

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GEAR PUMPS IN THE PAST AND PRESENT

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Abstract: *Pumps represent the "heart" of every hydraulic system, regardless to their use. Gear pumps, especially thanks to their basic characteristics, have an important use in solving various fluid power systems. Due to these reasons, a lot of interest and attention are focused to the continuous improvement of their basic parameters. PPT-Hydraulic AD has manufactured them since 1958 in significant quantities, sometimes much more, but in recent years into respectable amounts. But, it should remember that only the quality products will have the ability for placement which implies a reasonable price. These are the basic prerequisites to survive and stay in the competitive market. Due to these reasons, the basic structural parameters will be analyzed in the first part of the work with presentation of manufacturing capabilities in the production of the same. Analysis of structural solutions will show that our plant is not far behind, in any sense, for competition. Test results of gear pump nowadays and comparisons to the devices manufactured in the 80's of last century will be used as a support for this. The special significance is the hundred percent testing of finished devices and placement without complaint, as well as testing and control at all stages of manufacturing. Test results show that PPT-Hydraulic AD is capable for manufacturing the gear pumps for pressures over 300 bars.*

Keywords: *gear pump with external gearing, actual flow, volumetric efficiency level, testing.*

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1. INTRODUCTION

Pump is a device without which one cannot imagine any single hydraulic system, and all thanks to the possibility of converting the mechanical energy into compressive energy of working fluid. Due to their considerable advantages (low production cost, safe operation in service, high volumetric efficiency), compared to the other, the gear pumps with external involute gearing and equal number of teeth of both gears are commonly used nowadays.

Due to the specificity of such structures, in terms of operating conditions, the devices must be precisely defined, calculated, implemented and tested, in order to guarantee high level of reliability the required performances in service. Regarding to the structural components of the pump, such as for example a housing, a special attention must be paid to the selection of its geometry, material and weight distribution, in order to meet the resistance criteria (satisfactory rigidity, desired dynamic behavior, permissible stresses), savings in material (weight reduction), reduction of noise level (always present request in hydraulic and pneumatic devices), etc. Certainly, the product price must be taken into account; therefore the performances of device, however, are achieved as a compromise based on geometrical, material and economic criteria.

Gear pumps, unlike other types of pumps, thanks to the constructive solutions allow relatively high numbers of revolutions, but it is not possible to perform the flow control as it greatly limits their

field of application. But that is solved by the possibility of speed control the electrical drive and hence the servo requirements of the same, Fig. 1 [1].

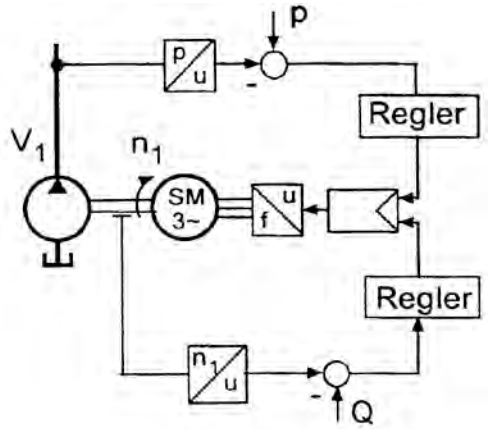


Figure 1: An example of possible regulation the fixed flow by changing the drive speed

The basic problem that needs to be solved in its development and manufacturing is to determine the technical-economic characteristics of the pump. Any variant solution is characterized by a set of positive properties (high degree of efficiency, high reliability in operation, low specific gravity, etc.) and a set of negative properties (increased noise, increasing in size, high price, etc.). The main task of designer consists in choosing the solution which enables to minimize the negative characteristics of structure and to increase the desired ones.

The principle of their operation is based on the volume change of working chambers, allowing suction, separation and suppression of fluid into pressure line. In the phase of volume increase the working chamber, the pressure is achieved under and the chamber is filled, i.e. the suction phase is achieved. When the action of operating element reduces the volume in chambers, the pressure phase occurs, i.e. compression. The value of working fluid pressure depends on the value of applied torque and it is not determined by the structural characteristics of the pump, but it is in a function of internal and external resistances in the system. The principle of operation and its component parts can be seen in Fig. 2 [2].

Gear pumps in the area of lower pressures are used as lubricating pumps for the main and auxiliary devices as well as the fuel pumps. In the area of high pressures, they are used for the source of hydraulic power in the open hydraulic systems in which the external loads are constant allowing different areas of application.

The actual flow of gear pumps is lower than the theoretical for a part of working fluid that flows from the area of high pressure in the area of lower pressure. The flow occurs as a consequence of the structural clearance between the surface of gear forehead and housing. This work presents the main directions of structural development of the same (problems and solutions), and the most significant parameters are shown in the example of pump from serial production. By comparison with characteristics of the same from earlier periods, it can be concluded that there are significant improvements in all matters. It is also shown by the results given in tables for the pump that is manufactured in serial production.

2. DEFINITION THE THEORETICAL AND ACTUAL PUMP FLOW WITH EXTERNAL GEARING

The operating element of these pumps, as it is mentioned above, is a coupled pair of gears installed in housing, Fig. 2 [1]. Gears are usually performed with flat involute gearing, and the standard sizes of these pumps have operating characteristics while Fig. 2 shows its common structural view [1-6]:.

- specific working volume: 0.25 to 266.66 cm^3/o (for special purposes and higher),
- operating pressure: 20 to 200 bars, now 270 bars (300 bars max),
- rotational speed of the pump drive shaft pump: 500 - 5.000 min^{-1} (all depending on nominal size and place of installation),
- total efficiency coefficient: 0.90 to 0.99,
- •noise level ≤ 87 dB.

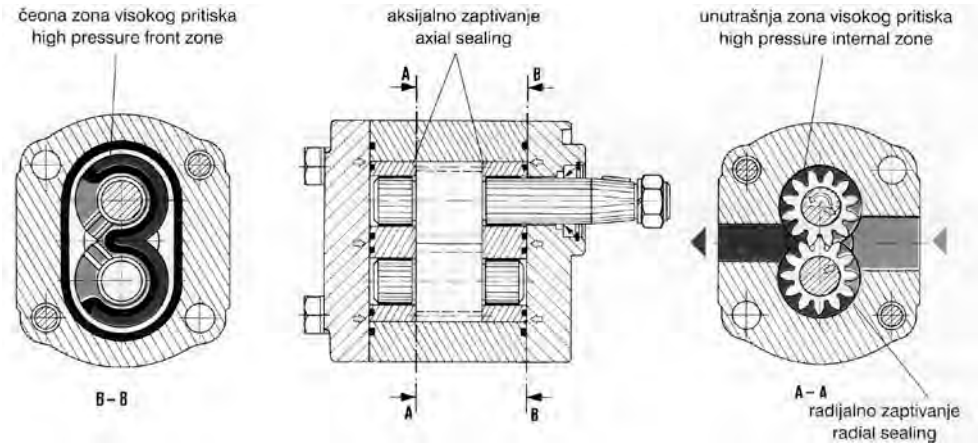


Figure 2: Cross-section of gear pump with external gearing (family 3115.**.**)

Theoretically flow of gear pumps is equal to the value (basic structural characteristics of the pump) of specific flow and rotation speed of drive gear, the expression (1), [6]:

$$Q_T = V_p \cdot n \cdot 10^{-3} = 2\pi \cdot D_0 \cdot m \cdot b \cdot n \cdot 10^{-3} \text{ [l/min]} \quad \textbf{(1)}$$

where : Q_T – theoretical pump flow,

V_p[cm^3/ o] − specific pump flow that matches the displaced volume when the shaft rotates by one turn,

n [s^{-1}] – revolution number of the pump drive shaft,

D_0 [cm] − diameter of pitch circle of gear,

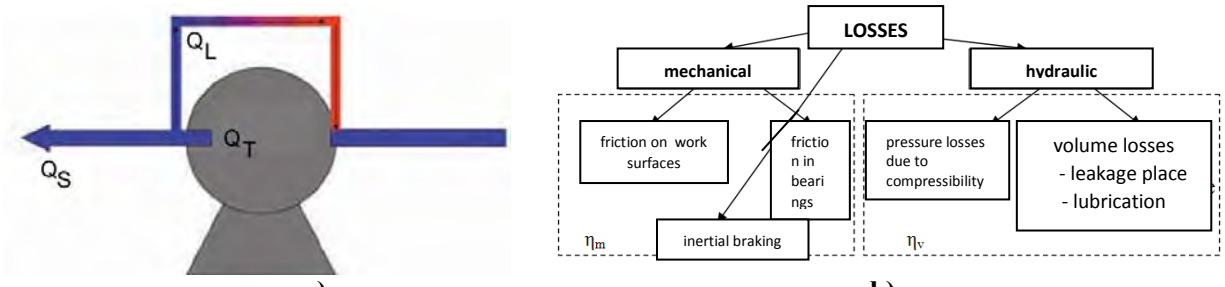
M [cm] − gear module,

b [cm] − gear width.

For the approximate flow calculations of gear pumps with the same gears, there are several empirical formulae and they can be found in the technical literature. For the pumps with a number of teeth z = 6 ÷ 12 (the most represented in PPT-Hydraulic AD), the volume of hollow between teeth has higher volume value of teeth; the value of π in the expression (1) is replaced with 3.5. Thus the expression is obtained that with sufficient accuracy determines the theoretical flow value of gear pumps, the expression (2) [6]:

$$Q_T = 7 \cdot D_0 \cdot m \cdot b \cdot n \cdot 10^{-3} \text{ [l/min]} \quad \textbf{(2)}$$

The actual pump flow is obtained if the theoretical pump flow is reduced by flow losses, the expression (3), and it is shown in Fig.3.



a) **b)**

Figure 3: View of the actual flow and flow losses of the gear pump

what is seen from tables hereinafter [4, 5].

$$\eta_v = \frac{Q_S}{Q_T} = \frac{Q_T - Q_L}{Q_T} = 1 - \frac{Q_L}{Q_T} \quad (3)$$

Hydraulic compensation of axial frontal clearance is performed in the practice to the account of displacements the front sides of gear support ,what is seen from tables hereinafter [4,5].

$$Q_S = Q_T - Q_L \quad (4)$$

where: Q_S – actual flow, l/min, $\mathbf{Q_T}$ – theoretical flow, l/min, $\mathbf{Q_L}$- flow losses, l/min.

For all hydraulic devices, clearance is the basic conceptual element and the presence of flow losses is normal in their work. Losses of flow occur as the result of liquid flow from the region of higher pressure into the region of lower pressure through the structural clearances between the front surfaces of teeth and housing, sides of teeth and housing, as well as in the area of teeth contact. Flow losses practically do not depend on the revolution number, but on the operating pressure and clearance, the expression 4. Leakage of working fluid through the radial clearance occurs between the arch surface of body and the outer cylindrical surface of gear, as well as the frontal (axial) clearance between the side walls of bearing bushing and front surfaces of gear. In damaged profile of teeth in contact or inaccurate manufacturing of involute, a loss of flow is also possible on their contact line of teeth in contact.

Place of the largest leakage of gear pumps, related to the uncompensated frontal clearance, is exactly this clearance. Leakage through it is (75 ÷ 80) % of all its losses. Due to these reasons, its elimination is done and it is maintained in the required limits by testing [3,4]. This limit, in addition to the other characteristics, significantly raises the bearing bushing to the front sides of the last bushing (Figs. 2 and 4), that is faced to a cover. The connection is established by channel k, which is in connection with the pressure line, so that the oil under pressure acts on the bushing surface between the seals (A). It is sized in such a way, that the force (F), which pushes the bushing towards gear, is slightly greater than the force (F_1), which separates the bushing from gear. The ratio of these forces should be so chosen that separation of bushing and gear could not occur as well as seizing on the sliding surface of bushing.

According to Fig. 4, the installed seal in the form of kidney separates the high-pressure zone (pressure part of the pump A_1) and low-pressure zone (suction part of the pump A), provided that $A > A_1$, and also prevents external leakage. Surface for compensation is performed on both covers, but the compensation of frontal clearance is performed only over one surface – the one that is larger over the communication channel **"k"**.

PPT-Hydraulics also uses the solution seals that restrict compensation surface housed in the bearing bushing, Fig. 5 [3,4]. The advantage of this solution is a multiple because the engraving of cover is avoided, what is enabled by material selection of better mechanical properties, so it is possible to achieve higher pressures. Much less dimensions are possible to be achieved with bedding in the cover and to get more stable operation of the pump, and therefore the system, Fig. 6.

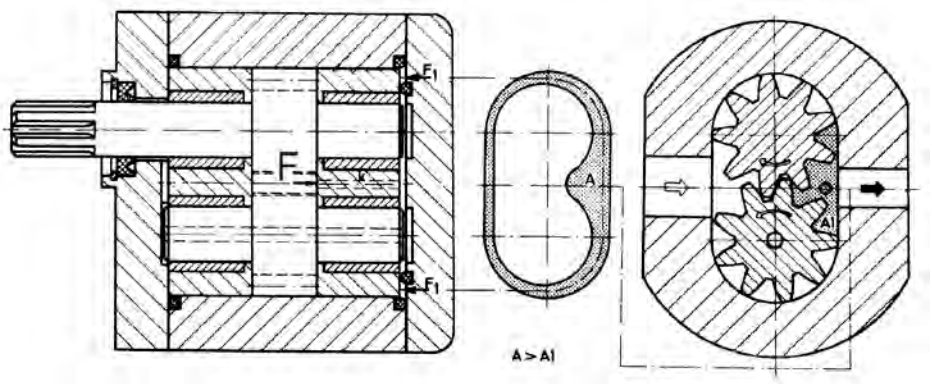


Figure 4: View of the pump with axial clearance compensation

Installation of roller bearings allows all of this and it is possible to install them on mobile machines.

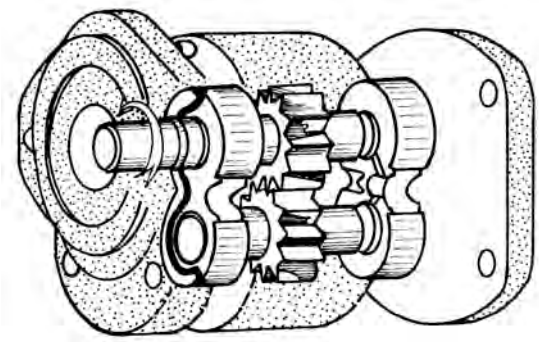


Figure 5: Example of compensation surface housed in housed in a bearing bushing

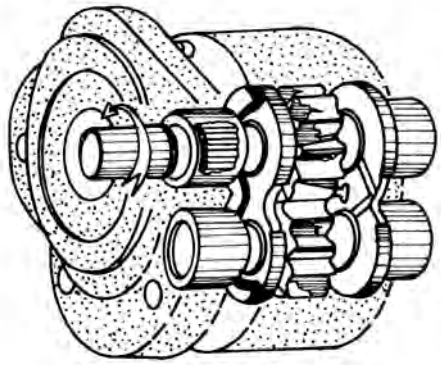


Figure 6: Example of compensation surface a bearing bushing and bedding in a cover

3. THE ACHIEVED LEVEL OF DEVELOPMENT AND NEW STRUCTURAL SOLUTIONS IN PPT-HYDRAULIC AD

The basic prerequisite for more intensive development of these devices refers to the following:

- Increasing the value of the basic technical parameters and their techno-economic optimization according to the conditions of application,
- Improving the overall efficiency level in order to achieve as much as better effects in terms of energy saving during operation,
- Decreasing the noise level as an important environmental factor,
- Decreasing the service life of device, etc.

The tendency of all manufacturers is constantly striving to raise the pressure level with simultaneously retaining at the same or higher level of other parameters such as noise, service life and overall efficiency level. Successes in these efforts largely depend on the level of technological development, in which every innovation in the field of construction must rely. This primarily refers to development the new and better quality materials for vital elements, the new processing procedures and advance in methods and measurement techniques. Many years of work to improve the overall efficiency level of gear pumps gave the visible results, so it is now assessed that further progress in this regard only for (1 ÷ 2%) would be possible only with disproportionately large investments [3]. Gear pumps with external gearing, thanks to the simplicity of construction, have a chance to retain the primacy as the cheapest pump despite the structural-technological requirements. This primarily relates to raising the pressure at level that is normal for piston pumps and thereby the field of application would be expanded. Today, the success is quite obvious that, in this regard, the leading manufacturers of these pumps have, because the level of nominal pressure was raised of 250 to 300 bars with tendency of further raise up to 400 bars. Certainly, the noise problem with this tendency became even more acute and has narrowed the field of application of these pumps in the fields where the power, not the noise, is the primary factor. This is primarily an area of severe service conditions such as encountered in hydro systems on mobile machines.

High pressure gear pumps are manufactured for more than 60 years in PPT-Hydraulic AD, and Fig.7 shows the historical start of manufacturing the same. The last fifteen years of intensive development of these pumps has resulted into development a new family of gear pumps, which are marked with ZPB (Figures 2 and 8) [3].

Figure 7: Thus the manufacturing of gear pumps has begun

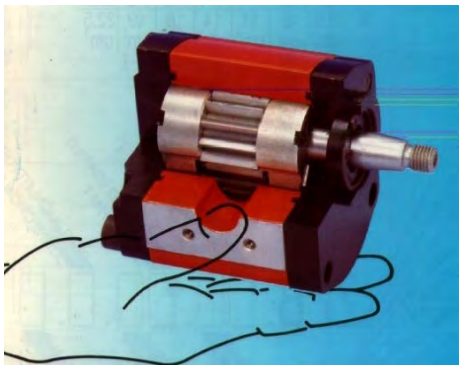


Figure 8: View of a new family of gear pumps from the group ZPB. **.**

This solution has a number of advantages over the standard family 3115. Among others, the level of nominal and highest pressures was significantly increased, the volume level of efficiency was increased, the service life of pump was extended and the noise is reduced as well as pulsation of flow and pressure. The improvement of all these parameters was performed using the new structural and technological measures in almost all vital parts of the pump.

These families of gear pumps allow use in hydraulic systems which require pressures up to 300 bars. These pressures of "piston pumps" were achieved by adequate conception of housing and covers. Housing material is extruded aluminum with high deformation degree (extruder). This material achieves significantly higher permanent strength than in aluminum die-casting, and thus higher reliability is obtained both for the pump and device of pump installation. Hydraulic casting with E-module of $(14\div16)10^7$ N/m^2 is used for cover.

Opposite to the aluminum covers with E-module $(7\div9)10^7$ N/m^2, this concept, due to higher E-module, is important, so that the sealing is reliable at high pressures. Furthermore, the use of hydraulic casting is also favorable for the screws of threads for fixing, which results in the structure compactness. In the cover (rear) of hydraulic casting, the valves can be fitted such as flow control valves or pressure limiting valves (significant in the pumps with control installation). It is well known that the number of gear teeth has the greatest influence on the flow pulsation. In this family of pumps, the gears with 12 teeth are adopted so that pulsations of flow and pressure are reduced. For comparison, the flow pulsations will be shown with different number of teeth [3]:

- 9 teeth, pulsation is 22%,
- 10 teeth, pulsation is 18%,
- 11 teeth, pulsation is 16%,
- 12 teeth, pulsation is 14%.

As pulsation has a decisive effect on noise, this gives a major contribution to the reduction of noise. The bearing journals of gears are specified with maximum roughness below 1 μm what results into optimal performances in sliding bearings coated with Teflon (DU bearings). The uniform surface hardness of gears is achieved by quality heat treatment, what in the end results in high resistance to wear of sleeve, bearings and gearing. The technique with DU bearing was applied for gear positioning because it guarantee the optimal exploitation. DU bearing is a bronze bearing coated with Teflon with steel support. This technique of positioning has significant advantages [3]: **low friction coefficient, good sliding properties, good capability of installing, slight wear, high loading, higher temperature range, moisture resistance, long service life.**

High efficiency of the pump is achieved by optimal defining the compensation area. Sealing elements are made of specially developed rubber compound based on perbunan with low rest of deformation from pressure and function of specially adapted hardness. To increase the service life, the seals are additionally supported with protective Teflon rings resistant to high temperatures. Axial forces of compensation are constant throughout the whole number of revolutions, what means that the compaction force is proportional to the pressure in pump.

It has already been pointed out that in this generation of gear pumps the pulsations of pressure and flow are reduced, what results into reduced noise. The solution of bearing bushings with an

optimal redirecting of pressure contributes to this with appropriate design of drainage the "squashed" oil on pressure side. Therefore, a significant improvement is achieved regarding to the technical solutions, which have a drain of "squashed" oil toward the suction side. Characteristic of bearing bushings in these pumps is partially rebutted edge on the side of gear, resulting in controlled increase of pressure in a hollow between teeth of gear. A new generation of gear pumps (ZPB) has anti-cavitation characteristics [3]:

- Easy formation of pressure in the chambers of teeth; sensitivity is reduced to the effect of air;
- High hardness of bushings prevents formation of erosion in the area of teeth contact, and thus results in decreased sensitivity to dirt;
- Specially shaped distribution edges on bearing bushings, which results in the "opening" chambers of teeth at the beginning, and this means premature filling to avoid cavitations at high rpm.

Within the Development of PPT - Hydraulic AD, there are efforts to implement the new solutions of gear pumps with housing of NL (Fig. 10). Unlike the ZPB solution, in which the floating bearing is applied, this family of gear pump uses the concept of fixed DU bearings in the box and back cover, [3]. Compensation of axial clearance is carried out through the sliding bronze plates containing high pressure seal, which allows high volumetric and mechanical efficiency. In this way, the radial forces of gears do not affect compensation of axial clearance. Some of the advantages include: reduced dimensions (bearings in covers), more stable system, pumps have longer service life.

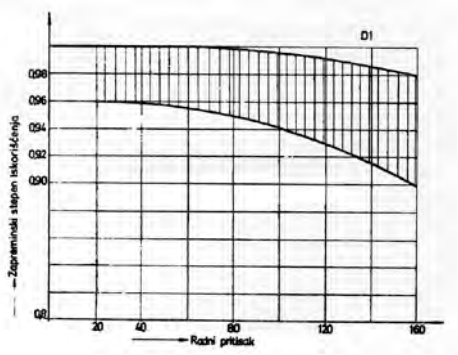


Figure 9: Typical diagrams of pumps from the group 3115.***.**

Figure 10: View of gear pump with housing of NL (dismantled with the basic parts)

They are designed for hydraulic systems on mobile machines and in general for the work in the hardest conditions. The results obtained on test stands for testing the functions and service life, as well as from the field while working in the exploitation conditions, are quite satisfactory. We can expect that further development of gear pumps will flow in the direction of increasing pressure with retaining high level of volumetric efficiency level ($\eta_v > 0.95$), further reducing the pulsations of pressure and flow and increasing service life. These performances can be achieved working on [3]:

- modification of gearing,
- improving the construction of bearing bushings,
- introduction the new technological processes,
- application the new materials.

4. AN EXAMPLE OF QUALITY MANUFACTURING THE GEAR PUMPS

Market demands as well as increasingly present competition have initiated the development of gear pump, nominal size V= 28 cm^3/r and test results will be given hereinafter in this work. Test results for five pumps are provided for different values of axial clearance (110÷160) μm. The same should demonstrate its optimal value with the aim of increasing the volume efficiency level [3].

Pump No. 1 – axial clearance of 110μm

p[bar]	0	50	100	150	210	250	270	
Q_S[l/min]	31.9	31.4	31.1	31.2	31.5	31.6	31.5	n = 1150 min^{-1}
η_v	0.99	0.975	0.966	0.969	0.98	0.981	0.98	t = 50^0C
Theoretical pump flow Q_T = 28 [cm^3/o]·1150[min^{-1}] = 32.2 [l/min]								
Q_S[l/min]	52.5	52.7	52.5	52.6	52.8	52.7	52.6	n = 1900 min^{-1}
η_v	0.987	0.99	0.991	0.99	0.99	0.99	0.99	t = 50^0C
Theoretical pump flow Q_T = 28 [cm^3/o]·1900[min^{-1}] = 53.2 [l/min]								

Pump No. 2 – axial clearance of 130μm

p[bar]	0	50	100	150	210	250	270	
Q_S[l/min]	32.0	31.4	30.9	30.9	31.3	31.7	31.8	n = 1150 min^{-1}
η_v	0.994	0.975	0.96	0.96	0.972	0.984	0.988	t = 50^0C
Theoretical pump flow Q_T = 28 [cm^3/o]·1150[min^{-1}] = 32.2 [l/min]								
Q_S[l/min]	53.0	52.6	52.2	52.1	52.6	52.7	52.6	n = 1900 min^{-1}
η_v	0.996	0.99	0.98	0.98	0.99	0.99	0.99	t = 50^0C
Theoretical pump flow Q_T = 28 [cm^3/o]·1900[min^{-1}] = 53.2 [l/min]								

Pump No. 3 – axial clearance of 140μm

p[bar]	0	50	100	150	210	250	270	
Q_S[l/min]	32.0	31.0	30.4	30.3	31.0	31.4	31.4	n = 1150 min^{-1}
η_v	0.994	0.963	0.944	0.94	0.963	0.975	0.975	t = 52^0C
Theoretical pump flow Q_T = 28 [cm^3/o]·1150[min^{-1}] = 32.2 [l/min]								
Q_S[l/min]	52.8	52.3	51.6	51.6	52.0	52.3	52.0	n = 1900 min^{-1}
η_v	0.992	0.983	0.97	0.97	0.98	0.983	0.98	t = 52^0C
Theoretical pump flow Q_T = 28 [cm^3/o]·1900[min^{-1}] = 53.2 [l/min]								

Pump No. 4 – axial clearance of 160μm

p[bar]	0	50	100	150	210	250	270	
Q_S[l/min]	31.9	31.2	30.6	30.7	31.2	31.5	31.5	n = 1150 min^{-1}
η_v	0.99	0.99	0.95	0.953	0.99	0.99	0.99	t = 50^0C
Theoretical pump flow Q_T = 28 [cm^3/o]·1150[min^{-1}] = 32.2 [l/min]								
Q_S[l/min]	52.8	52.2	51.8	51.8	52.3	52.0	52.1	n = 1900 min^{-1}
η_v	0.994	0.98	0.974	0.974	0.983	0.978	0.98	t = 50^0C
Theoretical pump flow Q_T = 28 [cm^3/o]·1900[min^{-1}] = 53.2 [l/min]								

For calculating the efficiency level dependence with pressure increase, using the expression 4, the values are calculated in given tables.

5. CONCLUSION

PPT - Hydraulic AD follows the global trends in development of these devices from which the development of the new structural families has resulted that have already confirmed their high level of quality both in domestic and international markets. Development of gear pumps in these directions leads to a slight improvement of all its parameters and significant reduction in noise and, as such, it is highly suitable for evaluation the achieved technical level of gear pump as a whole, as well as for evaluation the operating condition of its individual parts. The general condition can be described as follows:

- The realized quality, in every respect, the testing results of four pumps with different values of axial clearance have shown. As it is also stated in the text, it has the highest effect on the loss of flow, expressed in volumetric efficiency level.
- Comparison with the given diagram in Fig. 9 can be used as a contribution to this, where it can be seen how the present solution is better in every way.
- Testing devices have a big role in all of this and without which all of that could not be checked and verified by test reports, Fig. 11.
- Also, the weight reduction is more than 30% for the new solution [3,5].

Figure 11: View of universal test stands for testing of hydraulic devices

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INTERNATIONAL STANDARDS AND DIRECTIVES ON HUMAN RIGHTS

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Abstract: *Human right in the literature is usually defined as a set of rights and freedoms that belong to all people, regardless of their gender, origin or nationality. They refer to the legal, philosophical and political idea. Human rights have become a transnational issue and value, and to develop them is necessary to ensure joint efforts of humanity. It is necessary to establish the minimum standards of human rights which should reach all countries. The Statute of the Council of Europe provides that any serious violations of human rights by the member states constitute grounds for suspension or exclusion. While working on the paper we based on an analysis of existing regulations. Some conventions that dealt with human rights are also taken into consideration. We followed the reports, statements and recommendations of independent institutions for the protection of human rights, as these recommendations are aimed at improving the legal framework and should not affect the introduction of best practice to the full enjoyment of constitutionally guaranteed human rights.*

Keywords: *human rights, International standard, directive.*

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1. INTRODUCTION

Human rights starts from the principle that all human beings are born free and equal in dignity and rights, and include international, interstate and state standards of personal, political and economic, social and cultural rights and freedoms of man as a human being. These are rights that man accomplishes alone and with other people, regardless of nationality and other differences guaranteed by international charters, declarations, conventions and treaties, and legitimize them, implement and protect the States Parties in their constitutions and laws [18].

All people have equal rights and freedoms, and all are bound to respect the human rights of every individual. Writing human rights in the constitution and the law does not have formative, but declarative role, because this only confirms what is already there and no formal recognition. The source of human rights is not the will of the state authorities, because human rights belong to the individual according to his nature, in his capacity as basic human beings, and that is that he was born as a man. Therefore, it is said that man cannot lose his freedom and the state cannot deprive the individual to his right, as she has not given it. But the individual himself cannot renounce his rights, because he was born as a free and therefore cannot give up this basic characteristic of his personality.

About human rights is talked about a lot in expert scientific literature. A lot of books are written in this field, like for example [1, 3, 5-6, 8, 11-12, 14-17, 20-22, 25, 27-28, 33, 35-36, 38]. In Scopus citation database (CDB) searching for the phrase "human rights" appears

more than 70000 articles for period of 1996-2014. There are also substantial number of books published in Serbian language [23, 26, 29] and articles and 5 volumes "Zbirka odluka o ljudskim pravima – eng. Collective decision on human rights" [10, 13, 30-32] and etc.

2. INTERNATIONAL STANDARDS FOR THE PROTECTION OF THE HUMAN RIGHTS

Within the framework of human rights protection standards we will use the presentation of international standards which, in certain areas of human rights, should be monitored and promoted. The review will take the right against torture, the right of freedom of speech, the right of access to justice and the right to conscientious objection and for each of these rights standards that were proposed by the United Nations.

2.1. The prohibition of torture

"Torture" represents any act by which a person is purposely inflicted to pain or severe physical or mental suffering for the purpose of obtaining from him or a third person information or a confession or punishing them for an act which is or a third person has committed or for which execution is suspected, intimidate that person or exert pressure on it or intimidation or exerting pressure on a third person, or for any reason based on discrimination of any kind if the pain or suffering is inflicted by a public official or any other person acting in an official capacity, or at the instigation of or with the consent or acquiescence (UN Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment). The prohibition of torture is universal [2].

The state is obliged to take all legislative, administrative, judicial or other measures in order to prevent the exercise of torture. It is also obliged that persons in their institutions are penalized if it does not comply with an order of performing actions that do not constitute torture. Country in the process of person extradition to another state must first examine whether in that country isn't any torture, as well as in their own country. It must control the operation of the institutions where they are housed people, who were detained after legal proceedings, at the request of those persons are entitled to medical care if they claim to have suffered form of torture and also right to an attorney.

States should endeavor place under its criminal law all acts of torture as offenses, as well as attempt and complicity to commit torture (UN Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment). The state is obliged to ensure that education and information regarding the prohibition of torture is an integral part of education, civil or military personnel of law enforcement, medical personnel, public officials and other persons in any way be involved in the custody, interrogation or treatment of any arrested or an imprisoned person. Prohibition against torture should be within the rules and guidelines in connection with the duties and obligations of staff. It is necessary to train judges, prosecutors and lawyers on the relevant international standards in the field of prevention of torture.

The amenable authorities are obliged to promptly and impartially examine the cases of torture. The Member State is obliged to guarantee the victim of an act of torture obtaining compensation and the right to fair and adequate compensation, including the means for as full rehabilitation of victims. It should also be provided to victims of brutal violations of international human rights law and serious violations of full and effective reparation, which includes restitution, compensation, rehabilitation, satisfaction and guarantees of re-injury [4]

2.2. Freedom of speech

Freedom of expression means to have own opinions and to seek, receive and impart information and ideas without interference by public authority (the International Pact on Civil and Political Rights, the European Convention for the Protection of Human Rights and Fundamental Freedoms). This freedom gives rights to individuals even not to declare if he wants to. State law has a clear way to prescribe limitations that the law does advance available, as well as to predict effective means of judicial protection against possible abuse of power in the interpretation of these regulations. Legitimate restrictions relating to national security, territorial integrity or crime, for the prevention of disorder and crime, protection of the reputation or rights of others, for preventing the disclosure of information received in confidence and in order to preserve its authority and impartiality of the courts.

The necessity of restrictions on freedom of expression in a democratic society is estimated on the basis of: the relevant domestic legislation, the types of restrictions or penalties imposed as a result of its violation, the degree of interference by public authorities in certain human right kind of information or opinion, social and political context of the case, the person concerned, media types in which the information was published, public interest is concerned, conduct of journalists in this particular case, the factual merits of some opinions/ comments, the author's good faith. The debate on matters of serious public interest, particularly in the context of political debate, should enjoy the highest level of protection of the state. In the pre-election period, the Government should allow freedom of movement of all kinds of opinions [7].

The courts must take into account that the boundaries of permissible criticism are much wider when it comes to politicians or public figures. The boundaries of permissible criticism are wider with regard to politicians and public figures in general, in relation to private individuals, and politicians (public figures) must show a greater degree of tolerance, especially when administered alone and provocative statements. Occupation of journalists requires compliance with certain ethical standards in the gathering, transmission, and dissemination of information in order to commenting effective exercise of freedom of expression.

The journalist is obliged to respect the truth and write about it and the state has no right to demand him to reveal the source of information. The information must be objective and without the influence of political parties. The state must allow journalists to freely report and comment on the functioning amount to the criminal justice system, with respect for the presumption of innocence and the right to privacy of the person concerned. The competent authorities should provide accurate information and provide access to information given to the media.

2.3. The right of access to justice

Everyone is entitled to his rights and obligations determined by the court or other independent and impartial body provided for by law. Everyone has the right to a fair trial and on appeal in respect of their civil rights. The State should ensure effective access to justice, as well as practical and effective rights and not theoretical [9]. The state must not set any restrictions on access to justice and the rights of access restrictions must be legitimate and reasonable.

In civil proceedings must be provided for exemption from payment of court fees. States should ensure that court fees are reduced or eliminated when an obstacle access to justice. It should also provide free legal assistance in case of need to meet the justice and legal advice, which will be billed by that managed dispute. Country should encourage the

establishment of legal counseling in underdeveloped areas. in determining the existence of conditions for the award of legal aid where the interests of justice, the court takes into account the complexity of the case (factual and legal), the ability of the defendant to understand the case, especially taking into account the seriousness of the charges and severity of punishments. The state is not responsible for any deficiency in the quality of legal representation.

Criminal and civil proceedings should be as simple as possible. It is necessary to lay down measures and regulations to facilitate access to justice. Representation by a lawyer should not be compulsory. The state should pay attention to the problem of interpretation and translation and to provide conditions for the poor that they are not at a disadvantage in terms of access to a court or in terms of the procedure because of their inability to speak or understand the language of the court. All documents used in the process should be in a simple form. In conducting the investigation states should be taken it to be faster and more effectively implemented. Information needed by the administration of justice should be transparent.

2.4. The right to conscientious objection

Everyone has the right to freedom of thought, conscience and religion, and the right to change one's religion. Everyone has the right to refuse military obligations in accordance with the recognized right to freedom of thought, conscience and religion. When the person is required to serve in the army refuse to serve, he has the right to be exempt from such service. This right should be respected as a logical consequence of the fundamental rights of the individual in the basic principles of the laws of the Member States, which is guaranteed by Article 9 of the European Convention on Human Rights.

The request for the right to conscientious objection can be made at all stages of military obligations: before, during and after his military service. About claim of conscientious objector by an independent body that request may be refused only for cause. It is necessary in this system to introduce an independent and impartial body that will decide on claims of conscientious objection. The application and the appeal court postpone his military service until the final decision. It is necessary to envisage all measures for a fair procedure [19]. The State should provide to the applicant whose application has been denied the possibility of appeal to an independent body of second instance. When a decision recognizing the right to conscientious objection issue administrative authority, its decisions will be subject to review at least one administrative body, whose composition ensures independence from the first instance, and subsequently control at least one other judicial body. Conscientious objectors to perform alternative service will not diminish or constrain the social and financial rights in comparison with individuals who serve regular military service. Legal provisions relating to military service will apply to civil implementation. The person required to serve in the army must be informed in advance about the rights to conscientious objection.

2.5. International human rights directives

Holders of human rights of the citizens and the obligation of the state are that the rights and freedoms enshrined in the constitution and laws are not violated but respected. This means that the state must have an active approach to protecting human rights, and an effective system for their protection. Protection mechanisms can be divided into two groups, depending on whether these are activities that should prevent the occurrence of violations of human rights and freedoms (preventive action) or whether it should react to the already existing

instances of violation or restriction of human rights and freedoms (repressive action). The first group includes the educational and preventive action and extrajudicial protection in another criminal, misdemeanor and civil protection. What kind of judicial protection will injured person choose, depends not only on the right that has been violated, but also on how they were injured and what type of meeting requested.

The UN system for the protection of and promotion of human rights consists primarily of the body established by the UN Charter and the so-called treaty bodies or bodies established by international conventions for the protection of human rights and other bodies and agencies of the UN.

The bodies set up by the UN Charter:

Human Rights Council. As part of the current reform of the UN General Assembly's resolution of 15 March 2006 established a new body, the Council for Human Rights, as well as its subsidiary body that would replace the Commission of Human Rights and take in its responsibility, primarily in relation to the Office of the High Commissioner Human rights. The Council has 47 members and should be the head of the UN forum for dialogue and cooperation in the field of human rights.

The Human Rights Committee. The Human Rights Committee was formed in 1946, based on Article 68 of the UN Charter, and consists of the authorized representatives of 53 countries elected by the Economic and Social Council by a formula that provides geographical representation. It is a political body that acts on the instructions of their governments, and often submits proposals, recommendations and reports in connection with the conclusion and implementation of international instruments in the field of human rights. The Human Rights Commission also serves as a forum where representatives of countries, NGOs and human rights defenders discussed the situation on the field of protecting and improving.

Sub-Commission for the protection of and promotion of human rights. Sub-Commission on the Protection and Promotion of Human Rights is a subsidiary body of the Human Rights Commission which was established in 1947 under the original name of Sub-Commission on Prevention of Discrimination and Protection of Minorities. Sub-Commission in 1999 changed its name to the present and currently has 26 independent experts chosen by the Commission, and acting in their personal capacity (elected every two years for a period of 4 years).

Commission on the Status of Women. Commission on the Status of Women is based on Article 68 of the UN Charter, and consists of the authorized representatives of 45 countries elected by the Economic and Social Council by a formula that provides geographical representation.

There are six/seven treaty bodies that oversee the application of basic international treaties on human rights and they are: the Human Rights Committee - 18 members of the Committee on Economic, Social and Cultural Rights (established in ECOSOC Resolution 1985/17, 28 May 1985 . years) - 18 members, the Committee on the Elimination of Racial Discrimination - 18 members, the Committee on the Elimination of Discrimination against women- 23 members, the Committee against torture - 10 members, the Committee on the Rights of the Child - 18 members of the Commission for the protection of the Rights of All migrant Workers and Members of Their family - 10 members.

When we look at the picture, we see that the first step in respecting the human rights initially is providing legal aid, through non-governmental organizations that deal with these matters on a daily basis, the data is collected in parallel with the provision of legal aid by the organization. The results, which are reached by analyzing of collected data are compared to set national and international standards of human rights. When defining the problem are taken into consideration a number of questions and, based on them decide on the further course.

Representation before the court by the lawyer acting within the framework of non-governmental organizations is the result of interaction between experts in the field of human rights and lawyers themselves. Lawyers handle primarily the responses provided by the court, with particular reference to whether the judges in their responses referred to the mandatory application of international standards, in addition to the home that are routinely invited. After completion of the proceedings before the court, the experts once again handle the strategic case and determine the bodies before which it can run the mechanism for protection of human rights.

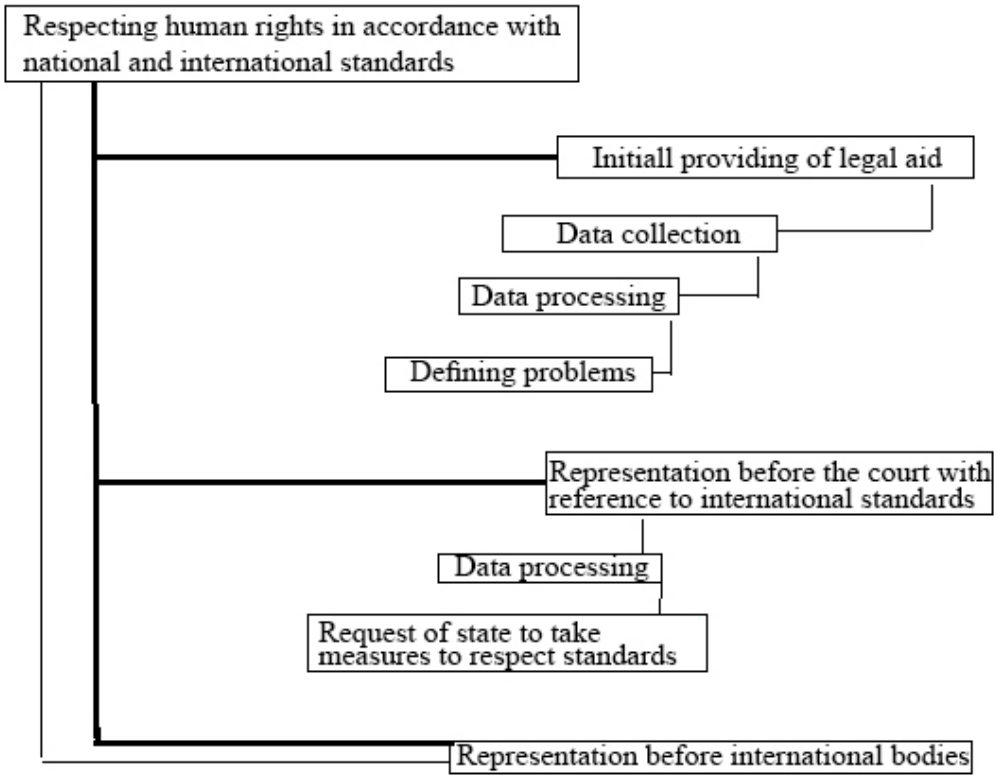

Figure 1: Scheme of strategic representation

3. EU CHARTER OF FUNDAMENTAL RIGHTS

In June 1999, the Cologne European Council concluded that the fundamental rights applicable at European Union (EU) level should be consolidated in a charter to give them greater visibility. The heads of state/government aspired to include in the charter the general principles set out in the 1950 European Convention on Human Rights and those derived from the constitutional traditions common to EU countries. In addition, the charter was to include the fundamental rights that apply to EU citizens as well as the economic and social rights contained in the Council of Europe Social Charter and the Community Charter of Fundamental Social Rights of Workers. It would also reflect the principles derived from the case law of the Court of Justice and the European Court of Human Rights [24].

The charter was drawn up by a convention consisting of a representative from each EU country and the European Commission, as well as members of the European Parliament and national parliaments. It was formally proclaimed in Nice in December 2000 by the European Parliament, Council and Commission.

In December 2009, with the entry into force of the Lisbon Treaty, the charter was given binding legal effect equal to the Treaties. To this end, the charter was amended and proclaimed a second time in December 2007.
The charter brings together in a single document rights previously found in a variety of legislative instruments, such as in national and EU laws, as well as in international conventions from the Council of Europe, the United Nations (UN) and the International Labor Organization (ILO). By making fundamental rights clearer and more visible, it creates legal certainty within the EU [36].

The Charter of Fundamental Rights contains a preamble and 54 Articles, grouped in seven chapters:

- Chapter I: dignity (human dignity, the right to life, the right to the integrity of the person, prohibition of torture and inhuman or degrading treatment or punishment, prohibition of slavery and forced labour);
- Chapter II: freedoms (the right to liberty and security, respect for private and family life, protection of personal data, the right to marry and found a family, freedom of thought, conscience and religion, freedom of expression and information, freedom of assembly and association, freedom of the arts and sciences, the right to education, freedom to choose an occupation and the right to engage in work, freedom to conduct a business, the right to property, the right to asylum, protection in the event of removal, expulsion or extradition);
- Chapter III: equality (equality before the law, non-discrimination, cultural, religious and linguistic diversity, equality between men and women, the rights of the child, the rights of the elderly, integration of persons with disabilities);
- Chapter IV: solidarity (workers' right to information and consultation within the undertaking, the right of collective bargaining and action, the right of access to placement services, protection in the event of unjustified dismissal, fair and just working conditions, prohibition of child labour and protection of young people at work, family and professional life, social security and social assistance, health care, access to services of general economic interest, environmental protection, consumer protection);
- Chapter V: citizens' rights (the right to vote and stand as a candidate at elections to the European Parliament and at municipal elections, the right to good administration, the right of access to documents, European Ombudsman, the right to petition, freedom of movement and residence, diplomatic and consular protection);
- Chapter VI: justice (the right to an effective remedy and a fair trial, presumption of innocence and the right of defense, principles of legality and proportionality of criminal offences and penalties, the right not to be tried or punished twice in criminal proceedings for the same criminal offence);
- Chapter VII: general provisions.

The charter applies to the European institutions, subject to the principle of subsidiary, and may under no circumstances extend the powers and tasks conferred on them by the Treaties. The charter also applies to EU countries when they implement EU law.
If any of the rights correspond to rights guaranteed by the European Convention on Human Rights, the meaning and scope of those rights is to be the same as defined by the convention, though EU law may provide for more extensive protection. Any of the rights derived from the common constitutional traditions of EU countries must be interpreted in accordance to those traditions. Protocol (No) 30 to the Treaties on the application of the charter to Poland and the United Kingdom restricts the interpretation of the charter by the Court of Justice and the national courts of these two countries, in particular regarding rights relating to solidarity (chapter IV) [36].

4. PROGRESSIVE REALIZATION OF ECONOMIC, SOCIAL AND CULTURAL RIGHTS

The concept of "progressive realization" describes a central aspect of States' obligations in connection with economic, social and cultural rights under international human rights treaties. At its core is the obligation to take appropriate measures towards the full realization of economic, social and cultural rights to the maximum of their available resources. The reference to "resource availability" reflects a recognition that the realization of these rights can be hampered by a lack of resources and can be achieved only over a period of time. Equally, it means that a State's compliance with its obligation to take appropriate measures is assessed in the light of the resources—financial and others—available to it [34]. Many national constitutions also allow for the progressive realization of some economic, social and cultural rights.

Each State Party to the present Covenant undertakes to take steps, individually and through international assistance and cooperation, especially economic and technical, to the maximum of its available resources, with a view to achieving progressively the full realization of the rights recognized in the present Covenant by all appropriate means, including particularly the adoption of legislative measures.

Convention on the Rights of the Child

(art. 4) States Parties shall undertake all appropriate legislative, administrative, and other measures for the implementation of the rights recognized in the present Convention. With regard to economic, social and cultural rights, States Parties shall undertake such measures to the maximum extent of their available resources and, where needed, within the framework of international cooperation.

Convention on the Rights of Persons with Disabilities

With regard to economic, social and cultural rights, each State Party undertakes measures to the maximum of its available resources and, where needed, within the framework of international cooperation, with a view to achieving progressively the full realization of these rights, without prejudice to those obligations contained in the present Convention that are immediately applicable according to international law.

The concept of progressive realization is sometimes misinterpreted as if States did not have to protect economic, social and cultural rights until they have sufficient resources. On the contrary, the treaties impose an immediate obligation to take appropriate steps towards the full realization of economic, social and cultural rights. A lack of resources cannot justify inaction or indefinite postponement of measures to implement these rights. States must demonstrate that they are making every effort to improve the enjoyment of economic, social and cultural rights, even when resources are scarce. For example, irrespective of the resources available to it, a State should, as a matter of priority, seek to ensure that everyone has access to, at the very least, minimum levels of rights, and target programmes to protect the poor, the marginalized and the disadvantaged.

Laws enacted in Scotland (local government) and France (national Government) are examples of efforts to progressively implement the right to adequate housing. In 2003 the Scottish Parliament passed the landmark Homelessness etc. (Scotland) Act 2003, which fundamentally changes Scotland's homelessness legislation by progressively introducing a fully justiciable right to housing. While at first applicable only to persons that have a "priority need", the Act is intended to ensure that over a period of ten years—between 2003 and 2012—these groups are expanded to include everyone without a home. In 2012 every unintentionally homeless person in Scotland will have a legally challengeable right to permanent accommodation. Since 2003 the Scottish law has become a model for other States. In France, similar legislation has

been under discussion. The French law, too, would create a legally challengeable right to housing (droit opposable au logement) that would be progressively realized. When gaining legal force, in 2008, the French law will apply only to homeless persons and those living in poverty. By 2012, it will include anyone eligible for social housing.

5. INTERNATIONAL HUMAN RIGHTS MONITORING MECHANISMS

There are various international mechanisms, global as well as regional, to monitor and protect economic, social and cultural rights. They include the monitoring bodies of the United Nations human rights treaties, the special procedures and universal periodic review mechanism established by the Human Rights Council, and regional human rights mechanisms. All the nine core United Nations human rights treaties have their own monitoring mechanisms—committees of independent experts known as treaty bodies. The main treaty body overseeing the implementation of economic, social and cultural rights is the Committee on Economic, Social and Cultural Rights. Other treaty bodies monitor the implementation of economic, social and cultural rights in relation to, for example, the prohibition of discrimination on the grounds of sex or ethnicity or rights of specific groups, such as children, migrant workers and persons with disabilities. Reflecting the nature of human rights, i.e., their interdependency and indivisibility, the other treaty bodies, whose main focus is not on economic, social and cultural rights, have also been monitoring compliance with economic, social and cultural rights directly or indirectly. For example, certain aspects of the right to health and the right to food have been monitored in relation to the right to life or the prohibition of inhuman and degrading treatment by bodies dealing with civil and political rights or torture [37-39].

Treaty bodies perform four main functions: (a) They periodically review reports on States' implementation of treaties; (b) They articulate the contents of rights and obligations under the treaties through their general comments or general recommendations; (c) Most treaty bodies examine complaints known as communications or petitions from individuals and groups of individuals. (d) Some treaty bodies also conduct inquiries, under certain conditions, when they receive reliable information of grave or systematic violations of human rights (table 1) [40].

The other main United Nations human rights mechanisms which monitor States' compliance with their human rights obligations are the special procedures of the Human Rights Council. The Human Rights Council appoints independent experts to address specific country situations or thematic issues. Such experts are called special rapporteurs, independent experts, special representative, or they are appointed as working groups. Currently, there are several thematic mandates which focus on specific economic, social and cultural rights.

In addition, there are many other special procedure mandate holders who address economic, social and cultural rights, such as the Special Rapporteur on the rights of indigenous people, the Special Rapporteur on violence against women, the Special Rapporteur on countering terrorism or the Special Representative of the Secretary-General on human rights and transnational corporations and other business enterprises. The mandates of the special procedures are normally threefold:

(a) They examine, monitor, advise and publicly report on human rights situations.

(b) Most special procedures respond to individual complaints of human rights falling within their mandates by sending letters transmitting allegations to States or communications requesting the State to take action to protect economic, social and cultural rights.

(c) The special procedures also carry out country visits to examine the implementation of the rights concerned, report on their findings to the Human Rights Council and make recommendations to the countries concerned.

Finally, in 2007 the Human Rights Council established a new monitoring process: the universal periodic review. Through this mechanism, it periodically reviews the fulfilment of the human rights obligations of all countries. It is envisaged as a cooperative mechanism, based on an interactive dialogue, with the full involvement of the country concerned and with consideration given to its capacity-building needs. The review process started in 2008.

Table 1: Monitoring mechanisms of human rights [40]

Treaty	Treaty body	Functions		
		Regular review of State party reports	Individual complaints	Inquiry into grave violations
International Covenant on Economic, Social and Cultural Rights	Committee on Economic, Social and Cultural Rights	✓	✓[a]	✓[a]
Convention on the Elimination of All Forms of Discrimination against Women	Committee on the Elimination of Discrimination against Women	✓	✓	✓
International Convention on the Elimination of All Forms of Racial Discrimination	Committee on the Elimination of Racial Discrimination	✓	✓	
Convention on the Rights of the Child	Committee on the Rights of the Child	✓		
International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families	Committee on Migrant Workers	✓	✓	
International Covenant on Civil and Political Rights	Human Rights Committee	✓	✓	
Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment	Committee against Torture	✓	✓	✓
Convention on the Rights of Persons with Disabilities	Committee on the Rights of Persons with Disabilities	✓	✓	✓
International Convention on the Protection of All Persons against Enforced Disappearance (not yet in force)	Committee on Enforced Disappearances (to be established)	✓	✓	

6. CONCLUSION

Based on the above analyzed standards we can conclude that the basic principle that all people have the right to be informed and that their information is accessible. The state is obliged to ensure the equal right of all people to freedom of movement, expression of opinions, information and other fundamental freedoms. The standards in the protection of human rights require the State to before performing or not performing any work well reconsider whether is provided protection from any misconduct, that is whether all human basic rights provided by the Universal Declaration of Human Rights. States also need to ensure a fair system of justice and equality of access to it. When implementing standards in its legal system, the State should ensure the safety of people living, and their protection of property.

We believe that preventive action deserves special attention, and so as to rehabilitation and education system that changed the awareness of the importance of respecting human rights and freedoms. It is often through the media or at numerous conferences about human freedoms and rights, and that citizens basically do not know what are their guaranteed freedoms and rights and what are the mechanisms to protect their rights. It is possible to achieve the education and teaching of human rights, which may be formal or informal. Learning about human rights can develop a true "culture of human rights", based on respect, protection, fulfillment, legal, insurance and implementation of human rights.

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Review Article

TIME SERIES ANALYSIS OF NEW CARS SALE IN SERBIA

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Abstract: *In this paper, the analysis of new cars sale in Serbia for the period 2007-2014 is provided. For the mentioned period, new cars sale in Serbia was reduced by 34.99 % (od 56231 vozila u 2007 do 19675 vozila u 2014) according to the data from Web site [44] and it can be approximated with the 3rd degree polynomial with determination coefficient R^2=0.9906. In the mentioned period, 292298 new cars were sold and the most of this number were FAS*** - 39672 vehicles (or 13.57 % out of the total cars sold for the period 2007-2014). In the year 2014, the most cars sold were of the car brand Skoda – total of 3377 vehicles (or 13.57 % out of the total cars sold for the year 2014).*

Keywords: *car, cars sale, national car consumption, time series analysis, regression analysis.*

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1. INTRODUCTION

In 2014 in Serbia, there was 19675 vehicles sold, based on the data from Web site [44], average sale per month was 1640 vehicles. The average was never so low, since the association observes the data on sale. Sale of new cars in Serbia was reduced in 2014. by 10.76 %, in relation to the year 2013., when it was at historical minimum and dealer houses were closed in smaller towns and regional centers. Since 1999, when association disappeared, records have been kept and in previous fifteen years 500.000 new vehicles were sold, or about 34.000 per a year. In the year 2007, there were 56231 sold, and in 2014 19675. The highest sale of new cars in Serbia in 2014 was recorded in the period from March-June.

Based on previous results of the sale, we can predict that the total number of cars delivered in 2015 will be smaller than in 2014. The data of some importers are not realistic because they also recorded the sales realized in Macedonia, Montenegro, Bosnia and Herzegovina.

In the first months of the year 2014, the most sold cars were the new ones with the lowest prices in medium class, up to some ten thousand euros, and Skoda had the highest sale, then FIAT, Volkswagen, Ford... Cars are mainly used for city ride, but also as family vehicles, because they spend less.

The growth in sale of Japanese brands such as Toyota, Suzuki, Mazda and Mutsubishi, was noticed due to the quality and endurance of those vehicles. As for the premium segment, i.e. sale of luxury cars, there is no major gowth or decline.

The sale of luxury cars was always about 1500 vehicles annualy and on average it usually looks like this: 500 cars BMW, 500 Audi and 500 Mercedes.

New vehicles have no support from the legislator in the aspect of the fee and regulation of cheaper interest rates or anything, while, on the other hand, the import of used cars is increased and those cars should go through certification centres of the certified manufacturer and his representative in order to determine their true condition regarding the mileage, safety and environmental protection.

The sale of new vehicles in the market of European Union in 2014 has grown at annual level, mostly due to two-cipher growth in Spain, Italy and Great Britain.

Sale in North America and Europe has grown, while in Asia it is reduced, primarily in Japan, whose government raised sales tax in 2014, for the first time in the last 17 years, which slackened domestic consumption.

Japanese "Toyota" is the world leader in cars sale, since it surpassed the German "Volkswagen" and American "General Motors". Japanese manufacturer is the leader in the world market for the last three years.

Previous research efforts on increasing cars sale have focused mainly on the application of cars sale forecasting methods, taking into consideration the general situation of the world economy. Literature has generally characterized advertising as competitive weapon of the firms in dividing markets, ignoring the special features of national economies. Most studies find that total car advertising stimulated aggregate national car consumption, but only few of them indicate some consumer sensitivity to advertising in relation to special macroeconomic characteristics of each national economy [2, 4, 6-7, 10, 30-32, 36, 38-40, 45].

New technologies in the field of car industry and their predictions for the future are presented in papers [1, 3-5, 12-13, 19, 24-27, 29, 33-35, 41-43, 46].

2. Data sources and methods

There are small differences in data on new cars sale in Serbia, depending on data source and for the analysis of new cars sold in Serbia for the period 2007-2014, the data from Web site http://www.vrelegume.rs/barometar.php [44] were used.

For analysis and graphical presentation of the results, the standard methods of statistical and regression analysis were used presented in papers [8-9, 11, 14-18, 20-21, 23, 37].

3. Results and discussion

Table 1 presents a number of new cars sold in Serbia by brands for the period 2007-2014, while Figure 1 presents top-ten most sold models of new cars in Serbia, as well as their share in percents for this period and in Figure 2 top-ten most sold models of new cars in Serbia as well as their share in percents for the year 2014.

For new cars sale in Serbia, the greatest number of vehicles sold for the period 2007-2014 is: FAS*** with 39672 vehicles (or 13.57 %), Skoda with 28425 vehicles (or 9.72 %), Zastava with 25355 vehicles (or 8.67 %), Opel with 22323 vehicles (or 7.64 %), VW with 20687 vehicles (or 7.08 %), Dacia with 17776 vehicles (or 6.08 %), Hyundai with 15584 vehicles (or 5.33 %), Ford with 13599 vehicles (or 4.65 %), Renault with 13061 vehicles (or 4.47 %), Fiat with 11332 vehicles (or 3.88 %) and other with 84484 vehicles (or 28.90 %) (table 1 and figure 1).

For new cars sale in Serbia, the greatest number of vehicles sold for 2014 is: Skoda with 3377 vehicles (or 17.16 %), VW with 1882 vehicles (or 9.57 %), Fiat with 1812 vehicles (or 9.21 %), Hyundai with 1613 vehicles (or 8.20 %), Dacia with 1352 vehicles (or 6.87 %), Ford with 1054 vehicles (or 5.36 %), Opel with 1049 vehicles (or 5.33 %), FAS*** with 1047

vehicles (or 5.32 %), Renault with 1020 vehicles (or 5.18 %), Toyota with 995 vehicles (or 5.06 %) and other with 4474 vehicles (or 22.74 %) (table 1 and figure 2).

Table 1: Number of new cars sold in Serbia by brands for the period 2007-2014 [44]

Brand	2007	2008	2009	2010	2011	2012	2013	2014	Total
Alfa Romeo	28	48	25	7	55	51	44	25	283
Audi	414	809	483	450	488	520	503	588	4255
BMW	476	505	344	387	404	392	403	382	3293
Chery	0	0	0	0	122	92	0	2	216
Chevrolet	2492	2148	1593	1453	1482	852	481	129	10630
Chrysler	58	94	9	11	12	0	0	0	184
Citroen	1691	2065	1063	983	519	22	0	129	6472
Dacia	2487	2511	3071	3383	2562	1389	1021	1352	17776
Dodge	164	153	53	58	16	4	0	0	448
FAS***	0	0	16375	11763	4717	2317	3453	1047	39672
Fiat	2936	2511	751	83	1413	797	1029	1812	11332
Ford	1951	2434	1635	1583	2063	1763	1116	1054	13599
Honda	1266	1296	569	328	307	391	475	315	4947
Hummer	8	1	0	0	0	0	0	0	9
Hyundai	1594	1797	1898	2525	2393	1847	1917	1613	15584
Infiniti	0	0	0	0	1	9	3	0	13
Isuzu	79	86	9	1	6	0	24	6	211
Jeep	180	194	88	89	48	55	45	60	759
Kia	655	762	580	730	701	832	796	843	5899
Lada	1546	259	37	0	234	509	199	317	3101
Lancia	2	3	7	1	20	32	27	35	127
Land Rover	24	76	84	32	88	107	68	73	552
Lexus	0	37	58	18	18	3	1	0	135
Mahindra	0	6	16	15	11	0	0	0	48
Mazda	269	781	664	542	315	243	234	263	3311
Mercedes	1260	1358	906	763	741	503	453	0	5984
Mini	117	87	102	44	74	118	66	63	671
Mitsubishi	109	151	66	50	252	88	121	70	907
Nissan	234	379	232	355	491	420	369	380	2860
Opel	5107	6436	2469	2635	2134	1399	1094	1049	22323
Peugeot	2983	2996	1413	1005	749	273	286	153	9858
Porsche	45	35	18	31	39	16	22	67	273
Renault	2135	2304	1745	1867	1779	1249	962	1020	13061
Saab	22	19	2	14	9	0	0	0	66
Seat	506	1085	664	311	268	221	121	140	3316
Skoda	3662	4412	2413	3252	3719	3665	3925	3377	28425
Smart	0	0	0	0	48	49	119	5	221
SsangYong	44	11	0	0	0	0	5	0	60
Subaru	189	202	108	92	40	23	26	28	708
Suzuki	728	790	605	572	394	460	484	329	4362
Toyota	1861	1693	1415	1258	956	801	642	995	9621
Volvo	182	56	59	72	78	79	86	72	684
VW	4013	5180	2106	2146	2014	1919	1427	1882	20687
Zastava	14714	9694	947	0	0	0	0	0	25355
Total	56231	55464	44682	38909	31780	23510	22047	19675	292298

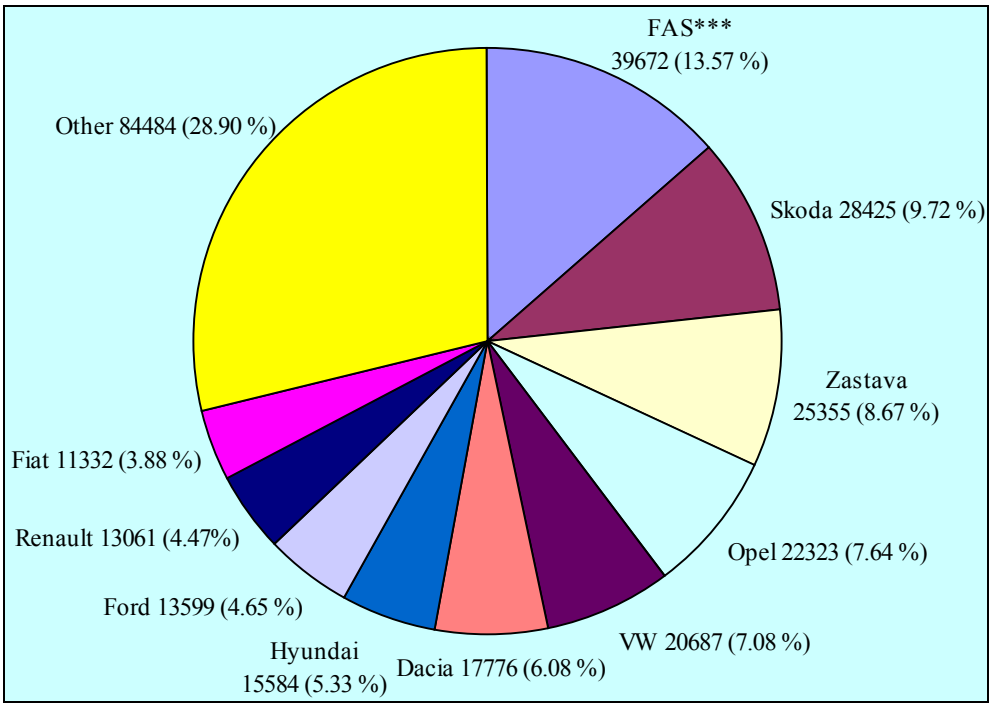

Figure 1: Graphical presentation of top-ten most sold models of new cars, as well as their share in percents in Serbia for the period 2007-2014

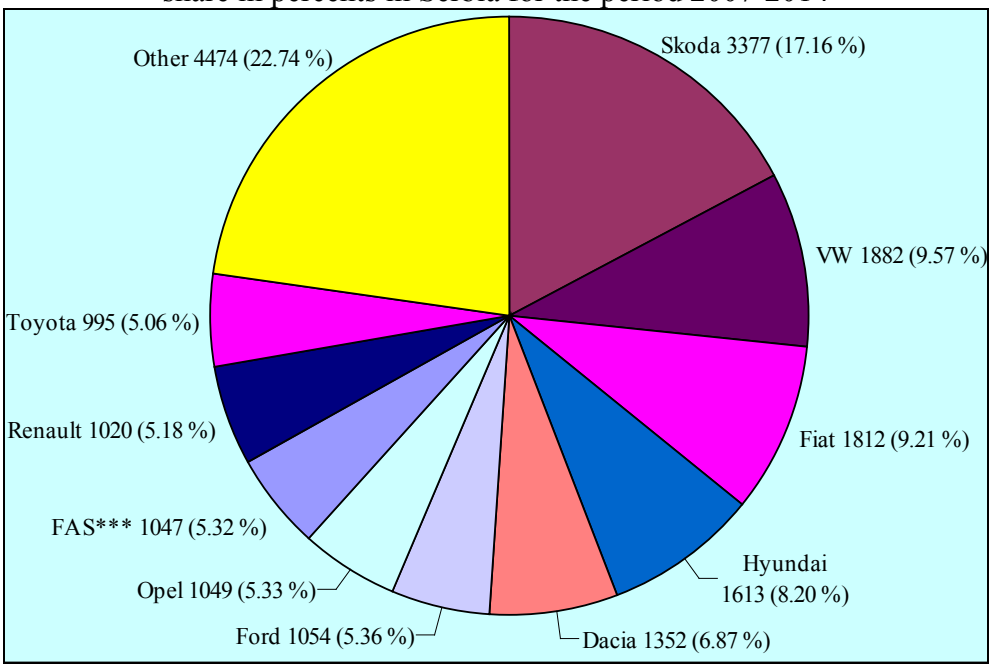

Figure 2: Graphical presentation of top-ten most sold models of new cars, as well as their share in percents in Serbia for 2014

Table 1 shows the number of new cars sold in Serbia by brands and months in 2014, while Figure 3 shows a great number of new cars sold in Serbia per months in 2014.

Table 1: Number of new cars sold in Serbia by brands and months in 2014

Brand	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Alfa Romeo	1	1	2	2	1	4	1	3	3	3	2	2	25
Audi	20	37	65	71	59	63	40	37	52	66	49	29	588
BMW	17	28	42	36	28	30	35	32	34	36	33	31	382
Chery	1	0	0	1	0	0	0	0	0	0	0	0	2
Chevrolet	20	20	15	24	19	31	0	0	0	0	0	0	129
Chrysler	0	0	0	0	0	0	0	0	0	0	0	0	0
Citroen	1	0	0	5	3	21	11	6	6	17	17	42	129
Dacia	63	76	130	129	118	163	154	145	76	97	105	96	1352
Dodge	0	0	0	0	0	0	0	0	0	0	0	0	0
FAS***	37	145	113	116	122	75	87	81	76	59	77	59	1047
Fiat	159	87	208	149	170	165	151	94	148	161	144	176	1812
Ford	70	107	143	101	171	82	46	32	64	79	66	93	1054
Honda	22	20	44	39	27	28	27	20	16	21	25	26	315
Hummer	0	0	0	0	0	0	0	0	0	0	0	0	0
Hyundai	43	83	157	177	190	176	141	122	148	133	127	116	1613
Infiniti	0	0	0	0	0	0	0	0	0	0	0	0	0
Isuzu	2*	4*	0	0	0	0	0	0	0	0	0	0	6
Jeep	4	3	6	4	4	7	2	3	9	6	5	7	60
Kia	60	64	70	104	88	83	80	77	42	61	34	80	843
Lada	21*	23*	56	37	0	8	26	26	34	32	32	22	317
Lancia	1	1	3	4	13	4	2	3	3	1	0	0	35
Land Rover	2	3	6	8	5	8	0	1	10	7	4	19	73
Lexus	0	0	0	0	0	0	0	0	0	0	0	0	0
Mahindra	0	0	0	0	0	0	0	0	0	0	0	0	0
Mazda	14	21	28	32	23	23	28	20	34	15	18	7	263
Mercedes	0*	0*	0*	0	0	0*	0	0	0	0	0	0	0
Mini	2	4	7	5	3	8	6	6	7	5	5	5	63
Mitsubishi	0	2	2	7	6	7	5	6	15	5	9	6	70
Nissan	20	21	24	25	25	37	39	39	43	38	40	29	380
Opel	54	50	116	75	126	95	114	83	69	117	60	90	1049
Peugeot	10	12	20	17	15	12	9	6	8	7	14	23	153
Porsche	0	7	7	12	4	10	5	3	2	4	8	5	67
Renault	103	48	70	114	86	182	65	76	62	85	63	66	1020
Saab	0	0	0	0	0	0	0	0	0	0	0	0	0
Seat	4	3	6	7	2	3	93	10	1	6	3	2	140
Skoda	213	271	314	372	325	303	391	230	197	226	220	315	3377
Smart	0*	0*	0*	5*	0	0*	0	0	0	0	0	0	5
SsangYong	0	0	0	0	0	0	0	0	0	0	0	0	0
Subaru	1	1	1	1	2	2	3	3	3	3	4	4	28
Suzuki	17	14	49	51	24	28	29	18	24	21	30	24	329
Toyota	43	50	80	105	104	109	120	62	67	65	74	116	995
Volvo	4	4	6	6	6	7	7	7	6	7	6	6	72
VW	162	108	246	209	206	263	126	80	160	95	112	115	1882
Total	1191	1318	2036	2050	1975	2037	1843	1331	1419	1478	1386	1611	19675

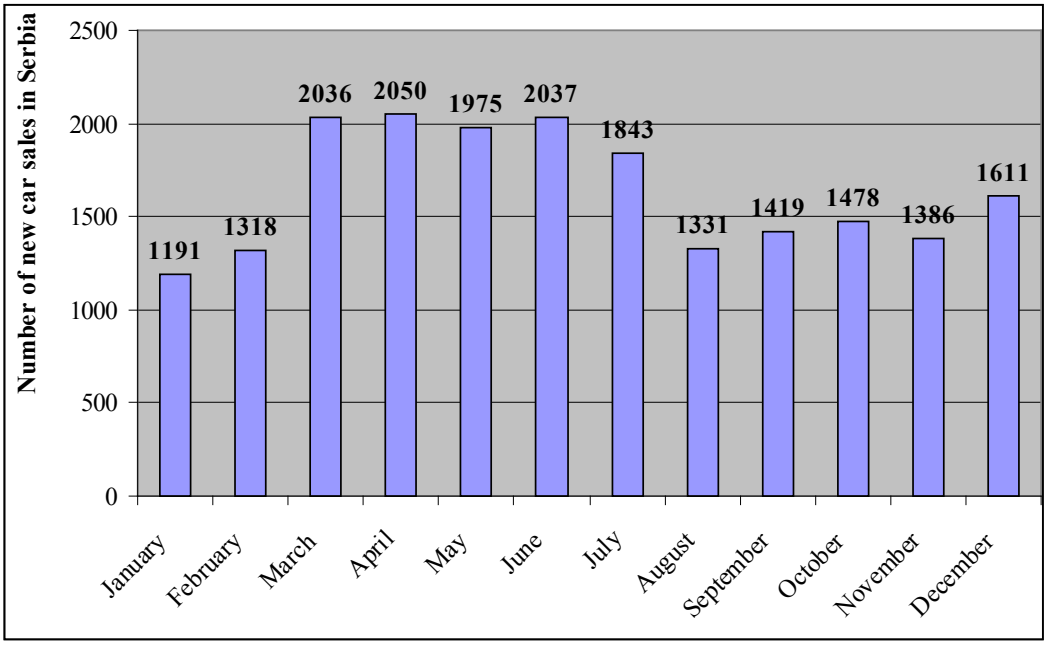

Figure 3: Graphical presentation of the number of new cars sold in Serbia by months in 2014

Table 3 presents the total number of new car sales in Serbia for the period 2001-2014, as well as their annual growth, chain index in [%] and cumulative growth index [%] and in figure 4 this is graphically presented.

Table 3: Total number of new cars sold in Serbia for the period 2007-2014

Year	Number of the cars sold in Serbia	Annual growth	Chain index [%]	Cumulative growth index [%]
2007	56231	-	-	100.00
2008	55464	-767	98.64	98.64
2009	44682	-10782	80.56	79.46
2010	38909	-5773	87.08	69.19
2011	31780	-7129	81.68	56.52
2012	23510	-8270	73.98	41.81
2013	22047	-1463	93.78	39.21
2014	19675	-2372	89.24	34.99

From table 3 and figure 4 for new cars sales in Serbia for the period 2007-2014, the following can be noted :

- that for a period of 8 years the number of vehicles has reduction by 36556 (from 56231 in 2007 to 19675 in 2014),
- the number of vehicles in the period from 2007-2014 was only decreasing trend,
- the largest annual reduction was in 2009 for 10782 or -19.44 % (from 55464 in 2008 to 44682 in 2009).

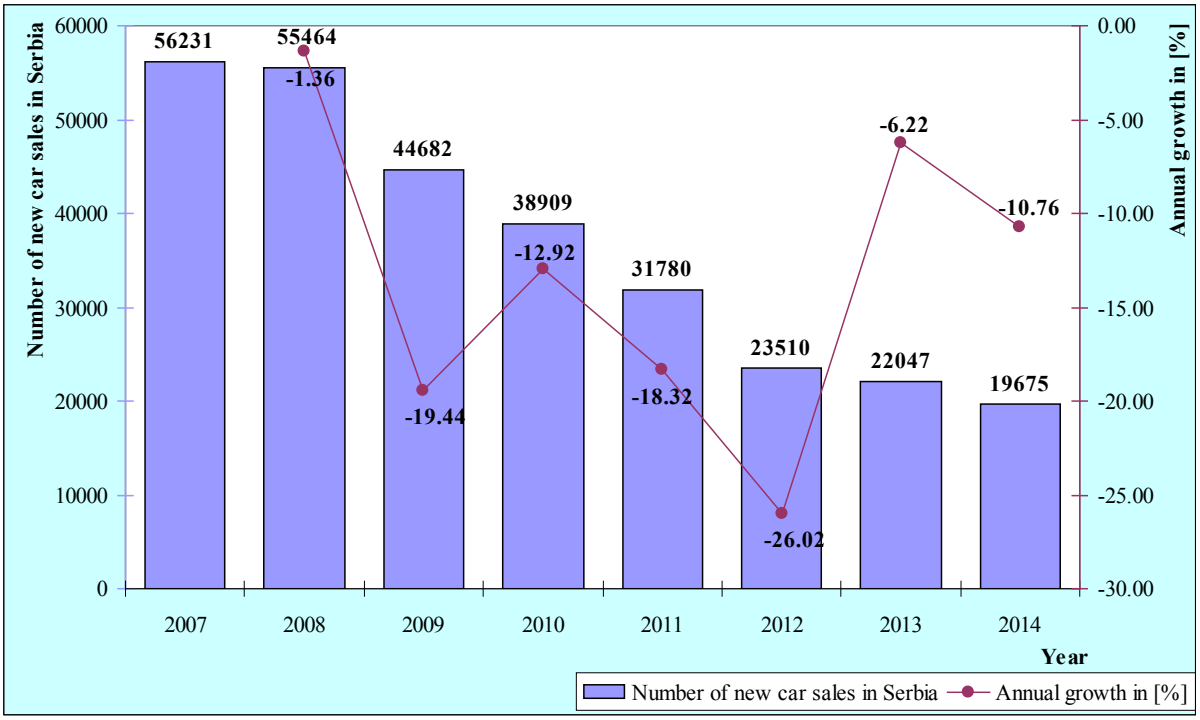

Figure 4: Graphical presentation of total number of new car sold and annual growth in [%] in Serbia for the period 2001-2014

Figure 5 graphical presents the total number of new car sold in Serbia for the period 2001-2014 and its approximation with the 3rd degree polynomial.

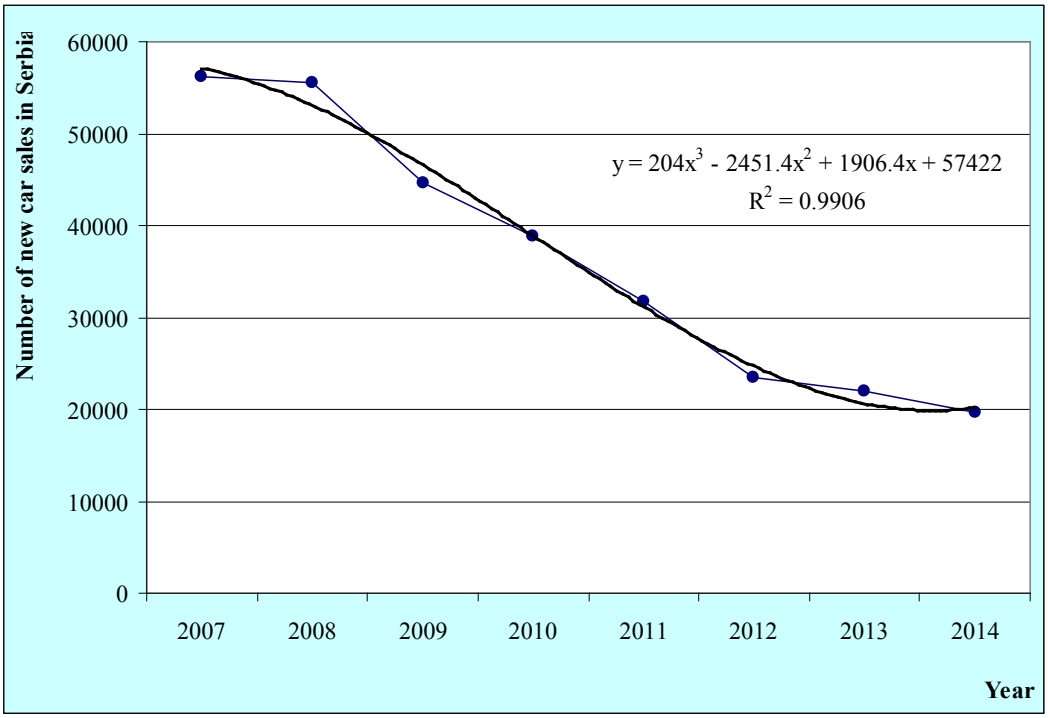

Figure 5: Graphical presentation of total number of new car sold in Serbia for the period 2001-2014 and its approximation with the 3rd degree polynomial.

4. CONCLUSION

Cumulative growth index of new cars sale in Serbia for the period 2007-2014 is 34.99 % (from 56231 vehicles in 2007 to 19675 vehicles in 2014) according to the data from Web site [44].

The total number of new cars sold in Serbia, for the period 2007-2014 was 292298, most of them were of the brand FAS*** i.e. 39672 vehicles (or 13.57 % of the total cars sold for the period 2007-2014). Cars of the brand Skoda were mostly sold in the year 2014, i.e. 3377 vehicles (or 13.57 % of the total cars sold in 2014).

The number of new cars sold in Serbia for the period 2007-2014 can be approximated with 3rd degree polynomial with determination coefficient R^2=0.9906 and correlation coefficient R=0.9953.

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Review Article

SOCIAL-HUMANISTIC SCIENCES (GENERAL EDUCATION) IN MODERN EDUCATION SYSTEM – IMPORTANCE AND TECHNOLOGICAL INNOVATION IN THE METHODOLOGY OF TEACHING

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Abstract: *In this digital era, education in the field of natural, and, in particular, technical - technological and biotechnological sciences (primarily, computerization - electronics) is in the focus of radicalized education system. When, however, it comes to education in the field of social-humanistic sciences it's not the case. In the scientific circles opinion is divided about the role and importance of education in this field. In our country there are almost no scientific papers (or are very rare) that talk about it. This paper is an attempt to give a modest contribution to the clarification of this issue. We'll points out the importance and necessity of the social-humanistic sciences in modern radicalized education system. We believe that the education in the field of social – humanistic sciences (General Education) in it is important and necessary for two crucial reasons:The first is that we're witnessing the fact that itself the scientific and technological progress and the process of globalization, regardless of all the importance for the progress of mankind as a whole have their second - negative side. We are witnessing the dramatic consequences of uncontrolled development of scientific and technological progress (environmental concerns, ethical issues of cloning the human species, etc.), as well as the negative sides of the process of globalization - globalism which operates mainly in favor of economically stronger and bigger, to the detriment of less developed and smaller countries. Education in the field of: modern sociology, ecology, psychology, counter-culture and culture of peace, can significantly contribute the students in the elucidation of these and many other problems of the world in which we live. Another reason is that in order to develop critical thinking and the formation of axiological and ethical attitudes in students is irreplaceable knowledge of: logic, axiology and ethics. This digital era is marked by new multimedia teaching in general and, in this framework, and the teaching in the field of social and humanistic sciences. Most current technological innovations are: multimedia systems, smart electronic boards and Power Point presentations. There's being pointed out and the importance of "classrooms without walls".*

Keywords: *social-humanistic sciences, uncontrolled technological progress, critical thinking, axiological and ethical attitudes, technological innovations in the methodology of the teaching.*

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1. INTRODUCTION

The third scientific - technological wave (information society) and the forthcoming fourth, the knowledge society - the "knowledge in the function of creativity" [8] - in terms of implementation of science and technology in the education system, "the dissemination of knowledge is not perceived only as an increase in spatial distribution, but also as an enrichment of knowledge with new contents, creative and intellectual reflection on existing knowledge about the phenomena that are the subject of information" [11]. It is necessary, first, to rethink and re-examine the current knowledge, then enrich that knowledge with new

contents - new information constantly coming from all sides in various scientific fields. So, even, in the field of natural, technical - technological, biotechnical, and in the field of social - humanistic sciences.

There are numerous scientific publications in this area in the last two decades, which show the dissemination of new knowledge and information in the field of natural, technical and biotechnical sciences. This, however, is not the case when it comes to considering the role and importance of knowledge and education in the field of social - humanistic sciences. In our areas there're not many famous (or are very rare) scientific papers dealing with this problem.

Approximately, the same is the case when it comes to the implementation of new educational technologies in the educational system. There are numerous scientific papers in which are elaborated the use of new educational technologies and new methods of teaching in natural, technical - technological and biotechnology sciences. The elaboration of these issues, when it comes to social - humanistic sciences is very scarce, notable is the work of Natalia Jovanovic [21].

Proceeding from the foregoing, we will try to clarify the issue of the importance of social - humanistic sciences, their place and role in the new educational system and technological innovations in the methodology of teaching in them. In particular, we will try to clarify the issue of the importance of social - humanistic sciences, ie. the necessity of their presence in the new educational system - the necessity of social humanistic sciences (general education) in the modern education system.

Therefore, this paper will be consisted by two main parts:

- Immediately after the introduction, the first part of this paper, we'll deal with the discussion of importance - both justifiable and necessary representation of scientific - humanistic sciences in the education system of the new epoch.
- In the second part of the paper, we'll point out the specifics - the specific features of technological innovations in the methodology of teaching of the social-humanistic sciences.

2. IMPORTANCE - JUSTIFICATION AND NECESSITY OF REPRESENTATION OF THE SOCIAL - HUMANISTIC SCIENCES IN THE EDUCATION SYSTEM OF THE NEW EPOCH

New epoch (end of the 20th and start of the 21st century), is marked by radical reforms of education systems around the world, and, especially, in highly developed countries. In scientific circles is emphasized the importance and necessity of knowledge and education in the natural, and, in particular, technological and biotechnical sciences. Knowledge in the field of computer science and electronics are even considered as an elementary literacy.

When, however, it comes to the place, the importance and the role of social – humanistic sciences (general education) in the modern radicalized educational system, in scientific circles opinions are divided - filled with numerous controversies. Without entering into a broader discussion about the justification of controversial opinions on this issue, we believe that, no matter how much modern education system must be accompanied by scientific and technological developments therein, in addition to the applied knowledge, it is necessary to find a place for education in the field of social – humanistic sciences. After all, knowledge in the field of social – humanistic sciences contributes to solving problems in the real – practical life. For example, let us mention only the importance of environmental education, as well as education and awareness of acute and dramatic problems of the world in which we live, in this regard.

But, let's leave that fact for a moment on the sidelines. The importance and necessity of education in the field of social – humanistic sciences stems from two much crucial facts - two major reasons, as follows:

- First, scientific and technological progress has come to the boiling point, there is a danger that man destroys himself. In fact, without diminishing the importance of scientific and technological progress and globalization process for the progress of humanity as a whole, the fact is that they have their second - negative side. Our era is filled with many dramatic problems that result from uncontrolled scientific and technological development. It is enough to mention the environmental problems and ethical issues of cloning human species which, of course, are not the only ones. In addition, globalization also has its downside - globalization, because it is asymmetrical and as such acts unilaterally, mainly in favor of economically stronger and bigger, to the detriment of less developed and small countries. It's not an insignificant number of sociologists and political scientists who believe that America (North America) is one side of globalization, and the rest of the world the other side. According to the world statistics from 2005, 2% of the wealthiest individuals in the world own more than half the world's wealth. This tiny minority of the richest, who has not amassed such quantity of wealth with peaceful means (often not lawful), using among other things, the fruits of globalization, today has almost all the power in the planetary scale. Even some believe that, today, they are (along with an elite group of competent information) in their hands had seized all the power in the planetary scale - they are now one side of the world and the whole rest of the population on the globe, the other side.
- Second, we constantly must keep in mind the fact that radicalized educational systems, as an imperative requirement set not only for a new, more active, perspicacious teacher, but also for a new active and creative pupil and student. Education and the fields of the social – humanistic sciences (especially in the field of logic, axiology and ethics), is of inestimable importance in order to develop students' critical thinking and the formation of axiological and ethical skills.

Thus, the importance and necessity of knowledge in the field of social-humanistic sciences in the modern radicalized education system can be divided into two subgroups:

- The first subgroup makes education in the field of: modern sociology, ecology, psychology, counter-culture and a culture of peace, which significantly contributes the pupils and students to clarify the acute and dramatic problems of the world in which they live.
- The second subgroup makes education of the following fields: logic, axiology and ethics, which is of the ivaluable importance to pupils and students in forming their critical opinions and construction of axiological and ethical attitudes.

2.1. Education in the field of social – humanistic sciences (which is significant for pupils and students for the clarification of acute problems of the world in which we live)

The world in which we live (the first decade of the millennium III) brought to the surface a number of problems, and, solutions that are barely discernible, are incomplete, and even contradictory. The new era has dramatized all questions and very often led dilemmas to spraying. We are facing a very dramatic problems of the new era, some of which even threaten the survival of the human species as a whole. Dealing with these issues is of particular importance for young pupils - students - who would step in life, and yet have to step into the lifespan.

2.1.1. Education in the field of contemporary sociology – education to cope with dramatic problems of the modern world

Sociology has long been primarily and almost exclusively, the theoretical science of society. Its most important representatives were trying with the theoretical (more philosophical) thinking to penetrate into the "hidden essence" of social life, without regarding much on practical verification of their general attitudes. Today, however, sociological researches are directed towards the real-life, in particular, the dramatic problems of the modern world. Problems of modern sociology, and, in particular, in this framework, education for coping with the dramatic problems of the modern world, is of great importance for the inclusion of the pupils and students in the life and lifetime.

In fact, nowadays, there is a major change in the internal structure and processes of all types of the existing social systems. Unsolved problems of peace, security and armaments, poverty (the gap between developed and underdeveloped countries), uncontrolled technological developments, demographic explosion, ecology and many others, are exacerbated in conditions of globalization and spread throughout the world. The complex international relations are marked by numerous conflicts and wars, the third-scientific technological wave represents the process of profound changes that have occurred in the current development of the economy and, to a large extent, and in society as a whole. It is particularly important to bear in mind the fact that it is "a process without end." The process of change began six decades ago and is still in progress and over time those changes will be constantly deepen. In the first decades of the 21st century, the developed world has already stepped into the fourth scientific-technological wave - a knowledge society. With these, and many others, pupils and students must be familiar with the current problems of the modern world, as it is necessary for them for many reasons. First, is important for their involvement in real life. Then significantly in their career guidance (recognition of the fact that this era is of frequent career changes). And, finally, it is necessary as a preparation for their participation in working life. In short, the teaching subject of contemporary sociology, in which focus is the discussion of acute problems of the modern world, especially will gain importance in the years ahead.

2.1.2. Ecological education – ecological economics and ecological culture

Ecological problems (preservation of living environment) undoubtedly belong to the most pressing acute and dramatic problems of the world of late 20th and early 21st century. We are faced with a situation that so far was not known to the world. For the first time in its history, humanity faced a crisis that concerns literally everyone, affects almost everything - all living beings, all plant life and all nations large and small, developed or developing. We are facing an ever faster disappearance imbalance between natural systems to support life and post-industrial, technological and demographic needs of humanity.

Specifically, social, and above all economic development over the past hundred years is marked and accompanied not only by the horrific dumping of all resources available to this planet, but also the terrible destruction of some of the basic premise of life and survival of the human race. Bearing this in mind, it is more than reasonable that educational contents in the field of ecological sciences (especially ecological economics and ecological culture) to be included in the modern education system.

In scientific circles, today, there is a divided opinion as to whether in the modern educational system the ecological education should be studied as a subject, or it should be a multidisciplinary exercise - so that it will permeate all subjects, ie. the care about preserving

the living environment permeates the entire modern system of education. We also believe that environmental education for acute and dramatic problems for human environmental protection, regardless of the necessity of multidisciplinary and interdisciplinary knowledge, must not be diluted on all subjects which are taught in the education system, but must be studied in a separate school subject in which focus will be an emphasis on two environmental disciplines: ecological economics and ecological culture, at least in middle professional schools and high schools. Even there are many reasons that, in particular, activities in the field of sustainable development, to be broader and deeper revived in university education. Sustainable development - natural (environmental) sustainability, sustainability of renewable resources, rational disposal of renewable resources [17], as well as biodiversity (maintaining the diversity of life on Earth) are the most acute environmental problems of the new era. Therefore, it is especially necessary that the scientific contents in the field of sustainable development to introduce into university education. The education of youth is necessary, especially of students, to "the approximate future for sustainable development" [14]. Because, ecology, particularly the principles of sustainable development, today occupies an increasingly important place in science at all. It is of particular significance in the field of social-humanistic sciences, it tackles one of the most acute problems of our time - the question of the survival of all life on this planet.

2.1.2.1. Ecological economics

Modern ecological economy is based on a wider (more versatile - comprehensive) economic approach, in contrast to the classical economy, which takes into account only the laws of the market, ie. "It starts from the analysis of the ways in which the scope of economic activities affect the system of the living environment" [12]. The goal of ecological economics is to **minimize the economic use of resources**, in order in the future (future generations) to preserve natural beauty. It occupies a central place **concept of sustainable development**, ie. **searching for a balance between economic growth and the development of ecosystems**. Education for sustainable development, in particular, is a need of young (pupils and students) and future generations. "Education for sustainable development is both an environmental education (environmental protection) and represents the future of education and the future generations. It is necessary to discuss about the living environment not only for economic reasons, but because it is the right way to revive the economy with more sustainability and to create new opportunities for employment... Comprehensive program of energy conservation and use of renewable energy sources within the EU member states, could create one to two million new jobs "[14]. Furthermore, as Andjelka Mikhailov states, "Education for sustainable development means the integration of appropriate knowledge and skills in the curricula at all educational levels and all sectors of society to the end of the Decade of Education for Sustainable Development 2005-2014 years" [14]. They are increasingly talking about the necessity of "**global - new green deal**" - arrangements for global economic policy in the planetary scale.

2.1.2.2. Ecological culture – "human ecology"

The focus of new environmental culture is humanization and breeding of the living environment. With a reason our poet Miroslav Antic notes that "**contaminants in the nature are the result of pollutants result in people**" (emphasized by Z.B.).

Environmental awareness (environmental culture) has long been on the margins of society. Today, environmental awareness becomes the spirit of the times. Thus became the

new disciplines in environmental science - "human ecology". Obviously, it requires the necessary change of man's view of the world, change of the man's evaluation system. "The crisis of the environment, or the living environment is nothing but a crisis of evaluation. It is necessary to build the values and beliefs that could be reduced to the motto, "give more than take" [15]. Culture and education of pupils and students in the field of problems of the living environment must go in breadth and in depth, because it is about their present and future life - the whole career and life in general. Simply put, the education and upbringing in relationship to nature must be the focus of the assessment system of the students. They have to live with nature and improve its growth and development. They have to "humanize" in Marx's sense of the word ie. humanize - transfer part of himself (of his being) to it.

2.1.3. Education in the field of psychology – especially the psychology of the consumer society

Education in the field of psychology has always occupied an important place in the educational system. In the new era - the era of highly dynamic pace of life, it is especially important. We live in a consumer society that is characterized, primarily, by the fact that in it, in the name of mere quantitative growth excludes the versatility of life - narrow and impoverish the original human possibilities. Under the conditions of growing consumption becomes crucial stimulation and manipulation of human aspirations and needs. Consumption takes the form of systematic activity on which is based the whole cultural system. There is coming to a sharp separation on a cash basis. **It does not matter how you act, but how you pay** [1]. Numerous industries of modern society with their thought out to perfection mechanisms for guiding and training of individuals manage to challenge and impose identical collective patterns of behavior up to fantastic proportions. This practically means mastering with the psychology of the masses. This is the most talked by Herbert Marcuse (philosopher known around the world) in his most famous book, "One-Dimensional Man." He notes that in modern capitalist society there is, on the one hand, the accumulation of wealth, and, on the other hand, the degradation of human life. Because what else to expect, he says, "where the means of mass media (newspapers, radio, television) continuously stand out: it's your living room, there is carried out a vacation, this is your book, we do it for you, etc." [13].

Consumer psychology (instrumented system of uncontrolled mass consumption) has mastered in highly developed countries of the world even more than half a century. After several decades has also been reflected in the whole world. Today, everyone is “sobbing” in it - we are all in it "drowned" . A deeper awareness of students about it, through educational content in psychology (consumer psychology) will encourage them to oppose the imposed pragmatic and ideologically by the end of the world. Encourage them to build their own world, ie. evaluation system in which focus is more (authentic) values.

2.1.4. Education in the field of counter-culture – building of critical attitude towards social and culturally deviant phenomena

Man is a social being - in his nature of behavior is to enter into relationships with other people and society as a whole. If the behavior of individual is in accordance with the requirements of society, then we say that the individual is aware of the personality that can be achieved in society and to contribute to society and himself. When, however, the individual does not comply with the demands of society (when his behavior is unacceptable to the community in which he lives) then we say that arise socially and culturally deviant phenomena – counter-culture behavior: pedophilia, prostitution, crime, drug addiction, alcoholism, gambling , religious sects etc.

In the current educational system in teaching in the field of social – humanistic sciences (primarily sociology and psychology) generally indicates this counter-culture behavior, without considering their nature and the consequences that they leave, as on society as a whole and on the individual. There are few countries in the world that in their educational systems have given more importance about it. In the epoch in which we live these behaviors are significantly multiplied and compounded. Today we are witnessing some new forms of counter-culture behavior. As it is for example, misuse of information technology. "There are more and more people who are willing, and able, due to a variety of reasons to abuse the power of new technology. It is the danger of compromising the confidentiality, intrusion into someone else's computer system (hacking) or creating a distribution of viruses, many types of fraud and theft [19]. It is obvious that in the new educational system, in the educational content of teaching, in the field of social-humanistic sciences (especially sociology and psychology) should be given more space to the understanding and perception of cause and essence of not only old but also new forms of counter-culture behavior.

2.1.5 Education for a new culture of peace

World of Peace - humanism, is a world of inspiration, full of commitment to human justice and freedom, benevolence, and, above all, the greatness in comparison to all the evils of this world. Each generation experiences peace in their own way - through the prism of their own lives. Peace can only start from the man who is really looking for and building - which is in the depths of his soul, who his conception of peace has flowed into everyday life. Peaceful activities as a way of life is something sublime and precious. It is essential to the education of a new culture of peace. We hope that those will have a "hearing" who postulate educational programs in the modern education systems - that with the educational contents in the field of sociology, philosophy, religious teaching - education for peace and tolerance, will elaborate a new culture of peace, which "arises" from the cross of different cultures and civilizations - "Meeting of the Worlds". No matter what beliefs that from the next-coming generations, according to their generic essence of beings, build a culture of peace for themselves, in an entirely new basis, that still does not mean that the new hermeneutics of peace should reject all the achievements of previous generations in this regard. It is impermissible to circumvent any peacekeeping achievements [2]. When it comes to religious achievements we will highlight one, we would say a central place in the Bible that in no way can be bypassed: "The nations shall forge their swords to ploughmen, and their spears into pruning hooks, nation will not raise a sword against nation, neither shall they learn war any more "[6]. Peace in the true sense of the word has not happened to this day. Because there is no true peace without peace for all. The power people of the most developed countries in the world still largely wield over the destinies of men and nations. The common man is still outside of the context of these events. As long as there are forces that with enormous armament fear a man it cannot be said that peace in planetary proportions in the true sense of the word occurred. We believe that the "Meeting of the Worlds" and the inclusion of a new culture of peace (as well as education for peace and tolerance) in the educational contents of contemporary educational systems of all countries on this planet, from a futuristic perspective, will encourage pupils and students that in forming of their assessment system for the culture of peace (humanism, altruism, solidarity, internationalism) will occupy an important place. It is important to recall also that the Fifth Ministerial Conference in Kiev (Living Environment for Europe, 2003) were determined settings of education for sustainable development. At that conference was adopted the proclamation of the Decade of Education for Sustainable Development 2005-2014. (UN

2002) in which, among other things, **as one of the values and principles that form the basis of education for sustainable development determines properly and peaceful societies** (emphasized. Z.B.) [19].

2.2. Education in the field of social-humanistic education that is of importance to the pupils and students in the formation of critical thinking and the building of axiological and ethical attitudes

We said that in the scientific circles, when it comes to the place, importance and necessity of the social-humanistic sciences in the modern radicalized education system, there are divided - controversial opinions. It seems, however, that it is largely accepted in the scientific circles the importance of humanistic sciences (especially logic, axiology and ethics) in the formation of critical thinking and building of axiological attitudes of students.

2.2.1. Education in the field of logic and methodology

Pupils and students increasingly receive an important place in the educational process – they become equal subjects of the educational process. Constantly innovating educational technology in general, and specific educational technologies in the methodology of teaching of the social-humanistic sciences necessarily increases their engagement and creativity in the learning process. They have to train to think critically. Already starting from this fact the modern education system must postulate education in basic logic. For example, they must master the induction (reasoning from the particular to the general), and deduction (reasoning from the general to the specific) and other forms of reasoning and judgment. Then, they cannot even begin to work on projects, which are the in the focus of modern education system without basic knowledge of the methodology of scientific research.

2.2.2. Axiological and ethical education

One of the most important characteristic which distinguishes man from other living beings is his axiological and ethical skills - the ability to distinguish worthy of unworthy, beautiful from ugly, good from evil, the righteous from the unrighteous. Shape of viable (practical) relationship of man to the world, to other people, as well as to himself, is called morality, ie. moral relationships and human behavior. This axiological (value) and ethical (moral) human dimension of a man is especially important in an era in which we live. Because, in the modern world there has occurred "such a dramatic confrontation of ideal and reality, the ideal and the real. Our civilization has extended the life of human beings and amplified the pleasure, but reduced them the duration and did it insignificance" [10]. If our future is realized in the consumer and pragmatic mentality then humanity will occur in the position of uniformity to such an extent that in that uniformity a man will lose, as well as his personality and creative power.

There should be emphasized the fact that uncontrolled scientific and technological development in the third and upcoming fourth scientific-technological wave generate serious ethical problems. Here, first of all, we mean the development of bioengineering - in particular, the cloning of the human species, which is subject to serious criticism from the standpoint of axiology and ethics. For example, imagine a world where we will all be copies of Einstein, or, what is worse that mankind is divided into two genetically modified class: intellectually ruling and intellectually subordinated class. "We are not and cannot be the same whether the future living world will further be developed with a noble man or with a man who in a negative way will have altered genetic programs" [16]. In short, in these fields must be

created a regulatory environment which will have a broad enough scope to encompass ethical standards. Of course, it must not be so restrictive that ethical standards impede innovations and development of new technologies.

Let us summarize the stated in the educational system of the modern era, the social-humanistic sciences must not lose its importance, it is essential to pupils and students in the education system, in addition to educational contents in the field of technology (information electronics) is necessary to include the general educational contents. Without them they cannot be included into real life and work in the new epoch that is full of contradictions and dramatic surprises, nor they can achieve an equal role of (active, creative and information) subject in the educational process.

3. Technical innovations in the methodology teaching of the social-humanistc sciences

Traditional teaching of the so-called *ex cathedra* teaching increasingly is being pushed out of the education system. It will soon become history - fully will give way its place to new multimedia technologies, "Multimedia are shaped in possession of didactic functions such as, for example, motivation, possession of information, work instructions, giving feedback, that in most cases used to be specific only for professors (teachers) as the primary complex multimedia" [7].

A new era - the third millennium is marked by a strong implementation of science and technology in the educational system. "The students of the this millennium, or "*digital natives*", as they are called, growing in the media environment that fundamentally changes the role of the traditional schools of education and upbringing. School classes, as perhaps never in the history faced the challenge of how to maintain and attract the attention of pupils" [22].

3.1. New educational opportunities in teaching of the social-humanistic sciences

In this digital era, the process of teaching in general and, and in particular, the process of teaching of social-humanistic subjects, significantly provide new educational opportunities. We say that in the teaching of the social-humanistic sciences, in particular, provide a substantially new educational opportunities because in this field so far the process of teaching has been largely frontal, and even, to a large extent and abstract. Particularly, in teaching of the social-humanistic subjects is necessary direct communication between student-teacher, various forms of group work, and, above all, greater initiative and independence of student work. Already this is provided by technological innovations in the methodology of teaching of these subjects - "a new approach to teaching, learning of new technology, communications, information processing, management, teaching and planning in education of social-humanistic sciences" [22].

Multimedia technology, smart electronic boards, virtual schools, and Power Point presentations are just some of the new technological possibilities in the methodology of teaching of the social-humanistic science (general education subjects).

A new approach to learning is "**blogging**". It provides new opportunities for non-formal approaches to education. It provides significant advantages in expressing their individual abilities and interests of individual students "Of the various types of blogs of the 21st classism is a blog that is dedicated to cooperative learning ... other name is a blog portal, because it allows the establishment of departmental and class blogs, where each pupil has his/her own part and teacher has an administrator control. The teacher adds to students' to blog, password and no email address. This method of communication allows a variety of

extracurricular activities in terms of working with gifted pupils, managing of smaller projects, directing an extraordinary interest of pupils" [23]. What is relevant is the "kid blog" which enables pupils to write articles and comments.

Social networks are special and specific learning opportunities for general education contents of social-humanistic subjects. "They connect people of the same or similar education, which can further expand the capacity of the education and training of students. Position in which the student independently manage the learning process, through solving of problems and with the cooperation not only with teachers but also with others who have the same interests ... using electronic social networks teachers are involved in active learning along with their students "[21]. It also opens the possibility for cooperation of teachers, not only the same but also in related fields - in this case of the social-humanistic sciences.

Thus, technological innovations in the teaching methodology of the social-humanistic sciences have expanded the educational opportunities. Giddens points out that people already speak of "classrooms without walls" [9]. New technology in socio - humanistic sciences, as says Natalija Jovanovic, is a synthesis of the development, telecommunications, television technology and the development of artificial intelligence, and as if a store of knowledge, information and facts are methodological past.

3.2. The teacher still, but only with mutual and equal communication with students is bearer of the educational process in the teaching of the social-humanistic sciences

The essence of the new methodological approach in the teaching of the social-humanistic sciences is in constant interaction of students and teachers, students and students, and it often supplemented even with an interaction between teachers and teachers in the same or similar subjects. Constantly innovation of educational technologies, in particular, increases engagement and the creativity of students in the learning process. They are in continual communication (interaction) with the teacher. The teacher is increasingly becoming an initiator, advisor, organizer and manager of the work of students who are taught to seek knowledge themselves. In the modern education system, the teachers with plans and work programs are only being recommended about the contents. The new role of teachers is just to choose, and, in particular, investigates and finds new contents, all within the determined outcomes. This is inevitable, because today information, especially in the field of social-humanistic sciences, arrive with such a speed that the schools do not have sufficient time to incorporate them into their curricula. That's why the teacher is allowed to have a broad freedom to carry out it constantly and successively. The time in which we live is a time of educational alternatives – the time to modernize teaching and their educational plans and programs. The teacher is still, but now only with mutual and equal communication (interaction) with the pupil, the bearer of the educational process. Therefore, he/she must be a creative researcher and creator, to come up with new ideas, knowledge and innovation, which will, just as the initiator and advisor, will only indicate pupils to possible ways to solve the given tasks - problems. The teacher trains students to quickly and easily find and use information, to remember just what they need. For information, especially in the field of social-humanistic sciences comprehensive, sometimes it is difficult to cope with them. New educational technology in teaching of the general education subjects assigns the teacher a task to master knowledge in the teaching design, media communication, managing of information technology, and many others. Especially in the teaching of social-humanistic sciences teacher should encourage students to think critically, democratic dialogue, concise presentation of hypothetical attitudes, and, finally, work in scientific research projects. Therefore, the role of teachers in the social-humanistic sciences is very complex. Therefore, its permanent professional training is necessary – monitoring of all technological innovations

in the methodology of teaching - the adoption of the educational - upbringing contents in the field of social-humanistic sciences. However, there are a number of teaching staff at our premises in social-humanistic sciences, who during their schooling did not even had the opportunity to study the use of educational technology. "It is necessary to intensify the accreditation of a large number of courses, organizing symposia and seminars, especially and the research projects in this field, in order to awaken further consciousness of teachers and adequately popularize the latest pedagogical achievements" [20]. Let us mention also that the EU member states in 2011 agreed on the promotion of creativity and innovation, including the use of new ICT tools and teacher training in general (and thus teachers in the field of of the social-humanistic sciences), as one of the priorities of the first cycle of the strategic framework for education and training ('ET 2020'). Teachers should be prepared for a life of lifelong learning.

4. CONCLUSION

In this digital era (end of 20th and the first decade of the 21st century) there was a radical reform of the education system in almost all and, in particular, the highly developed countries of the world. Of course, in the focus of these reforms was empowering and postulating the importance of applied, primarily, technological and biotechnological sciences. On the importance of the social-humanistic sciences in scientific circles many do not identify themselves or are divided – controversy opinions.

Without diminishing the importance of applied technological and biotechnical sciences, aware of the necessity of their focusing in this digital era, we believe that there must not be neglected the importance of the social-humanistic sciences (general education) in it. In the field of social-humanistic sciences constantly are being submitted new information all around. New reviewed and thoughtful knowledge, as well as a new approach to the submitted information in this field must be included in the modern education system.

The importance of the social-humanistic sciences – the necessity of postulation, reflection and review, as well as innovation of knowledge in this scientific field, in the modern educational system derives from two crucial reasons.

First, the fact is that itself the scientific and technological progress and globalization, regardless of all the importance for the progress of mankind as a whole, have a negative side. We are witnessing an uncontrolled development of scientific and technological progress, as well as the negative consequences that comes with it (ecological problems - the exploitation and destruction of the human environment, a serious ethical problem of bioengineering - cloning of the human species, and many others). Globalism (the negative side of globalization) is the fact that the globalization process is asymmetric and, as such, act unilaterally, mainly for the benefit of economically stronger and bigger, to the detriment of less developed and smaller countries, leading to a gap between the developed and underdeveloped countries, ie. problems of world poverty. Consideration of these dramatic consequences of uncontrolled development of scientific and technological progress and the negative consequences of the globalization process, and the problems of demographic explosion of new forms of criminal behavior, problems of peacemaking and other acute problems of the modern world, in particular, can contribute education in the field of: contemporary sociology, ecology, psychology, counter-culture and culture of peace.

Second, it is generally accepted in the scientific circles, the radicalized modern education system as an imperative makes a request for a new, more active and more creative basic subjects of the educational process. This means not only teachers but also pupils -

students. In order to develop students' critical - abstract thinking and the formation of axiological and ethical skills irreplaceable is knowledge - education in the fields of: logic, axiology and ethics.

This digital era is marked by new technologies in the methodology of teaching - particularly in the specific field of teaching of the social-humanistic sciences. New technologies, based primarily on the application of artificial intelligence completely change the traditional (classical) methodology, especially teaching of the ex cathedra. The most topical technological and methodological innovations in teaching of the social-humanistic science are: multimedia systems, smart - electronic boards, virtual schools and Power Point presentations. It increasingly points to the importance of "classrooms without walls, and so on".

Proceeding from all the foregoing, it is essential to understand the requirements for the new primary subjects of the educational process - students and teachers. The student becomes more active, more creative, in a word, equitable subject in the educational process that teaches that teaches to seek knowledge himself/herself. The role of the teacher, however, still remains the leading, above all, complex and responsible. He is still, but now only on equal communication and interaction with the student, the bearer of the educational process. In particular, in the field of social-humanistic sciences, especially is evident an equality of students in communication with the teacher ie. providing students opportunities of complete freedom and the fight of opinions. Wide space for freedom and fight of thinking, in particular, is emphasized in the lessons of sociology, psychology and logic. The teacher is there to initiate, advise, manage students, select and find out new teaching contents. Since the teacher has to master the knowledge in the field of curriculum design, media communication and management of information technology, its permanent professional training is indispensable in many fields.

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CULTURE OF BUSINESS DEALINGS: ETHICS AND AESTHETICS

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Abstract: *Once upon a time, in old times, Socrates uttered an ancient wisdom: Virtue is knowledge. Man acting according to the laws of Virtue is the one who knows something and who can do something. That`s the man who cognized the essence of his existence on Earth. We are all full of faults, but the cognition of one`s faults means the commencement of altering evil inside oneself and around oneself. A rich man is a man of abundant needs-the one who is not a slave to the others, a toy in the hands of Mighty Powers, but the one who is a self-conscious being that has an urge to work, to learn, to expertise himself, to correct mistakes, his own and somebody else`s, to read, to think and to humanely act. Until Man works for the sake of survival, that work shall be alienated from the essence of that Man`s being. The vision of a free man is the vision of satisfied basic needs, and of abundant spiritual, intellectual needs. Virtue is the route of truthfulness and of strength that Man must endure.*

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1. INTRODUCTION

Apart from politics, apart from personal spite and malice, apart from business profit and prestige, there are also the cheek, morals, honour and dignity, that may easily be lost, but, that are also hard to gain.

Army Commander Napoleon wrote: "The army of donkeys led by a lion is more worthy than the army of lions led by a donkey".

Almost in all encyclopedic accounts of the history of the term "culture", its Latin root is singled out, in the sense of breeding, cherishing or cultivating field. In time, the term "culture" evolved and got its metaphoric meaning: from the culture of soil it was being conveyed onto the culture of spirit, from cultivating field onto tilling, cultivating spirit.

2. CULTURE

The difference between the term "civilization" and the term "culture" is semantically the difference between the sphere of technics, tools, legal and political superstructure, so-called sphere of material culture, on one hand, and the sphere of purely spiritual forms: Art, Religion, Morals, Philosophy, Language, so-called higher sphere of culture, valuable culture, on the other hand. Consequently, culture bears civilization inside itself, but it surpasses and towers above it far off. There are various definitions of culture:

"Culture in general is the collection of general cognizances on literature, history, philosophy, sciences and art, that must be possessed by those who comprise intellectual and social elite of one society. Those cognizances allow spirit to develop its critical sense, its taste, its judgement".

"Culture is not only an intellectual conquest. One may be an intellectual, and not really cultivated. Culture has always been a certain aesthetic sense, a certain affinity of spirit, of manners, of taste, of style, which are easily acquired only by way of long traditions".

"Culture is active participation of Man in everything that is creation in nature, history, and in the life of spirit, all the ideas that progressed forward, craving for eternity".

"In one word, culture is not to be gifted. It seeks for effort. It does not comprise only knowledge drained out of more or fewer books. Apart from culture given by elementary scientific cognizances, there are, likewise, one culture of sensibility, one culture of taste, and one culture of common aspirations and needs, there are several aspects of internal spiritual work - reasoning, tradition, honesty, intellectual straightforwardness-which, all together, make up one man and one society highly cultural".

3. ETHICS

Ethics is a science on morals or ethos. Morals belongs to the general man's feature regarding not only his cognizing world and himself, people and their mutual relations as something given, existing according to some laws, but also regarding his effort to alter, shape world, nature outside and inside himself. Man is not simply present in this world, but he is also engaged within it. Morals is, therefore, most generally speaking, man's active shaping, directing someone else's and his own acts and aspirations, and their assessment as good or evil ones. Morals is, primarily, the principle of not inflicting evil and damage to other individual, actually, doing good for the sake of general benefit.

Aesthetics is a philosophical discipline researching beauty in art and nature, researching basic pre-conditions and criteria of artistic judgement, creation and impressions, as well as research of meaning, in general, of value, and essence of Art. Beauty comprises goodness, truthfulness and justice inside, therefore Ethics and Aesthetics cannot live without each other, they badly interweave and complement, making the phenomenon of culture purposive.

4. BUSINESS AND MORALS

Erih From established the following classification of basic needs and values generated by the distinctiveness of human existence:

- Affiliation,
- surpassing (creativity),
- ingrainedness (brotherhood),
- the feeling of identity (individuality),
- the need for the frame of orientation(reason).

One of the most famous classifications of values and needs was made by Abraham Maslov. In his pyramid there are physiological needs, then the need for safety, for belonging and affection, the need for appreciation. At the top of the pyramid there is the value of self-attainment of personality. Man has to be faithful to his own nature and to his deepest creative potential. Maslov names this very need self-attainment. Man raises himself truthfully above passivity and accident of his existence only by way of a creative Act and in that fashion he enters the field of appropriateness and freedom.

Defining Morals: Morals comprises a system of moral rules, the collection of the norms that determine Man`s treatment of others and of himself. Morals is based upon the norms on good and evil,

and it is expressed through valuable assessment of human acts, whether they are worthy of Man, which behaviour is good one, and which is evil one.

The first form of demonstrating morals is moral judgement. The second form is an act, bearing, manners or a character. The third form is a criterion, the benchmark of judgement.

Business ethics studies the application of moral norms and values on the activities and goals of enterprises and organizations. Business ethics, as a separate field of applied ethics, studies moral standards and their application within organizations. It includes not only the analysis of moral norms, but also it applies the results of its analyses on the world of business.

Probably, the most influential institutions within modern societies are economic institutions. Business ethics represents a field of two different perspectives: moral or ethical and business or economic perspectives. One might assert that the subject of business ethics is precisely the intersection generated by the convergence of moral and economic aspects of business dealings.

5. BUSINESS ETHICS AND SOCIAL RESPONSIBILITY OF BUSINESS DEALINGS

Endrju Karnegi propounds a classical view of social responsibility of corporations based on two principles: the principle of benefaction and the principle of guardianship.

Quite a different starting point on the issue of social responsibility of business was the view of the Nobel prize winner, Milton Fridman, who established his perception that the primary responsibility of business is to maximize profits: to use, within open and free competition, all the means and all the energy of business with the aim of increasing profit for stockers and employees. He insists upon the attitude that managers who put aside corporational finances for the sake of meeting some social needs (or misconceptions) dishonestly tax their own stockers and brokers, their own employees, and eventually, their own consumers. According to Fridman, enterprises should efficiently produce merchandise and services, and resolving social and humanitarian problems should be handed over to the authorized state institutions.

Contrary to these two aforesaid attitudes, there is a third one, the concept named mutually agreeable business ethics. It possesses three essential characteristics:

- it percepts creation of values in its various modes as a primary goal of business,
- it percepts profit and other social tributes more as a result of other aims than as the most significant or the only aim,
- it approaches the problems of business operations and administering more as a form of inter-human communication.

Mutually agreeable ethics appreciates productivity and profitability, but also essential values of individualization and autonomy of all the individuals within an organization.

The organization comprises not only objective reality of the structure, systems and strategies, but also subjective reality created by people with their opinions, emotions and values. Mutually agreeable ethics binds motifs based on profit with the values contributing to the creation of trust, cooperation and solidarity among people.

Is it possible to harmonize private interest of business and general interest of a society? With that purpose, it is necessary to work on building culture and consciousness of management of the necessity of strengthening corporative social responsibility of contemporary business - doing. In that frame, corporative social responsibility may be defined as the engagement of business within achieving sustainable economic development, via working with employees, with local and wider community, with the aim of improving quality of life and establishing high humanity standards, because it is good for business and at the same time good for development and for the community.

6. CORPORATIVE SOCIAL EFFECT

There are more reasons and more theories on the issue regarding companies' taking care of morality of their business-doing and of corporative social responsibility, likewise.

According to the theory of enlightened personal interest, organizations should be socially responsible or at least they should react to social problems, because it is useful for them.

Ethics is, therefore, a sort of comparative advantage in contemporary market.

According to Robert Akerman's theory, companies should not make effort to, once and for all, define and determine their final responsibility for a society. Instead of that, companies should evolve corporative social feeling, that is, sensitiveness or sensibility for recognizing concrete problems of a community and to react to them. Consequently, feeling, and not impersonal responsibility, should be the aim of corporative social endeavours. According to Akerman, corporative sensitivity for social issues has its life cycle: the first phase commences with corporative recognizing a problem, studying problems and modes of their resolving follow closely behind, and finally, implementation of problems pursues.

Combining ideas of social responsibility and of corporative sensitivity for community problems, Arci Kerol reached his theory of corporative social action which he named corporative social effect.

According to Kerol, the frame of all the disputes on social responsibility form economic, legal and ethical principles. The example of the economic principle represents free entrepreneurship, the example of the legal principle represents workers' right to safe working place, while equal possibility for employment is the example of the ethical principle. The common acting of these three principles generates a social agreement of its kind between business and community according to which companies operate as moral agents.

Four possible attitudes are present within managers' decisions:

- reactive, when a company reacts to a social issue only when it is confronted with the goals of the company,
- defensive, when a company reacts so that it would reject some social challenge,
- approachable, when a company supports demands of public opinion,
- proactive, when a company foresees future social demands and needs.

Corporative social effect represents all the more significant factor at bringing decisions by investors regarding the option of choosing which company they would gift their trust upon. Merits of companies in the field of social responsibility within environmental protection, aiding community evolvement and similar activities thusly become all the more significant factor not only at improving general company image, but also at its financial success.

At the beginning of new Era, there are a lot of new companies and new entrepreneurs who refuse to accept the old models of dwelling on business-doing, especially those who say that successful business and morals are opposite to each other. A good example represents businessman Tom Capel who successfully built his company for the assortment of products, at the base of which there exists his famous natural toothpaste. However, Capel was disappointed at his success, because it seemed to him that the race for profit estranged him from some deepest values in which he believed honestly.

He wrote the book "the Soul of an Enterprise", where he expounds his idea that the managers of 21st century shall have to administer the enterprise by way of values. His method of administering, which he named middle way, he sees as a complete integration of profit and community benefit. In

accordance with Aristotel's principle of virtue as the golden middle, Capel's middle way is an idea that in business one must find harmony between mere making money and caring for others.

He exposed the thesis that a company has to understand each employee, and to support him, as well, not only as a worker, but as a whole human being who desires to share his pain, his confusion and his joy with the colleges. Likewise, long-term mission of a company is that it itself becomes the selection of those buyers that care for health, nature and for their communities. Such a system of values would help the company, according to him, to strengthen its identity, remain itself, and at the same time to multiply increase its profit.

The research of the phenomenon of the culture of an organization commenced in the seventies of 20th century. That's how famous Model 7S came into being according to which the organization success is the functioning of seven interdependant elements:

- structure,
- strategy,
- people,
- style,
- system and acts,
- skills and knowledge,
- system of values.

The concept of the culture of an organization diverted attention onto social and individual aspects of an organization, therefore, numerous authors called it Copernicus turnover in the theory of management. The essence of such a turnover is in cognition that Man within an organization is a being of sense and values, a being who, in his own fashion, interprets the reality around him. That`s how the working environment is not only an objective reality, but also a subjective reality created by people with their values, opinions and emotions.

- organizational culture bases identity-who we are,
- organizational culture gives meaning and motivation-what our entrepreneurial mission is,
- organizational culture strengthens consensus-what binds us,
- organizational culture gives orientation and coordination-what I am supposed to do,
- organizational culture creates potential for learning-"let us prepare for changes".

Familiar violations of ethical principles:

- greed,
- assertions leading onto wrong assumptions on quality of products and services,
- avoidance of keeping given word or cheating as regards agreed conditions and deadlines,
- sustaining business policy that is most likely to lead the others to the situation in which they shall have to lie in order to end business deals,
- excessive conviction in self-judgement at the risk of corporative entity,
- insufficient loyalty to the company when hard times step in,
- bad quality,
- humiliating people at their working posts,
- blind subjecting to the authority no matter whether how much that authority is unethical or dishonest,
- extolling oneself above the commitments of a corporation(conflict of interests),
- sacrificing the innocent and the helpless in order to achieve certain goals in business,
- failing to point out at unethical acts,
- bringing decisions on a product the application of which may endanger the safety of other people,
- fawning and crawling to those that are at a higher hierarchy scale,
- climbing up the corporative scale by trampling on others,
- promoting a destructive busy-body who justifies his mistakes even before they get out,

- lying to the employees bound to self-governing documents, keeping information of general significance secret,
- ethics of advertising and sponsorship-a product must not be represented falsely in order to be sold,
- humanitarian activities must not be used in political and interest purposes,
- making alliances with suspicious partners etc.

Caring for environment protection represents an inseparable part of business ethics and culture. Nature is protesting, it is displaying the protest by throwing up fire blazes, by pouring water and by letting thunders and storm roar. Nature is defending itself from devastation inflicted to it by Man with his stupidity, negligence and greed.

Alarming also belongs to the domain of business ethics and honour. "It can be defined as a worker`s effort to make public something that the organization does or something that happens in it, and which is, in the worker's conviction, irregular. Like blowing the whistle in order to divert somebody's attention onto the thief, the worker points out at the act, deed, which he considers to be illegal or immoral".

"Unfortunately, those individuals who resolve to give an alarm-sign are almost always exposed to retaliation". But, it is their duty, moral and honourable, to point out at every irregularity.

Corruption as a phenomenon in a society is a very harmful and evil advent. It should be rooted out. But, human nature is subject to corruptive deeds. Therefore, the fight against corruption is almost barren. Although, one must never surrender. Man is no perfect being, but he should aspire for perfection.

The consequences of corruption:

- political consequences-corruption wrecks the relations between politicians and citizens,
- economic consequences-slowing down, even blocking the development of Economy,
- cultural consequences-they have a long-term impact upon the formation of a new, twisted and immoral style of behaviour. Corruption discourages creativity and entrepreneurship,
- social consequences-corruption increases and deepens poverty, and affects, at the most, those who are weakest and unprotected. It increases inequality amongst people regarding schooling, treatment, licences, procurements etc.

Corruption generates criminal-political, economic and business criminal. Health and academic criminal. It creates mafia at a high level. It becomes a systematic phenomenon. Ineradicable.

"In order to be highly moral, a corporation must, inside its own culture, free the space for moral autonomy of an individual. The corporation is comprised of individuals: if they were deprived of freedom to determine their own moral integrity in the frame of the company, and if the company turned them into mere and blind doers of the corporation's purposes, it would mean that it does not respect them as a purpose of its own appropriateness and it would lose the ability to rationally assess its moral character. In short, it would lead to abandoning moral stance necessary for the morality of that corporation".

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