Screening and analyzing the status of knowledge in industry concerning sustainability and formulation the first course scheme.

Dr. Vineta Srebrenkoska
University Goce Delcev - Stip

FIRST PART OF THE PRESENTATION

FIRST PART OF THE PRESENTATION

GENERAL DATA OF THE COMPANY

11 OKTOMVRI EUROKOMPOZIT

Professional competence of employees in the field of sustainable development

11 OKTOMVRI
EUROKOMPOZIT

www.eurokompozit.com.mk

Aleksandar Makedonski 2/42
MK – 7500 Prilep, Macedonia
Phone: (+389 48) 422 330; 423 037; 423 039;
Fax: (+389 48) 421 292;
Email: commerce@eurokompozit.com.mk
finnance@eurokompozit.com.mk
commerce@eurokompozit.com.mk

FIBER-REINFORCED PLASTICS PRODUCTION AND PROCESSING COMPANY

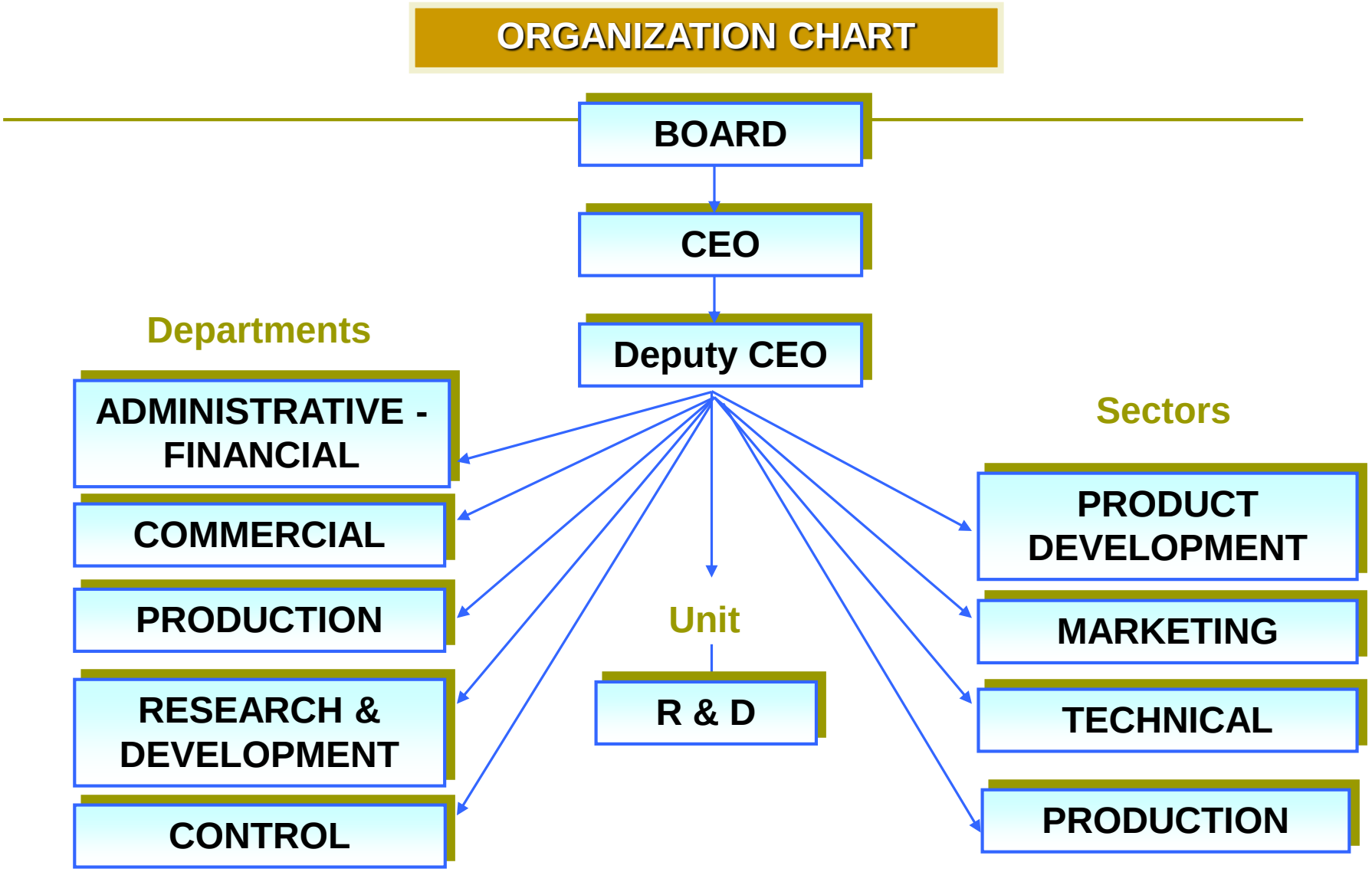
The head office of the "11 Oktomvri-Eurokompozit" - AD, company is located in the town Prilep, Republic of Macedonia.

The company was established in the far 1953, as a factory for mica exploatation as well as production of electro-insulating materials. Following the industrial development of the country, the company had needs to reconstruct of its production facilities as well as organizational changes.

Later on, following the Decision of the Government of R. of Macedonia, the company was announced as a company of great importance of the national defence of the country with its primary activity production of special purpose products, that is military and police equipment and secondary activity production of thermoreactive press mass.

In the further of period of transition in the country, the company has been transformed into a joint-stock company with 100% state ownership, and number of employers 454.

The organization scheme includes five departments and four sectors, as follows:



100% STATE OWNED COMPANY, 454 EMPLOYEES

TWO ORGANIZATIONAL UNITS INVOLVED IN R&D ACTIVITIES

Development Department

- More development less research
- Service to Production Dept.
- Approves changes in production documentation
- Employs engineers and technicians

R&D Unit

- **More research, less development**
- **Proposes goals for future development**
- **Manages external multilateral R&D projects**
- **Employs engineers only**

ADMINISTRATIVE – FINANCIAL DEPARTMENT

Sections

- Accounting
- Data processing
- Plan and analyses

- Law and personal activities
- Informatics
- **Building infrastructure and environmental protection**
- Security and fire prevention section

There is a special environmental office in the company which wants to be involved in the implementation of the System, as it is already involved in everyday activities concerning environmental problems.

Section for environmental protection

Only two/three employers. This unit has these activities:

- Provides hygienic cleanliness in the company with planning and implementation of appropriate hygiene activities;
- Provides regulations on working conditions and verify their compliance with the installation of additional funds;
- Provides regulations for safety at work and check their compliance with the application of appropriate measures and means of that protection;
- Define, document and propose objectives and principles for environmental protection;
- The objectives and principles for environmental protection are complying with the laws and other regulations concerning environmental protection, and other agreements for which the company is a signator;
- Make the documentation for environmental protection and coordinate their implementation;

Section for environmental protection

- Specifies criteria for assessing the realization of the objectives of environmental protection;
- Defines the participation and responsibilities of individual departments and agencies to achieve the objectives of environmental protection;
- It provides prevention of pollution and continual improvement of the environment;
- Organizes scanning and analyses of ecological situation in the company;
- Find ways to involve the company in daily global trend to reduce environmental pollution.

Eurokompozit is ISO 9001 certified.

All production stages are completely controlled !!!
(input control, in all production phases , final control)

In 1996 the company was ISO 9001:1994 certified,
In 2003 recertified acc. to ISO 9001:2000 and
In 2009 it has got the certificate ISO 9001:2008.

ÖQS

ÖQS-CERTIFICATE

ÖQS Certification and Evaluation Ltd. awards this ÖQS Certificate to the following organisations:

11 ОКТОМВРИ ЕВРОКОМПОЗИТ

11 OKTOMVRI-EUROKOMPOZIT AD
Macedonia, 7 500 Prilep, Aleksandar Makedonski 2/42

This ÖQS Certificate confirms the application and further development of an effective

QUALITY MANAGEMENT SYSTEM
complying with the requirements of standard
ISO 9001:2000

Registration No.: 936/0
Date of initial issue: 15 July 2003
Valid until: 15 July 2006

The validity of the ÖQS Certificate will be maintained via annual surveillance audits and three yearly renewal audits.

Vienna, 15 July 2003

ÖQS Certification and Evaluation Ltd.

TR Ing. Viktor Seitschek
President

Konrad Scheiber
General Manager

IQNet

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and ÖQS

hereby certify that the organization

11 OKTOMVRI-EUROKOMPOZIT AD
Macedonia, 7 500 Prilep, Aleksandar Makedonski 2/42

engaged in production of the following products:

Ballistic Vests, Ballistic Helmets, Ballistic Plates, Folding Brief, Attache Case, Mortar Shells Police Transparent Shields, Hand Held Rocket Launchers, Magazine for Automatic Rifle, Bayonet for Automatic Rifle, Molding Compounds, Agricultural Anti-Hail Rocket

has implemented and maintains a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2000

Issued on:	**2003-07-15**
Validity date:	**2006-07-15**
ÖQS certified since:	**2003-07-15**
Registration Number:	**AT-936/0**

Dr. Fabio Roversi
President of IQNet

Viktor Seitschek
President of ÖQS

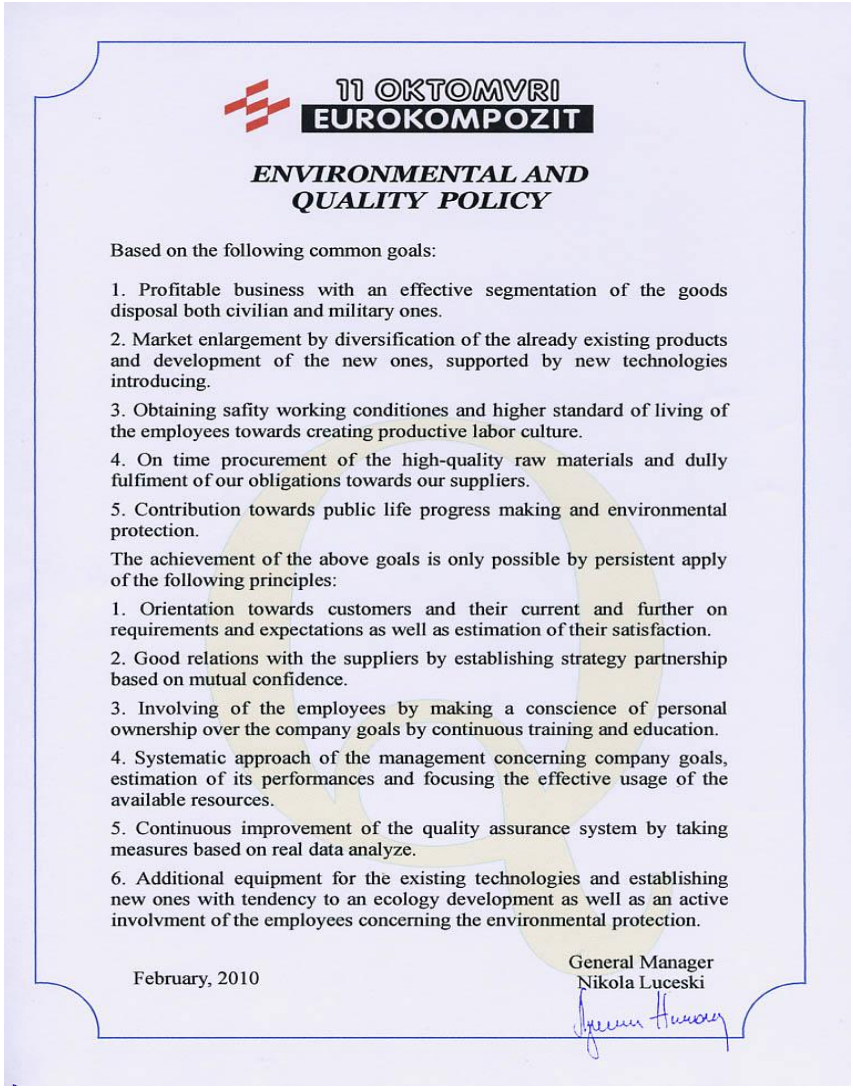
ÖQS

IQNet Partners*:
AENOR *Spain* AFAQ *France* AIB-Vincotte International *Belgium* ANCE *Mexico* APCER *Portugal* CISQ *Italy* CQC *China* CQM *China* CQS *Czech Republic* DQS *Germany* DS *Denmark* ELOT *Greece* FCAV *Brazil* FONDONORMA *Venezuela* HKQAA *Hong Kong* ICONTEC *Colombia* IMNC *Mexico* IRAM *Argentina* JQA *Japan* KEMA *Netherlands* KFQ *Korea* MSZT *Hungary* Nemko Certification *Norway* ÖQS *Austria* PCBC *Poland* PSB Certification *Singapore* QMI *Canada* SAI Global *Australia* SFS *Finland* SII *Israel* SIQ *Slovenia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia*
IQNet is represented in the USA by the following partners: AFAQ, AIB-Vincotte International, CISQ, DQS, KEMA, NSAI, QMI and SAI Global
* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

"11 Oktomvri-Eurokompozit" - AD, is in a procedure of getting ecology licence, type B.

The Project is also supported by the whole management team of the company such as by the General Manager and also it is evident by his personal statement.

A period of 1 (one) year is the foreseen time period to complete implementation of the system.



11 OKTOMVRI
EUROKOMPOZIT

ENVIRONMENTAL AND QUALITY POLICY

Based on the following common goals:

1. Profitable business with an effective segmentation of the goods disposal both civilian and military ones.
2. Market enlargement by diversification of the already existing products and development of the new ones, supported by new technologies introducing.
3. Obtaining safity working conditiones and higher standard of living of the employees towards creating productive labor culture.
4. On time procurement of the high-quality raw materials and dully fulfiment of our obligations towards our suppliers.
5. Contribution towards public life progress making and environmental protection.

The achievement of the above goals is only possible by persistent apply of the following principles:

1. Orientation towards customers and their current and further on requirements and expectations as well as estimation of their satisfaction.
2. Good relations with the suppliers by establishing strategy partnership based on mutual confidence.
3. Involving of the employees by making a conscience of personal ownership over the company goals by continuous training and education.
4. Systematic approach of the management concerning company goals, estimation of its performances and focusing the effective usage of the available resources.
5. Continuous improvement of the quality assurance system by taking measures based on real data analyze.
6. Additional equipment for the existing technologies and establishing new ones with tendency to an ecology development as well as an active involvment of the employees concerning the environmental protection.

February, 2010

General Manager
Nikola Luceski

"11 Oktomvri-Eurokompozit" - AD participated as a member in some international projects, such as:

-FP6 Project – Eco-houses based on eco friendly polymer composite construction materials, 2004-2007

- EUREKA Project – Development of new actuators, materials and technology for the production of advanced pneumatic and hydraulic valves, 2008-2011

EUREKA

Sixt Framework Programme

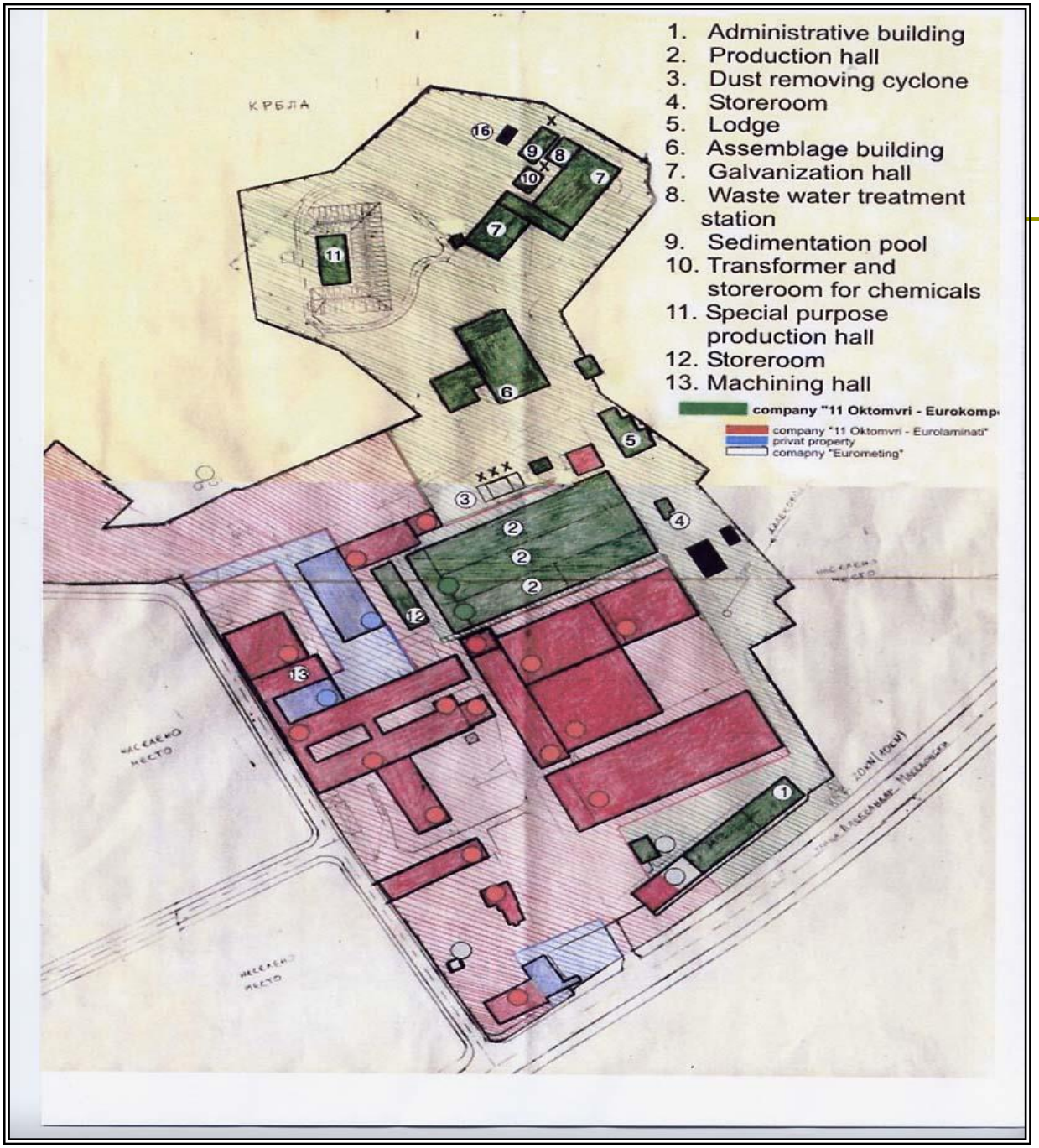
SECOND PART OF THE PRESENTATION

SECOND PART OF THE PRESENTATION

11 OKTOMVRI EUROKOMPOZIT

TECHNOLOGICAL SCHEME OF THE COMPANY

- USED MATERIALS
- AVAILABLE TECNOLOGIES
- PRODUCTION PROGRAM



Overall technological scheme of the company

COMPOSITE PRODUCTS

Filament-wound tubes and pipes

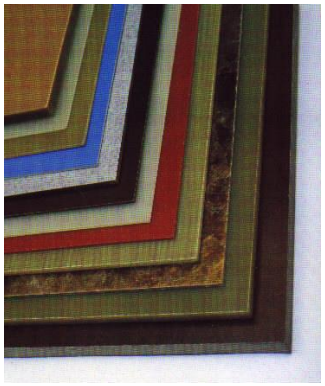
Tape-wound tubes and pipes

Composite parts for high-voltage heavy duty transformer

COMPOSITE PRODUCTS

- Molding compounds and moldings
- Composite rods
- Laminates

glass/polyester
glass/phenolic
carbon/phenolic
cotton/phenolic



glass/epoxy
glass/phenolics
glass/silicone
aramid/phenolics
HPPE/phenolics
polyamide/phenolics
cotton/phenolics

COMPOSITE PRODUCTS

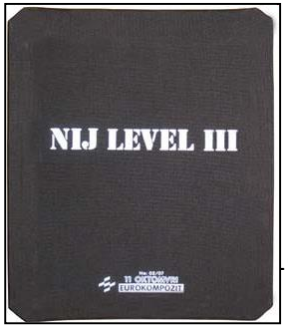
Safety helmets

SPECIAL PURPOSE PRODUCTS



Ballistic helmets


Ballistic vests



Ballistic plates


Ballistic and transparent shield

AVAILABLE TECHNOLOGIES RELATED TO FIBER COMPOSITES

- ✓ IMPREGNATION
- ✓ LAMINATION
- ✓ FILAMENT WINDING (WET PROCESS)
- ✓ TAPE WINDING (DRY PROCESS)
- ✓ MOLDING COMPOUNDS PRODUCTION
- ✓ OPEN MOLD MOLDING
- ✓ CLOSED MOLD MOLDING
- ✓ MACHINING – TRADITIONAL METHODS
- ✓ CNC MACHINING
- ✓ WATER - JET CUTTING OF COMPOSITES

USED RAW MATERIALS

MATRICES

- ✓ PHENOLIC RESINS
- ✓ EPOXY RESINS
- ✓ POLYESTER RESINS
- ✓ SILICONE RESINS
- ✓ THERMOPLASTICS

FIBERS

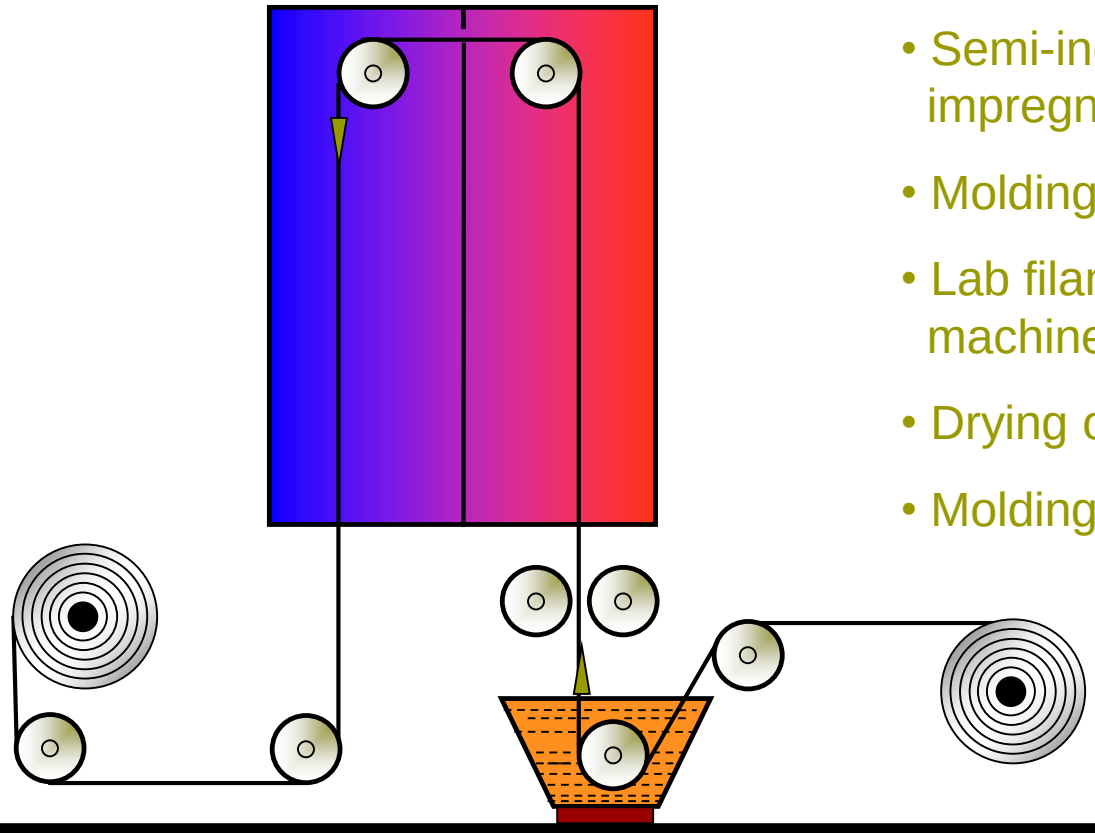
- ✓ GLASS
- ✓ POLYAMIDE (Nylon 6.6)
- ✓ ARAMID (Twaron)
- ✓ HPPE (Dyneema)
- ✓ CARBON
- ✓ COTTON

TEXTILE FORMS OF THE FIBERS

- CONTINUOUS (GLASS)
- CHOPPED (GLASS, CARBON)
- WOVEN FABRICS (HPPE, ARAMID, GLASS, NYLON)
- WOVEN ROVING (GLASS)
- MATT (GLASS)
- NON-WOVENS (HPPE)
- UD TAPES (HPPE, ARAMID with thermoplastic matrices)

RESEARCH AND TESTING FACILITIES

- Prototype workshop for composites production



Consists:

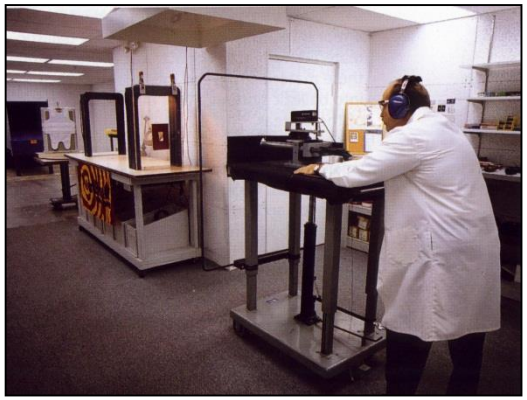
- Semi-industrial vertical impregnating machine
- Molding press
- Lab filament-winding machine
- Drying ovens
- Molding compounds mixer

RESEARCH AND TESTING FACILITIES

❑ Laboratories:

- Physical Laboratory

- Chemical laboratory

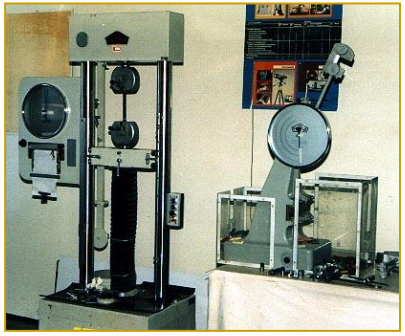


- Ballistic laboratory

Line for mechanical testing

Line for burst pressure testing

Line for thermal analysis



Universal testing machines

INDUSTRIAL PRODUCTION FACILITIES

Molding line

Filament Winding

Multi axes computer controlled winding

High-quality technology involved in the production process!!

✓Standard machines such as universal lathes and universal milling and grinding machines,

✓Unconventional method of cutting by water, abrasive jet

✓CNC machines

Water-Jet Cutting

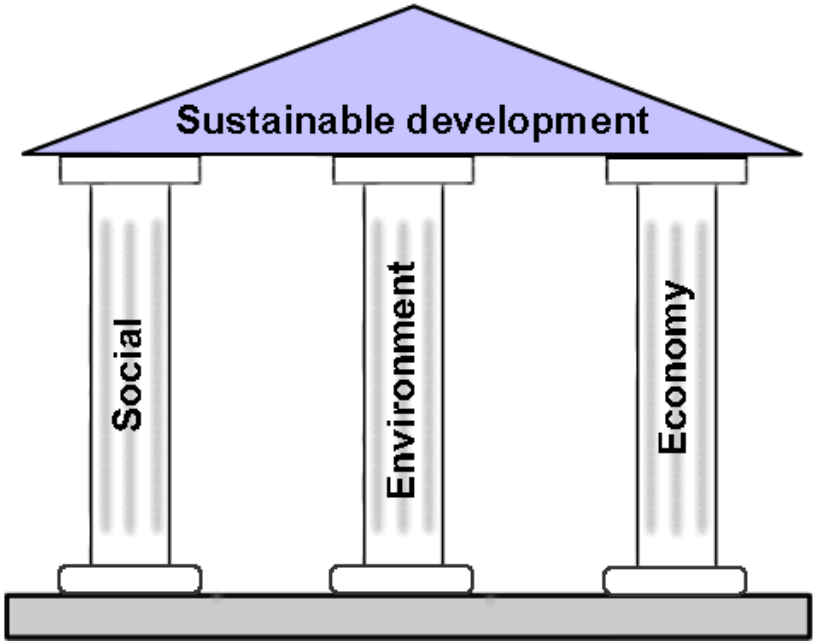
THIRD PART OF THE PRESENTATION

THIRD PART OF THE PRESENTATION

RESULTS FROM INVESTIGATION IN EUROKOMPOZIT CONCERNING SUSTAINABILITY

DETERMING THE STATUS OF KNOWLEDGE IN INDUSTRY CONCERNING SUSTAINABILITY

Sustainable development includes economic, social and environmental dimensions.



The companies should take into consideration the use and waste phases by designing a product so as to minimize the overall environmental impact (including pollution). However, it is clear that environmental concerns cannot be regarded in isolation and must be integrated alongside other aspects of products such as performance, quality and safety.

We have provided some information for material and energy use, water consumption, products, waste, air emissions from the Eurokompozit which can be used to measure how the company contributes to sustainable development.

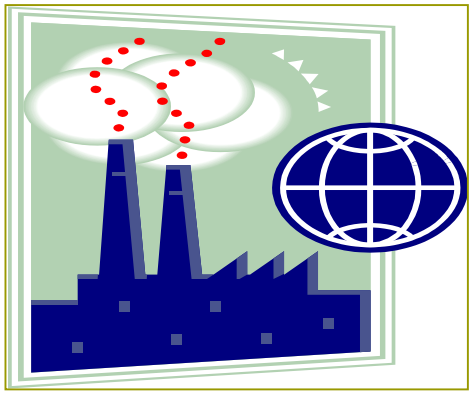
It is very difficult to evaluate the performance of the company on the ground of too many information !?

INPUT

Energy

Materials

Water



OUTPUT

Products

Solid Wastes

Liquid Wastes

Air Emissions

There are continuous and discontinuous process in the company.

Capacity of the company

Installed capacity = 110 000

Realized capacity = 54 000

Number of working hours per year = 2088

INPUT INFORMATION OF THE WHOLE ORGANIZATION

		Unit of measurements	Quantity
Materials	Aramide	m^2 / year	5,000
	UD tape Dyneema SB21	m^2 / year	32,000
	UD tape Dyneema HB 2	m^2 / year	7,000
	Cordura	m^2 / year	5,000
	Ceramic tiles	pcs / year	36,000
	Polycarbonate plate	m^2 / year	500
	Glass roving	kg / year	100,000
	Epoxy resin	kg / year	30,000
	Hardener	kg / year	25,000
	Acetone	kg / year	10,000
	Drill bits	pcs / year	4,000
	Composite plates	kg / year	20,000
Energy	electricity	Kw / month	100 000
Water	Communal water	m^3 / monthh	200 - 300
	Well water	l /sec	1 -2

OUTPUT INFORMATION OF THE WHOLE ORGANIZATION

Products

COMPOSITE PRODUCTS: Filament-wound tubes and pipes, tape-wound tubes and pipes, composite parts for high-voltage heavy duty transformer, molding compounds and moldings, composite rods, laminates, safety helmets

SPECIAL PURPOSE PRODUCTS: Ballistic helmets, ballistic vests, ballistic helmets, ballistic shields

Solid Wastes

1. Waste material generated by the process of machining of steel materials and soft metals.
2. Waste material generated by the process of machining of the composite tubes and cylinders.

Liquid Wastes

Liquid waste material generated by the process of metal-plating is basically neutral salts consist of hard metal salts (Fe, Zn, Cd, Ni, Cr,.)

Air Emissions

There is no emission in the atmosphere

The great part of this waste material is in a form of "sawdust" and is put in containers and the collection of the containers is carried out by the local companies registered for that purpose.

The waste material which is in a form of dust and thin "sawdust" through the fan system is carried out in cyclones outside, and after that is transported from the cyclones to the local trash dump.

The solid waste material in a form of bigger parts as a result of the process of cutting, is stored in the company.

Mostly of this waste material is reproduced for further on application acc. to the customer's requirements.

TYPE OF WASTE MATERIAL	Number of European catalog of waste	QUANTITY		Processing	Location
		Quantity by month (tons)	*Annual quantities (tons)*		
1. Waste material generated by the process of machining of steel materials and soft metals.	**12.01.01**	**0,1- 0,2**	**1 - 2**	**-**	**City landfill**
2. Waste material generated by the process of machining of the composites	**12.01.05**	**0,4 - 0,5**	**5 - 6**	**+**	**Factory landfill**
3. Waste plastics and powder	**12.01.05**	**-**	**1 - 1,5**	**-**	**City landfill**
4. Waste from galvanization	**11.01.09**	**The amount of sludge is not possible to determine**		**-**	**Factory landfill**
5. Municipal waste	**20.01.01**	**-**	**-**	**-**	**City landfill**

SECTION FOR SURFACE PROTECTION AND GALVANIZATION

It consists of the following technical parts:

1. Technological line for anode oxidation
2. Technological line for metal surface
3. Technological line for bronning and phosphating 4. Waste water treatment station
5. Technological line for silver surface the chrome surface (doesn't work)
6. Cab for yellow ignition (doesn't work)
7. Apparature with three chlorine ethylene which cleans the machine oil (doesn't work)
8. Offices for employees and storeroom for chemicals
9. Apparatures for measuring thickness of the surface

Scheme of the section galvanization

Processing lines are completely installed with all technology necessary supporting elements.
Good ventilation for acceptance of volatile gases and discharge outside of the technological line.

Processing lines for anode oxidation of aluminium and aluminium alloy in sulphuric acid

All active **bath** and all bath where there are chemicals have a volume of **1200 litres**. The line has **3 baths** for anode oxidation . **Annual capacity** is approximately **20,000 m^2 in two shifts. Amount of water** needed for flushing the anode oxide subjects is approximately **13m^3/h or 3.6 l/sec**. The duration of the whole technological process is **60 to 90 minutes** in dependence of the type of parts, their purity and thickness of the layer. Requires **electricity** for this technological process is about **250 to 300 KW** for one shift.

Processing lines for metal surface of copper, nickel, zinc and cadmium

All active **bath** and all bath where there are chemicals have a volume of **700-800 litres**. **Amount of water** needed for flushing the anode oxide subjects is approximately **8,7 m^3/h or 4,2 l/sec**. Requires **electricity** for this technological process is about **150 to 200 KW** for one shift.

Processing line for brunne and phosphate of the steel parts

All active **bath** and all bath where there are chemicals have a volume of **700-800 litres**. **Amount of water** needed for flushing the anode oxide subjects is approximately **5,4 m^3/h or 1,5 l/sec**. Requires **electricity** for this technological process is about **150 to 200 KW** for one shift. The duration of technological processes in fosfatiranjeto is about 45 minutes while for the bruniranjeto is **60 to70 minutes.**

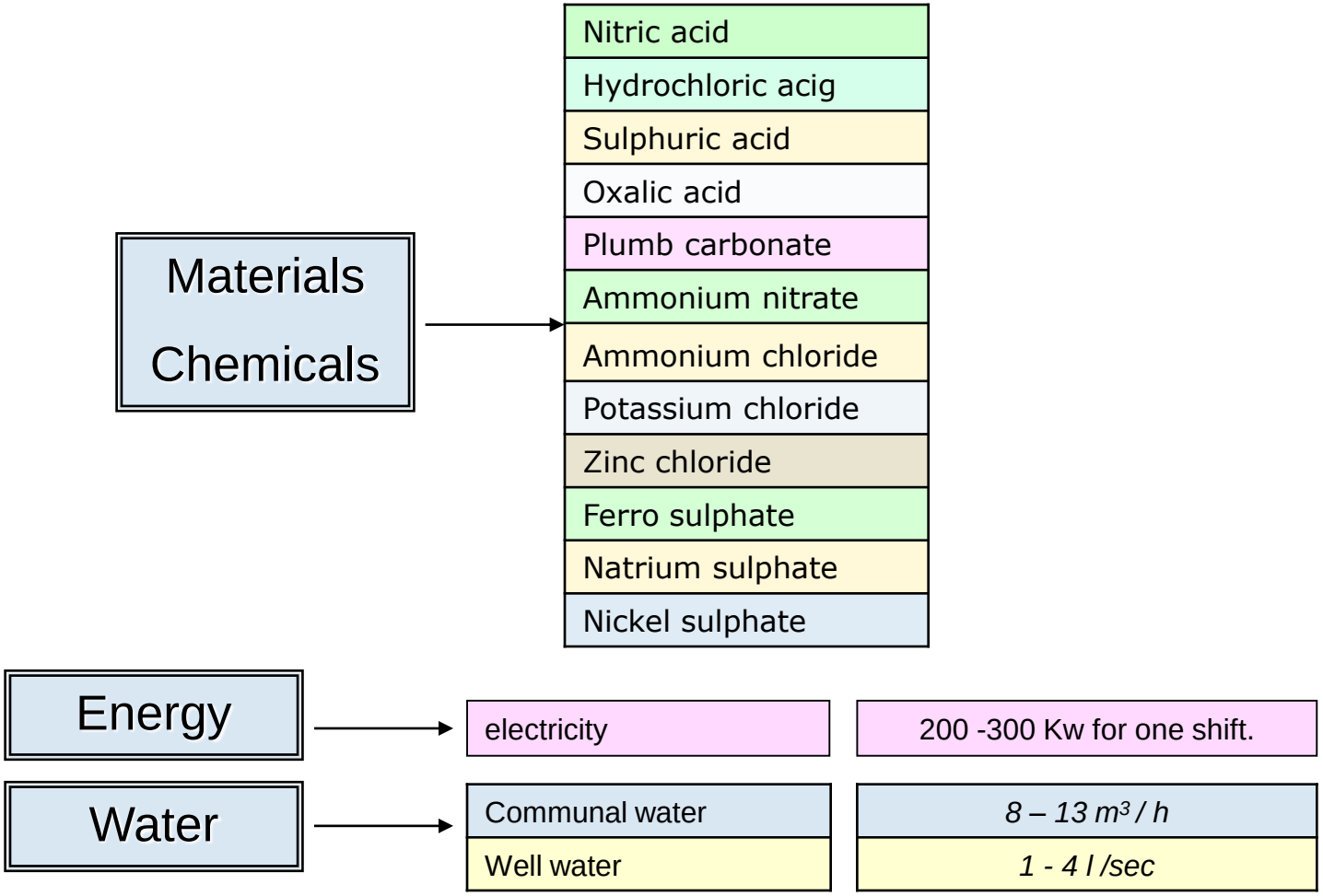
Waste water station

The amount of water entering in the section for different goals: flushing, cleaning of various active bath etc, need it to be processed and to get out in correct and clean state.
The total amount of water entering in the station is approximately **27m^3 per hour or 7,5 litres per second.**
This is a huge amount of water need to be processed or purified and neutralized as a neutral to go out in the environment.

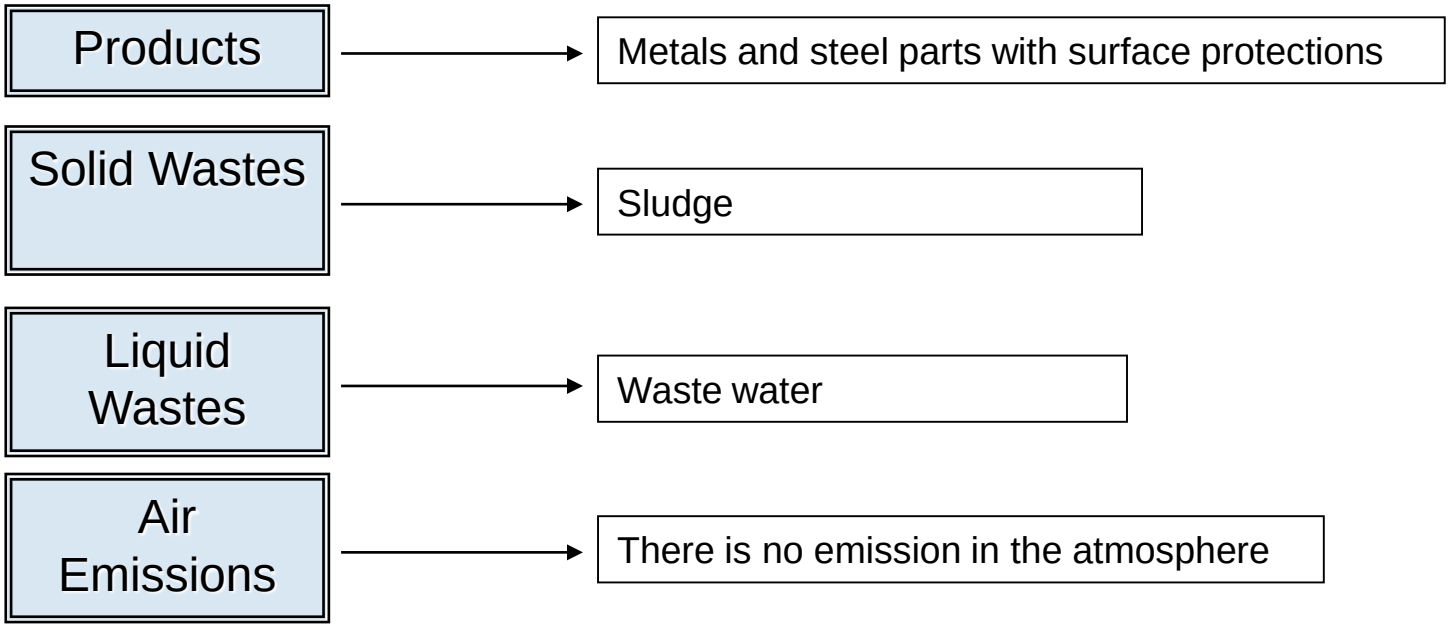
The waste water which comes from galvanization section are:

- Mineral water
- Alkaline water
- Acid-alkaline water
- Alkaline cyanide water
- Acid chromate water

INPUT INFORMATION OF THE GALVANIZATION SECTION



OUTPUT INFORMATION OF THE GALVANIZATION SECTION

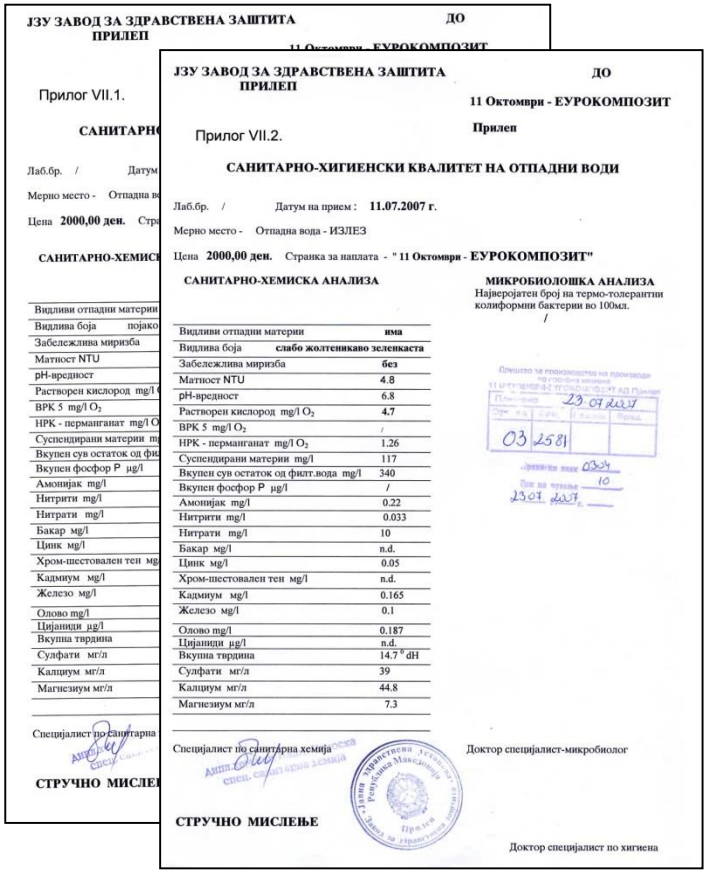


The waste from galvanization process

Number of European catalog of waste	QUANTITY	Processing	Location
11.01.09	**The amount of sludge is not possible to determine**	**-**	**Factory landfill**

MONITORING

Certificate from authorized laboratory



ЈЗУ ЗАВОД ЗА ЗДРАВСТВЕНА ЗАШТИТА ПРИЛЕП

ДО 11 Октомври - ЕУРОКОМПОЗИТ Прилеп

Прилог VII.1.

САНИТАРНО-ХЕМИСКА АНАЛИЗА

Видливи отпадни материи	
Видлива боја	појако
Забележлива мирзба	
Матност NTU	
pH-вредност	
Растворен кислород mg/l	
BPK 5 mg/l O_2	
HPK - перманганат mg/l	
Суспендирани материи	
Вкупен сув остаток од фи	
Вкупен фосфор P µg/l	
Амонијак mg/l	
Нитрити mg/l	
Нитрати mg/l	
Бакар mg/l	
Цинк mg/l	
Хром-шестовален тен	
Кадмиум mg/l	
Железо mg/l	
Олово mg/l	
Цијаниди µg/l	
Вкупна тврдина	
Сулфати mг/л	
Калциум mг/л	
Магнезиум mг/л	

Специјалист по санитарна

СТРУЧНО МИСЛЕ

ЈЗУ ЗАВОД ЗА ЗДРАВСТВЕНА ЗАШТИТА ПРИЛЕП

ДО 11 Октомври - ЕУРОКОМПОЗИТ Прилеп

Прилог VII.2.

САНИТАРНО-ХИГИЕНСКИ КВАЛИТЕТ НА ОТПАДНИ ВОДИ

Лаб.бр. / Датум на прием: 11.07.2007 г.

Мерно место - Отпадна вода - ИЗЛЕЗ

Цена 2000,00 ден. Странка за наплата - "11 Октомври - ЕУРОКОМПОЗИТ"

САНИТАРНО-ХЕМИСКА АНАЛИЗА

Видливи отпадни материи	има
Видлива боја	слабо жолтеникаво зеленкаста
Забележлива мирзба	без
Матност NTU	4.8
pH-вредност	6.8
Растворен кислород mg/l O_2	4.7
BPK 5 mg/l O_2	/
HPK - перманганат mg/l O_2	1.26
Суспендирани материи mg/l	117
Вкупен сув остаток од филт.вода mg/l	340
Вкупен фосфор P µg/l	/
Амонијак mg/l	0.22
Нитрити mg/l	0.033
Нитрати mg/l	10
Бакар mg/l	n.d.
Цинк mg/l	0.05
Хром-шестовален тен mg/l	n.d.
Кадмиум mg/l	0.165
Железо mg/l	0.1
Олово mg/l	0.187
Цијаниди µg/l	n.d.
Вкупна тврдина	14.7 °dH
Сулфати mг/л	39
Калциум mг/л	44.8
Магнезиум mг/л	7.3

МИКРОБИОЛОШКА АНАЛИЗА

Најверојатен број на термо-толерантни колиформни бактерии во 100мл.

/

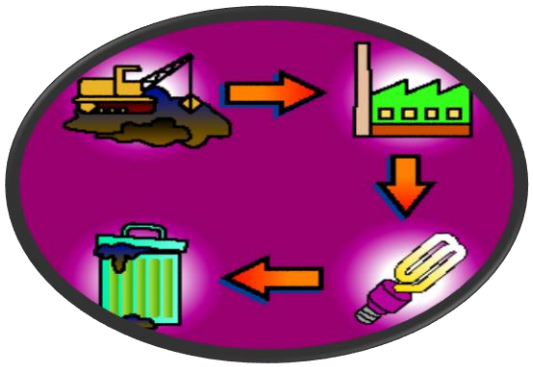
Специјалист по санитарна хемија

Доктор специјалист-микробиолог

СТРУЧНО МИСЛЕЊЕ

Доктор специјалист по хигиена

Parameters	Frequentation of monitoring	Method for taking samples	Method for analyze
Slugger in	Two times per year	standard	chemical
Slugger out	Two times per year	standard	chemical



Conclusion

The questionare test was made to analyze the knowledge of the staff from Eurokompozit.

Fulfill the questioner test of the management team and coordinators of the sections.

It is a fact that the industrial staff is not properly educated and has a lack of knowledge concerning sustainable development.

Eurokompozit is open for collaboration and it is very satisfied for involving in this Tempus project.

In the company there are good mood for educated in the field of sustainable technologies.

Thanks for your attention