



Upet

TÜV
AUSTRIA

9001/2008
14001/2004
18001/2007



ISO-1729
TS-1456
Q1-1572



European
Directives



2017

www.upetgroup.ro

SC UPET SA factory is one of the biggest European manufacturers of drilling rigs oil and equipment, “green” energy equipment.

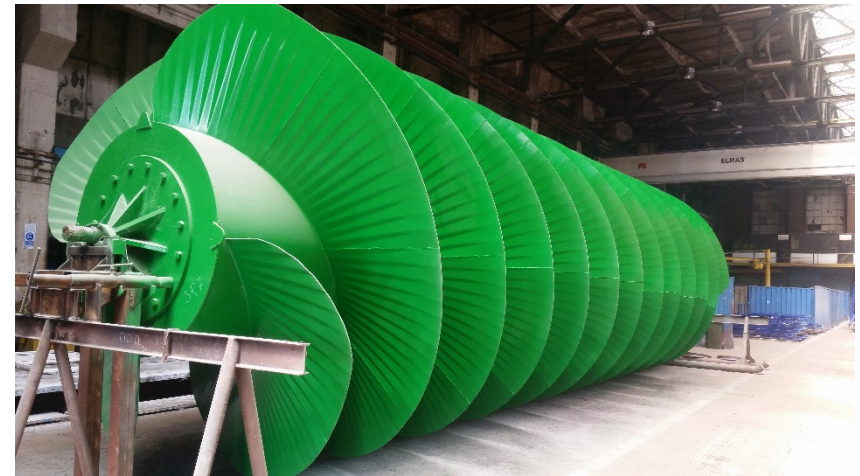
UPET SA products comply with API (4 F, 7K, and 8C) and ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007 standards , and the most exigent requirements of its beneficiaries.

OUR OBJECTIVE

Consists in solving the client’s problems through our employees’ competence. We consider that one of the secrets of a successful activity is the active collaboration with our clients, which allows us to offer the necessary technical solutions directly oriented towards a concrete beneficiary. We propose a mutually beneficial collaboration and we are interested in the success of our clients.

PRODUCTS:

- Oil & gas drilling rigs, with the hook load capacity 80 - 250 tones
- Workover and well servicing rigs, with the hook load capacity 40 - 160 tones
- “Green” energy equipment
(Archimedes screws with various applications)
- Auxiliary equipment (swivels, travelling blocks, rotary tables, drilling pumps, etc.);
- Spare parts for oilfield industry;
- Hydraulic and pneumatic equipment;

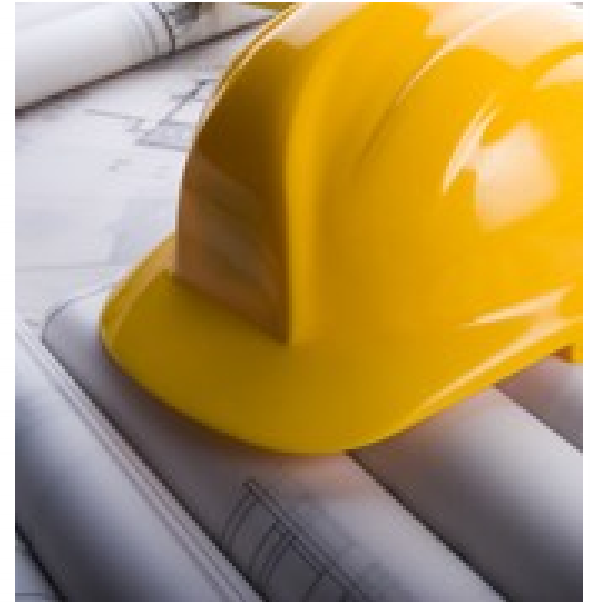


UPET SA, through its production departments, can cover all the stages necessary for the manufacturing of the specific equipment.

The production capacities include: cutting, heat treatment, processing, welding and hard-facing, mounting, test benches, anti-corrosion coating.

The manufacture technology and the products are certified in accordance with the ISO 9001, ISO 14001, OHSAS 18001, API 4F, API 7K, API 8C international standards.

The most motivating part of our job is that we can contribute to the success of our clients and we are aware that **WE DO NOT SELL A PRODUCT BUT A BENEFIT THAT OUR PRODUCT OFFERS TO THE CLIENT.**



Long-term business strategy is to find and exploit the energy potential by implementing new solutions ,research and development of electrical power plants and hydrogen production.

Harnessing this potential energy and especially the hydroelectric potential energy has multiple advantages such as:

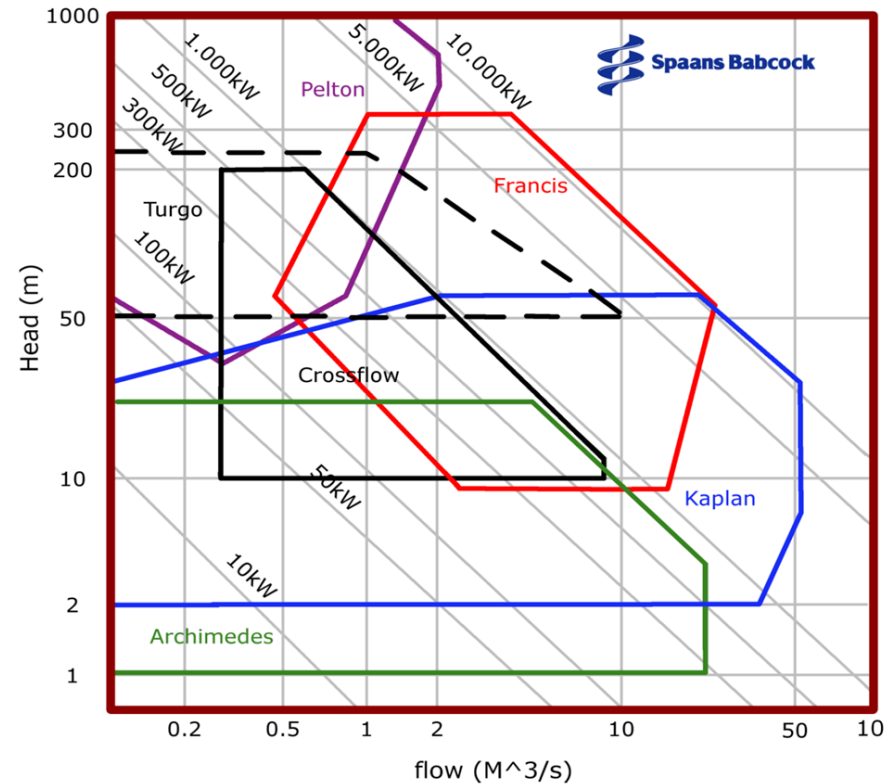
- production of energy and hydrogen from clean, renewable sources ;
- decommissioning of operating fossil fuel-fired power plants and prevention of the construction of new fossil-fuel-fired power stations;
- improving national energy balance in a sustainable development perspective because any hydroelectric power is an absolute gain of energy (saving limited fossil resources)

- * Available power at a location = Potential Energy (E_p)
- * $E_p = \text{Density water} \times \text{Gravity acceleration} \times \text{Head} \times \text{Flow}$
- * Power output = $\text{Eff}_{\text{turbine}} \times E_p$

WHEN A SCREW TURBINE

Below a few applications:

- Run of river
- Municipal treatment
- Fish farm
- Irrigation canals
- Industrial outfalls
- Paper mill
- Cooling water outfalls



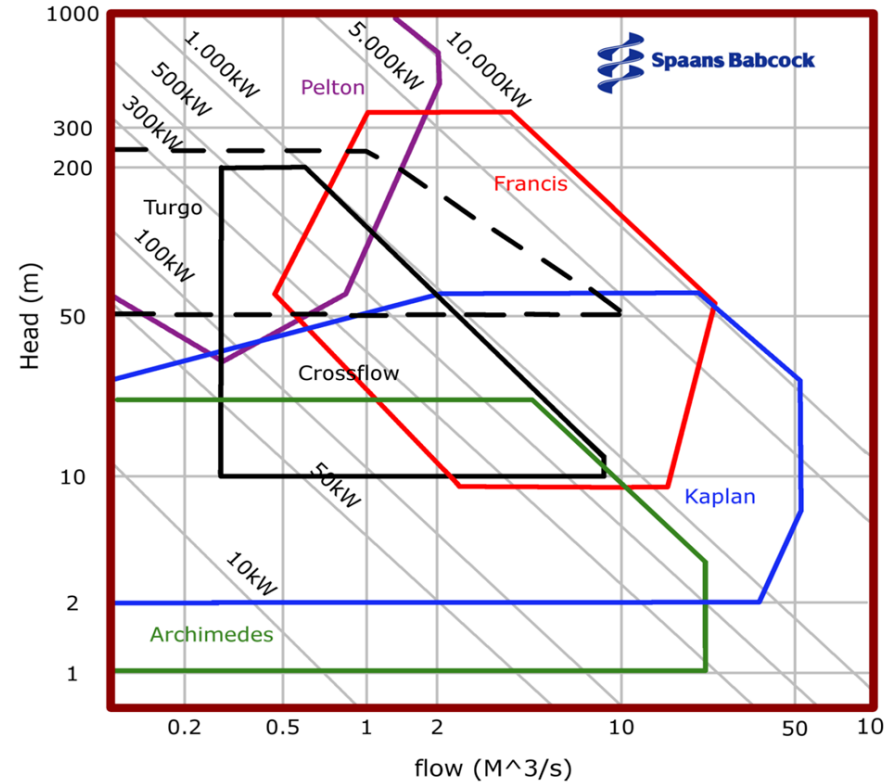
With regards to the Archimedean screw, this is based on a single turbine. Multiple turbines are possible in both series as parallel set-up or a combination of both. The above graph is for indicative purposes only.

WHY A SCREW TURBINE

Besides the screw turbine there are a few competitive turbine types in the low head segment:

- Kaplan Turbine
- Water wheel
- VLH (very low head)

The biggest advantages and disadvantages are discussed below.

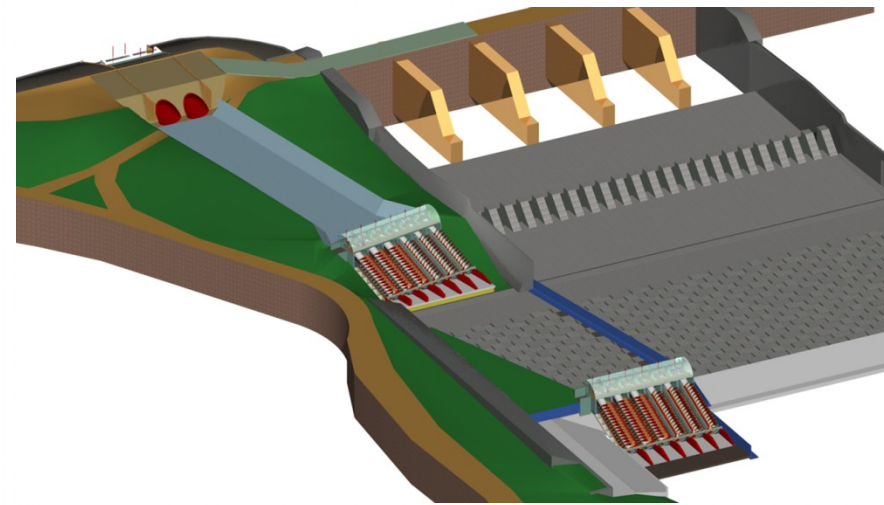


With regards to the Archimedean screw, this is based on a single turbine. Multiple turbines are possible in both series as parallel set-up or a combination of both. The above graph is for indicative purposes only.

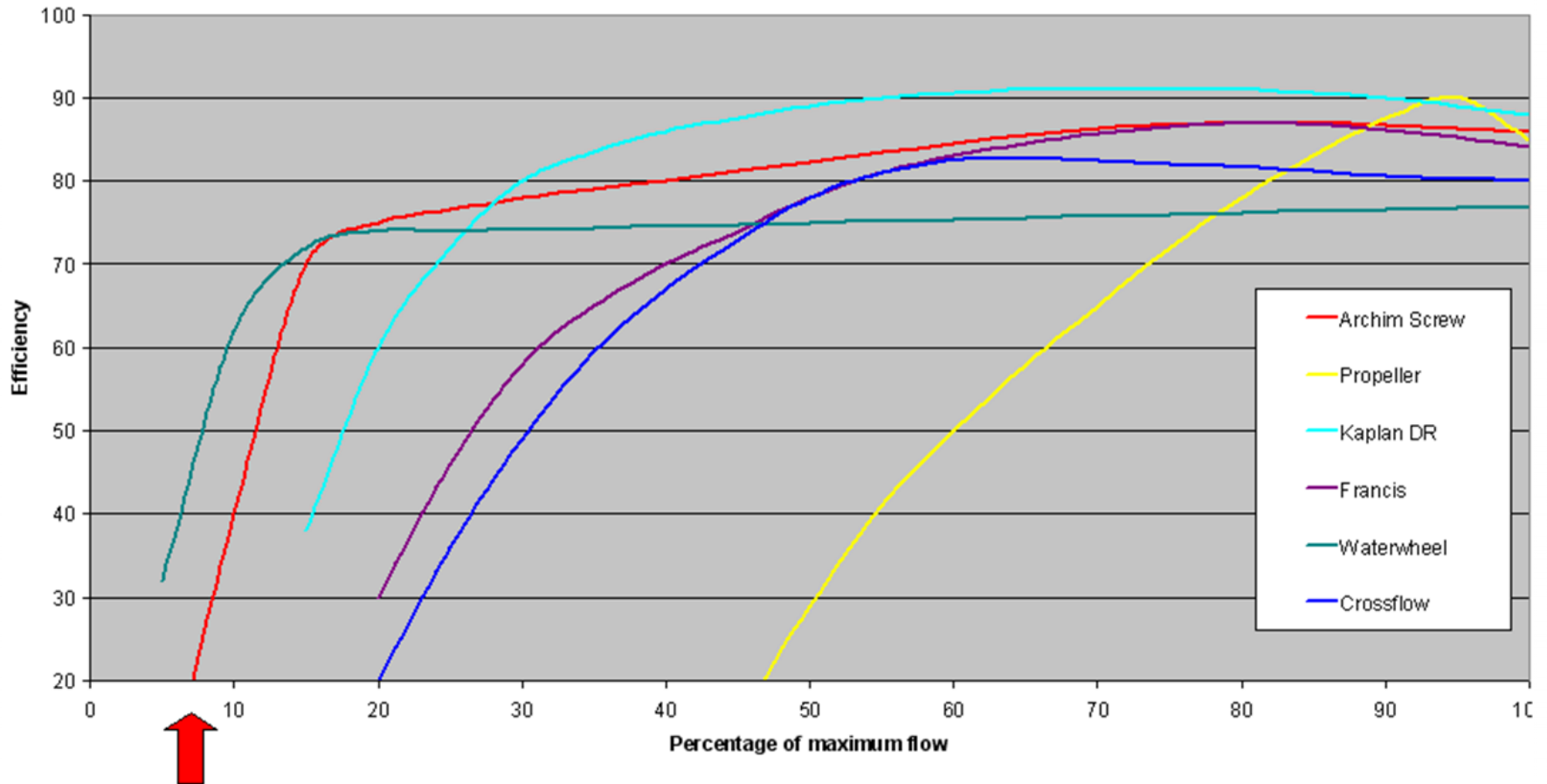
WHY A SCREW TURBINE

Advantages compared to other turbines:

- * Fish Friendly
- * Simple civil structure
- * Capable of handling raw water with floating debris
- * Simple and robust
- * Constant high efficiency even in low flows
- * Easy maintenance
- * Long lifetime (> 30 – 40 years)
- * Proven and very long track record regarding reliability
- * Probably the most economical low head turbine



Turbine Efficiency Comparison



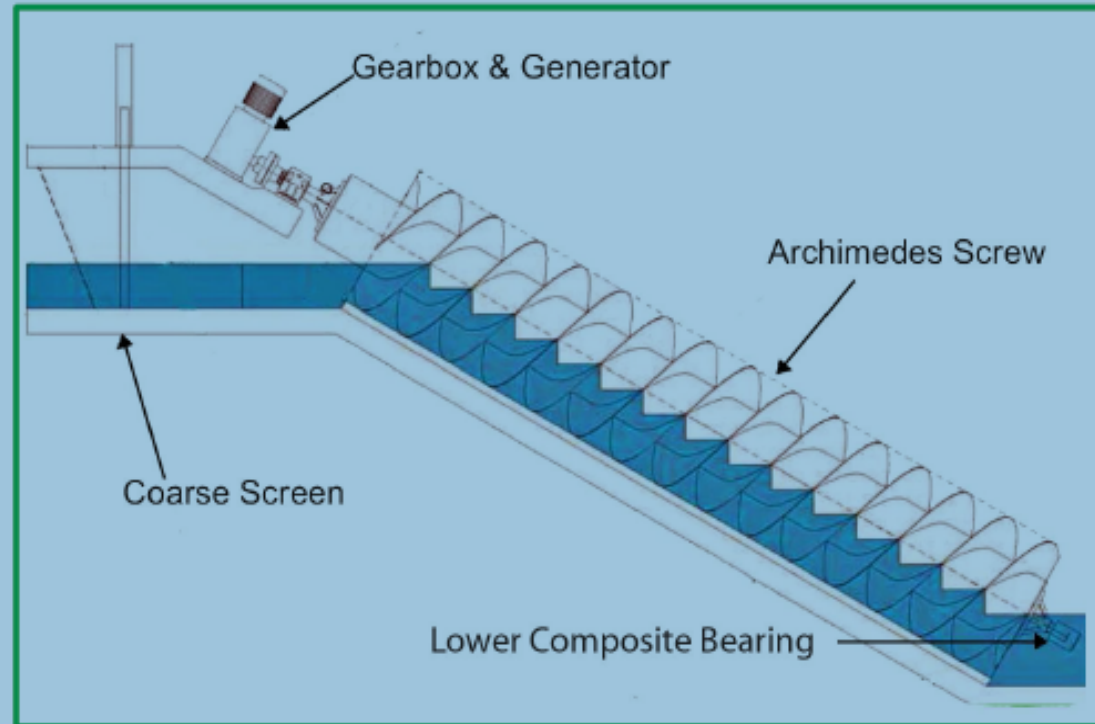
- We have managed together with our partner Visis Best Proiect SRL to produce and test first two turbines, which in this moment we work to install them on a small mountain river ,replacing two Francis turbines ,they produce electricity for a monastery in the BUCEGI NATIONAL PARK Romania



Archimedes Screw

How it works

- **The weight** of water falling through the screw turns the screw which turns the gear box and generator and produces electricity as it turns.
- **The diameter** of the screw increases as the design flow increases.
- **The length** of the screw increases as the "head" or vertical drop increases.



Location : River MURESH (Romania, EU)

Type of equipment : ARCHIMEDES SCREW

Case Study:

The hydropower station, will include two small hydroelectric power plants, with 2 X 8 Archimedean screw turbine type, arranged in parallel. The power plant will be fully automated

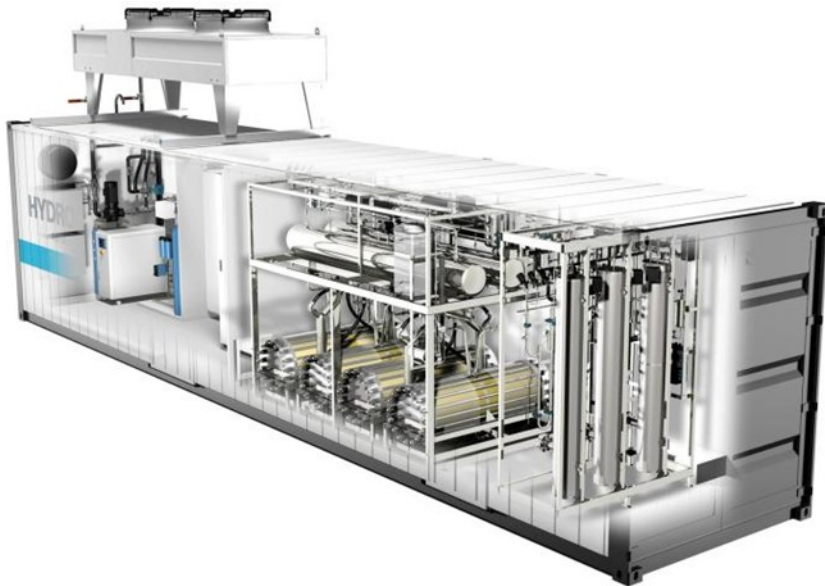
Main components:

- Camera charger MHC I
- Channel routing with stilling basin role and loading chamber for stage II:
- MHC
- Archimedean screw turbine: is the part of the plant where water energy is converted into mechanical energy - 2 x 8 pieces;
- Generators: the mechanical energy of the turbine is transmitted to the electrical generator producing electrical energy;
- Post transformer 0.4 / 20 kV: electrical power is transmitted to the national grid.

Case Study:

The hydrogen production station, Electrolysis modules will separate the hydrogen (H_2) and oxygen (O) from the water

- Electrolysis modules will need 0.08 m³ of water for production of 2045040 m³ hydrogen.
- Hydrogen and oxygen will be load in high pressure cylinders and delivered to the costumers and distribution company



Gross head HPP 1 (m)	4.47
Gross head HPP 2 (m)	5.33
Screw tilt angle (degree)	22
Flow rate/screw (cm/s)	6,5
Screw diameter (m)	3,525
Screw length (m)	9.984
RPM	21
Flow speed (m/s)	1,65
Screw power (kW)	175
Numbers of screws	8
Annual average flow (mc/s)	36
Total throughput flow (mc/s)	26
Total power (kW)	1600
Capacity utilization Rate (%)	83%
Annual hydrogen production m3	2045040
Energy production per year	12987MWh

Capacity

Hydropower plant will have 2 x 8 Archimedean screw turbine and 4 modules of electrolysis that will ensure an installed power and hydrogen production of:

Installed power	= 1.691 MWP
Energy production by year	= 12,987 MWh/year
Electrolysis modules 4* 240 m ³ /h	= 2.045.040 M ³ /year

Hydrogen is using in many industries. In the chemical industry it is using to produce ammonia for agricultural fertilizer (HABER PROCESS) and cyclohexane & methanol, which are intermediates in the production of plastics and pharmaceuticals. It is also used to remove sulfur from fuels during to the oil refining, metallurgic industry for welding & technical gas, etc.

Today , hydrogen is almost exclusively used for industrial purposes in chemicals and refining.

In the future it could play a major role as an energy carrier in transportation, gas industry, electricity and heat generation.

CAPACITY



	Month	Used capacity %	Days	Operating hours	Production MWh/year
1	January	84.73	31	630	955.58
2	February	91.98	28	618	935.82
3	March	97.00	31	722	1,103.06
4	April	100.00	30	720	1,100.36
5	May	100.00	31	744	1,139.12
6	June	100.00	30	720	1,100.36
7	July	100.00	31	744	1,139.12
8	August	99.79	31	742	1,136.60
9	September	99.18	30	714	1,090.78
10	October	97.54	31	726	1,109.57
11	November	98.45	30	709	1,082.32
12	December	95.03	31	707	1,079.38
				TOTAL	12,987

← ELECTRICITY PRODUCED

↓ HYDROGEN PRODUCED

	Month	Used capacity %	Days	Operating hours	Production m3
1	January	84.73	31	630	151200
2	February	91.98	28	618	148320
3	March	97.00	31	722	173280
4	April	100.00	30	720	178800
5	May	100.00	31	744	178560
6	June	100.00	30	720	172800
7	July	100.00	31	744	178560
8	August	99.79	31	742	178080
9	September	99.18	30	714	171360
10	October	97.54	31	726	174240
11	November	98.45	30	709	170160
12	December	95.03	31	707	169680
				TOTAL	2.045.040 m3

HEAD OFFICE :

SC UPET SA

ARSENALULUI 14, 130021, TARGOVISTE, ROMANIA, EU

TEL: +40-746-996-016

E-MAIL: SALES@UPETGROUP.RO

EXCLUSIVE REPRESENTATIVE IN THE BALKAN REGION :

MONTENEGRO MARINE SURVEYS D.O.O.

TOPLISKI PUT BB,85310, BUDVA – MONTENEGRO

TEL: +382 -69-67-042-795

E-MAIL: INFO@MONTENEGROMARINESURVEYS.COM