BISONSOL
THE NATURAL POWER

DRILLING COMPANY

PREZENTATION

The Bisonsol int Drilling Company

The company's identification

Name	**BISONSOL INT SRL**
Registration No	**J05/2389/2008**
VAT No	**RO 24508457**
DUNS Number	**567108702**
Address	**Calea Clujului nr. 192, Oradea, Bihor county, Romania**
General Manager	**Eng. Dieter Koteles**

The company's activity

Main activity	**Water well drilling,**
Other activities	**Civil Work Constructions, distribution of water well materials, water filtering and treatment plants, equipments construction and maintenance.**

The company's assets

Permanent employees no	**4**
Temporary employees no	**8**
Permanent drilling rigs in function	**1**
Rented available drilling rigs with staff	**4**

Who we are

The Bisonsol SRL company was established in 2008, with the purpose and goal to become one of the best drilling companies in Romania. Born from of it's General Manager's, dream, the company, started to drill water wells around Western and Central part of Romania, with latest technologies, and best materials available, soon, the company was requested to all major water wells, where the maximum amount of water was requested from only one well. We had references from a town, that

ordered 3 wells, but from one well they obtain all the water they projected in three wells.
In order to obtain excellent performances, from wells, our company has numerous partners for materials and services. We distribute German PVC drilling Johnson screens, American stainless steel Johnson screens, all tubing, casing, pumping and all materials for first class water wells.
We consider each well as an individual project, we measure each well with electronic measurements, have the geophysics, well logging, of each well and we adjust the screens, pumps and well casings and tubing to use to maximum it's resources.

With a dedicated team, we are 100% dedicated to the job, and to the clients benefits.

Since 2013, our company was expanded abroad, and we become Bisonsol Int SRL.
All assets where passed to the new company, but we consider the best assets of all the people, our specialists.

On-going projects

Place	County / Country	Wells	Depth	Purpose	Observations	Executed
Ciocaia	Bihor / Romania	9	80-90	Greenhouse irrigation	EU project	15,00%
Săcuieni	Bihor / Romania	1	90	Orchard	With Water well tank, complete irrigation systems installed	80,00%
Săcuieni	Bihor / Romania	1	30	Agriculture	With Water well tanks	98,00%
Oradea	Bihor / Romania	1	120	Industrial production plant	With pumping units, water water well and water system installation for the new plant.	In March-April 2013

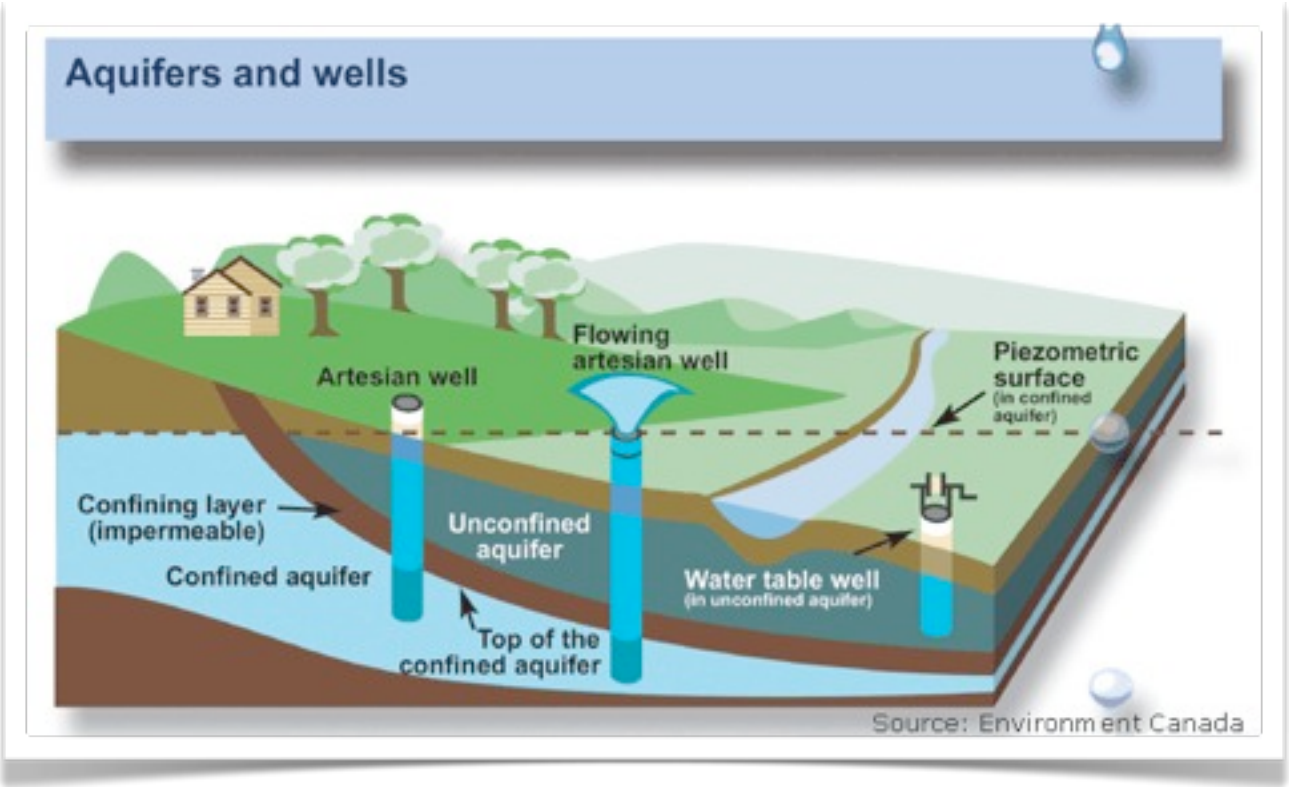
References list - Bisonsol Fresh Water Wells (+ Partners)

Beneficiary		Town / Country	Wells	Depth / Capacity	Observations
Ravazd Fishery		Rávazd / Hungary	1	Confidential	Positive well
Koronco Cannery		Koronco / Hungary	1	Confidential	Positive well
Avvil – Refrigetation Workshop		Győr / Hungary	4	1000 L/min	
Édász		Győr / Hungary	1	200m	Water well for town water system
Álmoskert		Tapolcafő / Hungary	1	120 m	Irrigation water well, drilled in limestone
Galliform Kft.		Pápakovácsi / Hungary	3+1	100 m	3 – test wells 1 – refurbished
Galliform Kft.		Sokorrópatka / Hungary	1	186 m	Water well for poultry farm
Galliform Kft.		Szerecseny / Hungary	1	80 m	Water well for poultry farm
Attala Zrt.		Szentivánpuszta / Hungary	5	Confidential	Water process plant
Attala Zrt.		Kelemenessömjén / Hungary	1	110 m	Spring water well
Attala Zrt.		Bálványos / Hungary	1+3	90 m	1 – new water well 3 – closing and sealing of old wells
MOL Zrt.		Almásfüzítő / Hungary	1+2	135 m	1 – new water well for dinking 2 – closing and sealing of old wells

Beneficiary		Town / Country	Wells	Depth / Capacity	Observations
Bartus Kft, Etesrau mine		Salgótarján / Hungary	1	Confidential	Different special drilling services for mine
Tordas Kertészet		Tordas / Hungary	1	173m	Water for irrigation system
Iulius Agrocom Srl.		Sacueni / Romania	1	30 m 140 m^3/day	Water for agricultural applications
Dumexim SRL		Ciocaia	9	80 – 90 m	Water for greenhouse irrigation systems
Valea lui Mihai City Water System		Valea lui Mihai / Romania	1	130m	Urban drinking water system In the project there where three well designed

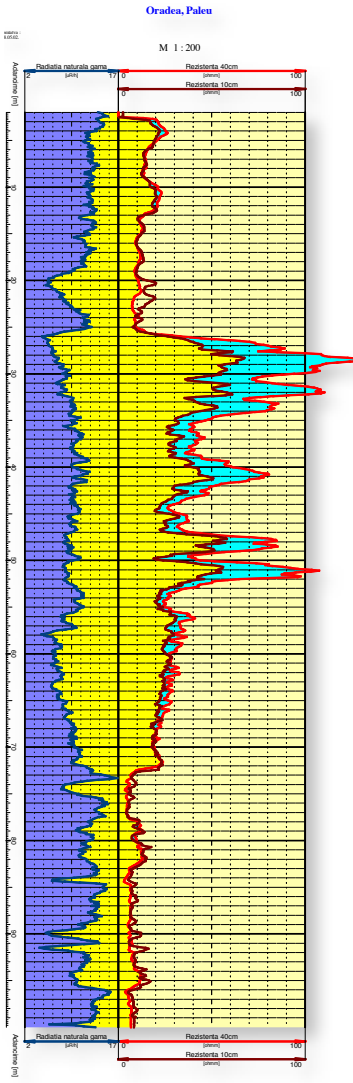
References list - Bisonsol Fresh Water Wells (+ Partners)

Beneficiary	Town / Country	Wells	Depth / Capacity	Year of completion	Observations
Bauproject Kft.	Mosonmagyaróráv / Hungary	1	1400 m	2005	
Studio Vitalis Kft.	Ecseny / Hungary	1	800 m	2005	
Musitz László	Nagybajom / Hungary	1	850 m	2005	
Papp Béla	Ópusztaszer / Hungary	1	880 m	2006	
Kék Tó Üdülőfalu	Lengyeltóti / Hungary	1	1600 m	2005-2006	
Kék Tó Üdülőfalu	Lengyeltóti / Hungary	1	1100 m	2006-2007	
Bozsófleur Kft.	Balástya / Hungary	1	1650 m	2007	
Termálfürdő	Tiszakécske / Hungary	1	1100 m	2007	
K.k.félegyháza Termálfürdő	Tiszakécske / Hungary	1	1650 m	2007	
Tiszaszolg Kft.	Tiszaújváros / Hungary	1	1150 m	2008	
Exinformix Kft.	Szada / Hungary	1	1550 m	2008	
Praid Thermal Baths	Praid / Romania	1	1100 m	2010	Salt Thermal water well



The Team

Name	Function	Experience (years)
Kasza Zoltan	Hidrogeolog inginer	25
Kovács János	sink technician, pusher	35
Mázsa István	sink technician, pusher	20
Herold Sándor	sink technician, pusher	25
Szécsi Róbert	sink technician high pusher	20
Karánvölgyi Ágoston	sink technician high pusher	20
Dinka Ferenc	sink skilled worker pusher	35
Kiss Sándor	sink skilled worker	35
KrekuskaCsaba	sink skilled worker	10
Péter József	locksmith, repairmen, engine-fiter	30
Dohar József	engine-fiter, repairmen	35
Karaba Csaba	electric artificer	10
Zsikó Mihály	drill master	28
Vicasiu Gabriel	drill master	24
Dinulescu Floarea	drill master	20
Medar Teodor	drill master	17
Braic Gavrila	drill master	20



Water treatment

Our company, has a division that is designing, installing and maintaining small water treatment plants. We have at this moment, a contract for the maintenance of a village of 7500 inhabitants, and we are also under negociations for another 4 village tap water treatment plants, designing/ installing/maintenance. Also, there was requested in couple places to accept the maintence of the entire distribution system.

For the plant we have already by two years, we had restarted the treatment plant, after some luck of maintenace and bad conception, and due to the excelent job performed, we where contracted for the maintence and upgrading the power plant. Here, after several years of clean water from the well, Arsenic was detected at a moment in the water. Based on the analisys performed by the Healt Department, we addapted the present system, to accomodate the reduction of Arsenic to 0%.

in following pages, we'll present some methods for removing some heavy metals from the water, with the mention that we treat each case as an individual project, taking into consideration all factors, as concentration, type, inhabitants, local conditions....

Arsenic

Source of Arsenic

Arsenic (**As**) is not easily dissolved in water, therefore, if it is found in a water supply, it usually comes from mining or metallurgical operations or from runoff from agricultural areas where materials containing arsenic were used as industrial poisons, and also, arsenic and phosphate easily substitute for one another chemically; therefore, commercial grade phosphate can have some arsenic in it.

Arsenic is highly toxic and has been classified by the US EPA as a carcinogen. The current MCL for arsenic is 0.05 mg/l, which was derived from toxicity considerations rather than carcinogenicity.

Treatment of Arsenic

Depending on the type of arsenic found in the water, inorganic or organic,

there are several methods for removing it:

1. Inorganic Arsenic Removing Methods
    1. Reverse Osmosis (removes about 90% As)
    2. Activated Alumina
    3. Ion Exchange (removes about 90-100% As)
    4. Activated carbon (removes about 40-70% As)
    5. Distillation (removes about 98% As)
2. Organic Arsenic Removing Method
    1. Oxidation with subsequent coagulation, with $FeCl_3$, followed by ceramic filtering and activated carbon filtering. (removes about 95-100% As)

Real picture from a village water station modified for removing Arsenic from water (source water well). Picture taken while plant was under annual maintenance and active elements replacing.

Cadmium

Source of Cadmium

Cadmium enters the environment through a variety of industrial operations, it is an impurity found in zinc. By-products from mining, smelting, electroplating, pigment, and plastic production can contain cadmium. Cadmium emissions come from fossil fuel use.

Cadmium makes its way into the water supplies as a result of deterioration of galvanized plumbing, industrial waste or fertilizer contamination. The US EPA Primary Drinking Water Standards lists Cadmium with a 0.005 mg/l MCL (maximum contamination level)

Treatment of Cadmium

Cadmium can be removed from drinking water mainly with a sodium form cation exchanger (softener). Other recognized methods are:

- Reverse Osmosis will remove 95 - 98% of the cadmium in the water.
- Electro dialysis will also remove the majority of the cadmium.

Chromium

Source of Chromium

Chromium is found in drinking water as a result of industrial waste contamination. The occurrence of excess chromium is relatively infrequent. Proper tests must be run on the water supply to determine the form of the chromium present. Trivalent chromium (Cr^{-3}) is slightly soluble in water, and is considered essential in man and animals for efficient lipid, glucose, and protein metabolism. Hexavalent chromium (Cr^{-6}) on the other hand is considered toxic. The US EPA classifies chromium as a human carcinogen. The current Drinking Water Standards MCL is 0.005 mg/L.

A reverse osmosis unit, before connecting to an water plant. It has a capacity of 6 m^3/h treated water.

Treatment of Chromium

Trivalent chromium (Cr^{-3}) can be removed with strong acid cation resin regenerated with hydrochloric acid.

Hexavalent chromium (Cr^{-6}) on the other hand requires the utilization of a strong base anion exchanger that must be regenerated with caustic soda (sodium hydroxide) NaOH.

Reverse Osmosis can effectively reduce both forms of chromium by 90 to 97%. Distillation will also reduce chromium.

Radium

Source of Radium

Radium (Rn) is a radioactive chemical element which can be found in very small amounts in pitchblende and other uranium minerals. It is used in the treatment of cancer and some skin diseases. Radium 226 and radium 228 are of most concern when found in drinking water because of the effects on the health of individuals. Radium 228 causes bone sarcomas. Radium 226 induces carcinomas in the head.

Radioactivity in water can be naturally occurring or can be from man-made contamination. Radiation is generally in curies (Ci). One curie equals 3.7 x 10^{10} Bq (Bequerel SI), nuclear transformations (decays) per second. A picocurie (pCi) equals 10.12 curies. The US EPA has set the MCL for radium

226 and 228 at 5 pCi/L under the NIPDWR (National Interim Primary Drinking Water Regulations).

Treatment of Radium

Radium can be removed by sodium for cation exchange resin in the form of a water softener. Reverse osmosis will remove 95 - 98% of any radioactivity in the drinking water.

Mercury

Source of Mercury

Mercury (Hg) is one of the least abundant elements in the earth's crust. It exists in two forms, an inorganic salt or an organic compound (methyl mercury).

Mercury detected in drinking water is of the inorganic type. Organic mercury inters the food chain through fish and comes primarily from industrial chemical manufacturing waste or from the leaching of coal ash. If inorganic mercury inters the body, it usually settles in the kidneys. Where as organic mercury attacks the central nervous system. The MCL for mercury set by the US EPA is 0.002 mg/L.

Treatment of Mercury

Activated carbon filtration is very effective for the removal of mercury.

Reverse osmosis will remove 95 - 97% of it.

There are methods for removing almost all pollutants from the water, and we assure you that we'll analyze each case and we'll present an efficient solution for a EU, US, local regulation water quality.