SIMPLE SOLUTION WITH GREAT EFFECT

energy water®
environmental product

MWD - MINERAL WATER DOCTOR

Ecological elimination of limescale and sedimentation

For domestic and industrial use, where limescale causes energy, material and aesthetic damage due to the clogged water system

MWD-HOME

MWD- INDUSTRY

ENERGYWATER MWD

a physical treatment of water working on the principle of a wet galvanic cell, wherein the change of the calcium carbonate crystals is performed by the Zn anode.

ENERGYWATER® - MWD DEVICE TEST

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The results of chemical analysis of calcination of calcium carbonate $CaCO_3$ (results from the University of Maribor, Faculty of Chemistry)

The efficiency of the Energywater device has been tested for the effect of the casting of the limescale in the drinking water. Three devices from Energywater, two MWD G1" PN10 and one MWD G1/2" PN10 in different drinking water sources were tested. The results of chemical analyzes of samples of untreated drinking water (flowing into the MWD) and the treated drinking water samples (flowing from the MWD) are shown in the following tables on the right.

The chemical composition of drinking water remained unchanged after treatment (overflow) with Energywater Mineral Water Doctor (MWD) (see graphs to the right of the tables where the green and blue colors are represented by Calcit and the red color of Aragornit).

X Ray - spectographic analysis

Calcium carbonate $CaCO_3$ in the form of Calcite forms the main component in the deposition of water in drinking water systems. The limescale, which is formed in the form of calcite, is difficult to be removed from drinking water pipes.

The Mineral Water Doctor (MWD) changes the crystal structure of $CaCO_3$ calcium carbonate and converts calcite crystals to Aragonite crystals. At the outlet of treated water from the MWD, calcium carbonate was present only in the form of aragonite (which is shown on the graphs in red). When the untreated water enters the MWD, as shown in the accompanying graphs, calcium carbonate ($CaCO_3$) also appeared in the form of Calcite (green and blue) and Aragonite (red).

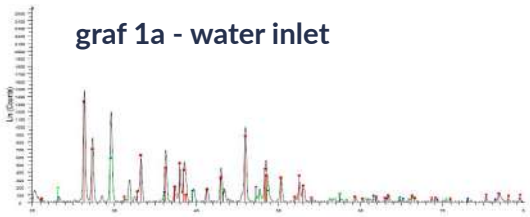
The chemical composition of the water flowing through our MWD has remained unchanged, the total water hardness in German grades (OdH) and the amount of Ca^{+2} and Mg^{+2} cations, as well as Cu^{+2} and Zn^{+2}, at the inlet to our device and the outlet from our device has not changed, as seen in all 3 tables of test water flowing through our MWD (tab on the right).

TAB.1	MWD G1" PN10	
	water inlet	water outlet
X-ray $CaCO_3$	graf 1a	graf 1b
Ca^{2+} (mg/l)	65,7	65,7
Mg^{2+} (mg/l)	21,3	21,3
Zn^{2+} (mg/l)	<0,01	<0,01
Cu^{2+} (mg/l)	<0,1	<0,1
Tvrdost' (°dH)	14,1	14,1

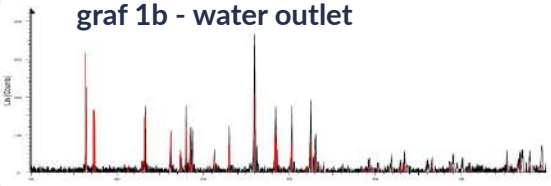
TAB.2	MWD G1" PN10	
	water inlet	water outlet
X-ray $CaCO_3$	graf 2a	graf 2b
Ca^{2+} (mg/l)	65,7	65,7
Mg^{2+} (mg/l)	21,3	21,3
Zn^{2+} (mg/l)	<0,01	<0,01
Cu^{2+} (mg/l)	<0,1	<0,1
Tvrdost' (°dH)	14,1	14,1

TAB.3	MWD G1" PN10	
	water inlet	water outlet
X-ray $CaCO_3$	graf 3a	graf 3b
Ca^{2+} (mg/l)	65,7	65,7
Mg^{2+} (mg/l)	21,3	21,3
Zn^{2+} (mg/l)	<0,01	<0,01
Cu^{2+} (mg/l)	<0,1	<0,1
Tvrdost' (°dH)	14,1	14,1

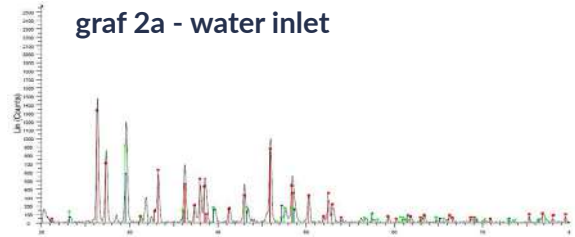
graf 1a - water inlet



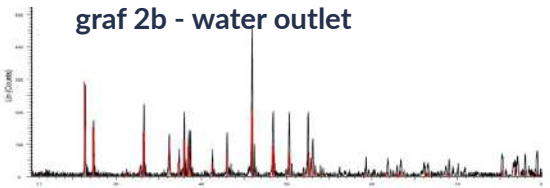
graf 1b - water outlet



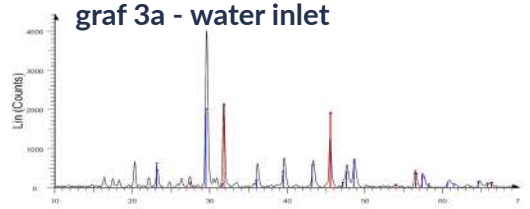
graf 2a - water inlet



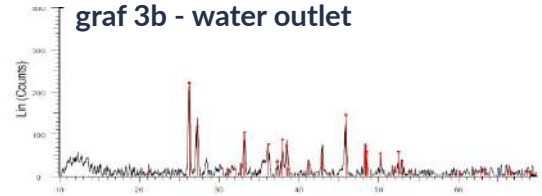
graf 2b - water outlet



graf 3a - water inlet



graf 3b - water outlet



ADVANTAGES OF GALVANIC WATER TREATMENT ENERGYWATER® MWD

Galvanic Water Treatment - Energy Water® MWD is currently the only technology for eliminating limescale clogging, meeting the demanding criteria for drinking water treatment in water systems.

- Energywater® - MWD - is the only technology without the use of chemistry and energy, which does not burden the environment.
- MWD Home - no operating costs
- MWD Industry - low operating costs
- The use of MWD has many positive accompanying properties that affect hygiene of water distribution.
- Simple construction and easy installation into drinking and utility water pipes predestines the MWD product for wide use by waters where Calcit ($CaCO_3$) causes limescale to clog.

weight of heat exchanger with MWD 832g

weight of heat exchanger without MWD 978g

Clogged water plastic PPR
(after cleaning the plate heat exchangers with chemicals).

Clean (using MWD) and clogged (without MWD) plate heat exchanger gas boiler for water heating

APARTMENT HOUSES, ŠAĽA, SLOVENSKO

Weighing Exchangers TÚV: Székházi Pavol

Station	Date	Weight (kg)	Date	Weight (kg)	Weight difference	Exchange of exchangers	"Kn" TUV initial / final
DOS 133	03.8.2017	16.86	18.10.2017	**16,56**	- 0.30	06.04.2016	Kn = 0,321 0,479 / 0,438
DOS 144	07.8.2017	16,71	18.10.2017	**16,67**	- 0,04	06.04.2016	Kn = 0,335 0,665 / 0,534
DOS 60	09.8.2017	16.82	18.10.2017	**16,48**	- 0,34	29.4.2016	Kn = 0,353 0,488 / 0,426
DOS 62	14.8.2017	18.13	18.10.2017	**17,73**	- 0,40	6.3.2017	Kn = 0,335 0,279 / 0,278
DOS 71	09.8.2017	16,85	18.10.2017	**16,8**	- 0,05	31.08.2014	Kn = 0,335 0,430 / 0,380
DOS 122	11.8.2017	19,97	18.10.2017	**19,47**	- 0,50	06.05.2016	Kn = 0,335 0,297 / 0,307
DOS 124	14.8.2017	20,06	18.10.2017	**19,76**	- 0,30	26.9.2016	Kn = 0,298 0,531 / 0,270

Installation of MWD, from 03.08.2017 - 14.08.2017 for cold water supply to a plate exchanger and for recirculation of hot water in apartment buildings in the town of Šaľa. MWDs were installed in 10 apartment buildings from which 7 were inspected. Total water hardness in Šaľa is more than 21 OdH. Plate heat exchangers for hot water were weighed before MWD was installed. The control weighing of the plate exchanger was performed on October 18, 2017. The weight difference of the plate exchanger is recorded in the table where the weight loss is seen. In practice, this means that, after mounting the MWD into the hot water system, the heat transfer between the walls of the plate heat exchangers is better, saving the energy needed to heat the hot water. In these cases, energy savings range from 10-30%. It is not necessary to use chemical exchanger cleaners as well as replacement of plate exchanger to increase heat transfer efficiency in exchanger. At the same time, the lifetime of hot water connected appliances such as water tap and shower heads is extended.

APARTMENT HOUSE TRENČÍN, SLOVENSKO

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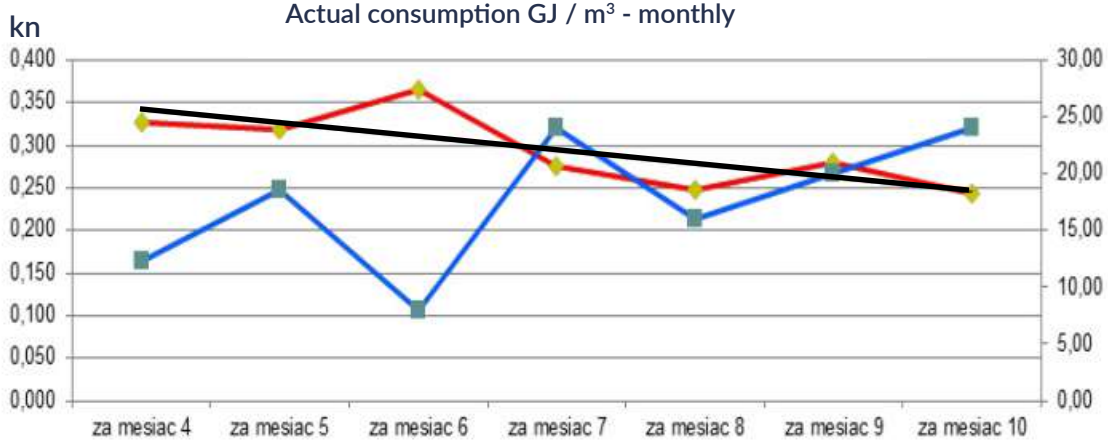
- Water hardness 23° dH, MWD G1" PN16 set behind water outlet from CHTS in a recirculation pipe 40 years old same as the building.
- CHTS (Compact Heat Transfer Station) put into operation 24.04.2013. Water heating from 10° C to 50° C and measurement of water and heat consumption by using cold water up to 5 m^3/h (hot water recirculation - less than 2m^3/h).



The black curve shows a decrease in the relative heat consumption

After the installation of Energywater MWD G1 "HOME TERMO PN16, the hot heat consumption (kn) for hot water heating decreased by more than 20%. From a diameter of 0.35 GJ / m^3 to 0.25 GJ/m^3 due to gradual cleaning of the plate heat exchanger. The test took place from June to October 2013. The energy savings on water heating - more than 20%.

HOSPITAL AND APARTMENT BUILDINGS IN BELEHRADE - SERBIA

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CLINIC FOR REHABILITATION
"DR. MIROSLAV ZOTOVIĆ"
SOKOBANJSKA 13 11000 BELEHRAD
MWD INDUSTRY DN65 PN16

After 5 months of operation: savings on heating oil 10% and trouble-free operation by using hot water in the hospital.

In hospital facilities high requirements are placed on drinking water hygiene and MWD has met these requirements.

APARTMENT HOUSES:

preparation of hot water via plate exchangers,

After 5 months of operation with the MWD Industry in the hot water recirculation circuit, the heat transfer coefficient (kn) for hot water preparation was stabilised. There is no more need for frequent cleaning of plate exchanger that was necessary to be cleaned up every 3 months prior to the MWD Industry installation so that the hot water pressure is sufficient to supply hot water also to the upper floors of the building.

ICE HOCKEY STADIUM IN TRNAVA - SLOVAKIA MWD INDUSTRY G2" PN16

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APPLICATION AT TRNAVA ICE HOCKEY STADIUM SINCE 2014, WATER FLOW 36 m^3 / H COOLING WATER-WATER SYSTEM THROUGH HEAT EXCHANGERS.

- Used 3 pcs MWD Industry G2 "PN16
- Total savings of over € 15,000 per year
- During the 3 years of operation, 5 zinc electrodes were changed, with 650,000 cubic meters of water, making 325 full Olympic pools

PIPES BEFORE AND AFTER INSTALATION
MWD INDUSTRY G2" PN16

CLOGGED COOLING WATER COOLER AND CLEAN AFTER USE OF MWD INDUSTRY G2 "PN16

MWD INDUSTRY G2 "PN16 REFERENCES IN THE AGRARIAN SECTOR

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DONAU FARM

Kalná Nad Hronom, more than 10000ha of the cultivated land

Treatment of hard water from groundwater for the dilution of urea, .fertilizers and spraying into sprayers

With modified water using MWD Industry G2 "PN16, chemicals and urea are better diluted, spraying nozzles are not clogged, and improved fertilizer absorbability increases yields of agricultural crops.

OVOCNÝ SAD

36ha in Village Košúty - Installation of MWD Industry G2 "PN16 in irrigation system

The water in the well has a 24OdH hardness.

2 years, the nozzles in the irrigation system were not chnaged, and the animals did not have any disease from the water.

REFERENCES ELECTRIC HEATING DEVICE

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Electric boiler for hot water heating in a bakery in Tyachev, Ukraine 3 x 6 kW, Installation in 2016. Before installation MWD G3/4" PN10 it was necessary to clean the electric boiler every 2-3 weeks (regulation of the regional hygienist) After installing it is necessary to clean the electric spirals only once in 6 months, the boiler is clean (see photo).

BENEFITS:

energy savings and money savings for chemical cleaning.

Heater of the washing machine after 3 years of use of MWD G1" PN10 at the water inlet to the family home. Hardness of used water 24OdH., Despite high hardness of Water, it appears as soft water and the consumption of laundry powders drops to 1/2.

BENEFITS:

Energy savings and lower washing powder consumption.

Inlet with MWD G1" PN10 in a family house

INTERNATIONAL CONFERENCES AND EXHIBITIONS

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We present our products at exhibitions and conferences in Slovakia, in the Czech Republic and also:

IN KIEV - UKRAINE
IN BELGRADE - SERBIA
IN BIELSKO BIALA - POLAND, GOLD MEDAL AT THE EXHIBITION FOCUSED ON HEATING AND WATER FOR ENVIRONMENTAL PRODUCT.

We regularly take part in international conferences about safe drinking water.

EU AND PUBLISHED DIRECTIVES

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2009/125 / EC - to establish a framework for the determination of ecodesign requirements for energy-related products

2010/30 / EU of 19 May 2010 on the indication by labeling and standard product information of the consumption of energy and other resources by energy-related products

DIRECTIVE 2012/27 / EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2012 on energy efficiency, amending Directives 2009/125 / EC and 2010/30 / EU and repealing Directives 2004/8 / EC and 2006/32 / EC

WHAT ARE THE EFFECTS OF THE EU DIRECTIVES ON EFFICIENT DHW IN RESIDENTIAL BUILDINGS? THE SOLUTION IS AN INSTALLATION ELEMENT FROM

ENERGYWATER - MINERAL WATER DOCTOR - MWD

WHY INSTALL MWD FROM ENERGYWATER

SAVE MONEY USING ENERGYWATER'S MWD INSTALLATION ELEMENT:

More than 739 million people live in Europe - the average hot water consumption per citizen of Europe, quoted in EUR, is 50 EUR / year

We assume that about 40% of the population uses water that exceeds the hardness of 2mmol / l, or hard water. Drinking hard water is from the medical point of view appropriate and healthy, but hard water causes the water systems to clog and reduces the life of the facilities, which are connected to watersystem.

With installations of MWD in systems with hard water, the assumption of saving is more than 20% of the energy needed to heat the water. By statistics people in Europe consume € 36,950,000,000 to produce hot water.

IF ONLY 40% OF EUROPEANS SAVE 20% OF ENERGY, IT ALREADY REPRESENTS AN ANNUAL SAVING OF € 2,956,000,000, NEEDED TO PREPARE HOT WATER.

Each of us can protect the environment and the air of our planet.
Its sufficient to use simple procedures with minimal investment.

CERTIFICATES ISSUED FOR MWD FOR DRINKING WATER USE

SLOVENSKIA

EU

POLAND

UKRAJINE

RUSSIA

SERBIA

AQUATICA®

Build & Living