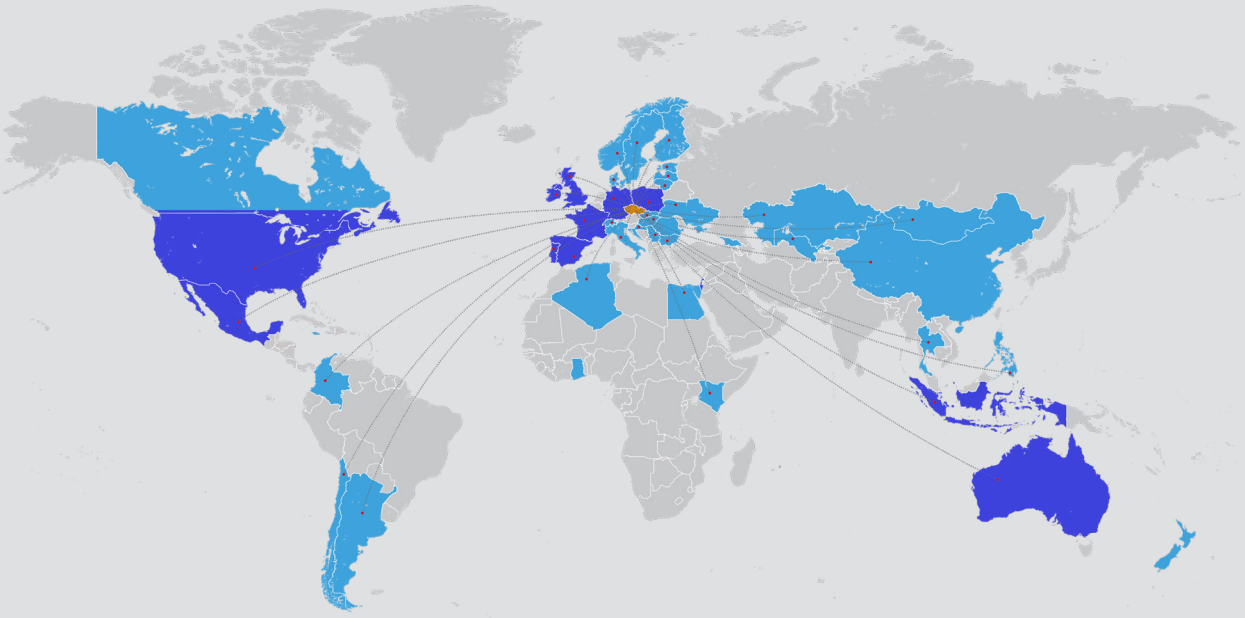
MP-EDW
Electroosmotic dewatering

MIVALT

We are a family-owned manufacturing company rooted in the Czech Republic, operating across Europe, the USA, Australia, and more than twenty other countries, with over 600 projects running worldwide. With our own manufacture, we ensure high-quality production, flexibility and innovation on our technologies.

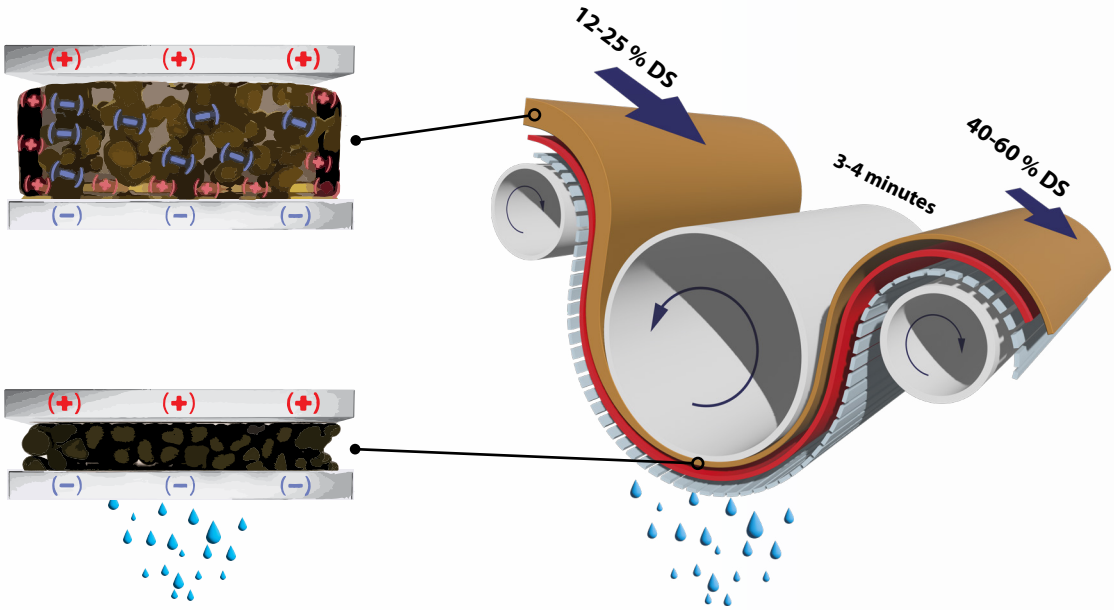
Our core expertise is in sludge dewatering solutions, covering dewatering screw presses, polymer preparation units, sludge cake transportation, and secondary dewatering systems. Therefore we are able to provide a complete sludge treatment solution. Our focus is on efficiency, sustainability, and reliability, helping industries turn wastewater into a manageable resource.



MP-EDW

The MP-EDW system enhances dry solid content after traditional mechanical dewatering methods (e.g., screw press, centrifuge, belt press). Acting as a secondary dewatering stage, it reduces sludge cake volume, cutting costs for transportation, disposal, or preparation for further processing (e.g., incineration, pyrolysis, composting).

Mechanically dewatered sludge (12-25% DS) enters the MP-EDW via a belt conveyor, which functions as the cathode, while the central drum acts as the anode. The sludge forms a layer between the drum and belt, and an electric voltage (<100 V RMS) creates a current between the electrodes. The device uses electrophoresis (solid separation by electric field) and electroosmosis (water movement via electrostatic force), drawing solids to the drum and water to the perforated belt.



This process also disrupts cells, releasing bound water— which any mechanical dewatering methods cannot achieve. Up to 99% of microorganisms, pathogens, and bacteria are destroyed, resulting in sludge hygienization, reduced biological activity, odor elimination, and broader reuse options (e.g., certain sludges as fish feed). Unlike mechanical dewatering, the MP-EDW applies no mechanical pressure; all moisture removal is driven by electric current through electrophoresis and electroosmosis.

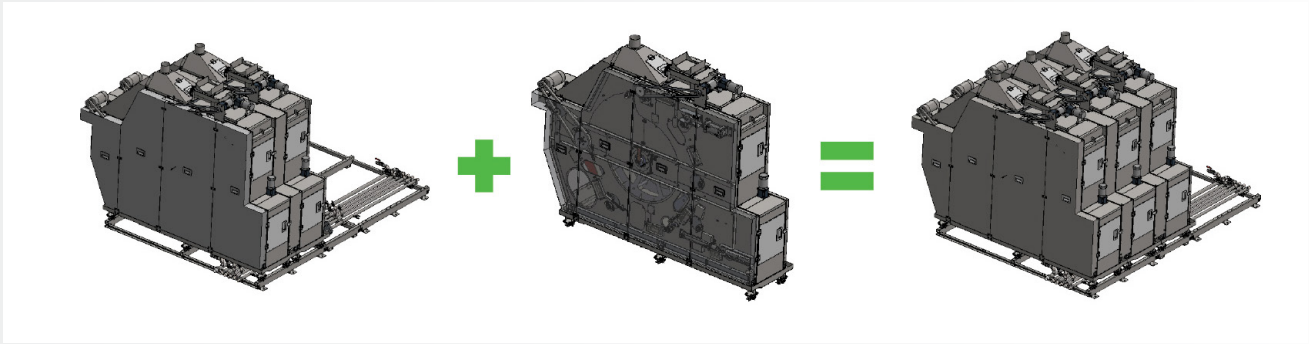
Inlet DS	12-25 %
Outlet DS	40-60 %
Electrical conductivity of sludge	1 000 - 13 000 µS/cm
Solids capture rate	95-97 %
El. Energy per 1 liter of removed water	0.45 kWh guaranteed, typical 0.25kWh
Cake temperature at outlet	40-60 C

v

Parameters

Model	Inlet sludge Capacity [m3/h]	Daily Capacity [m3/day]	Power [kW]	Number of modules	Dimensions [L x H x W mm]	Weight [kg]
MP-EDW-M01S	0.2	4	36	1	3000 x 2500 x 700	1 300
MP-EDW-M02S	0.4	8	70	2	3000 x 2500 x 1400	2 600
MP-EDW-M03S	0.6	12	100	3	3000 x 2500 x 2100	3 900
MP-EDW-M04S	0.8	16	135	4	3000 x 2500 x 2800	5 200
MP-EDW-M05S	1.0	20	165	5	3000 x 2500 x 3500	6 500
MP-EDW-M06S	1.2	24	200	6	3000 x 2500 x 4200	7 800
MP-EDW-M07S	1.4	28	230	7	3000 x 2500 x 4900	9 100
MP-EDW-M08S	1.6	32	265	8	3000 x 2500 x 5600	10 400
MP-EDW-M09S	1.8	36	295	9	3000 x 2500 x 6300	11 700
MP-EDW-M10S	2.0	40	325	10	3000 x 2500 x 7000	13 000

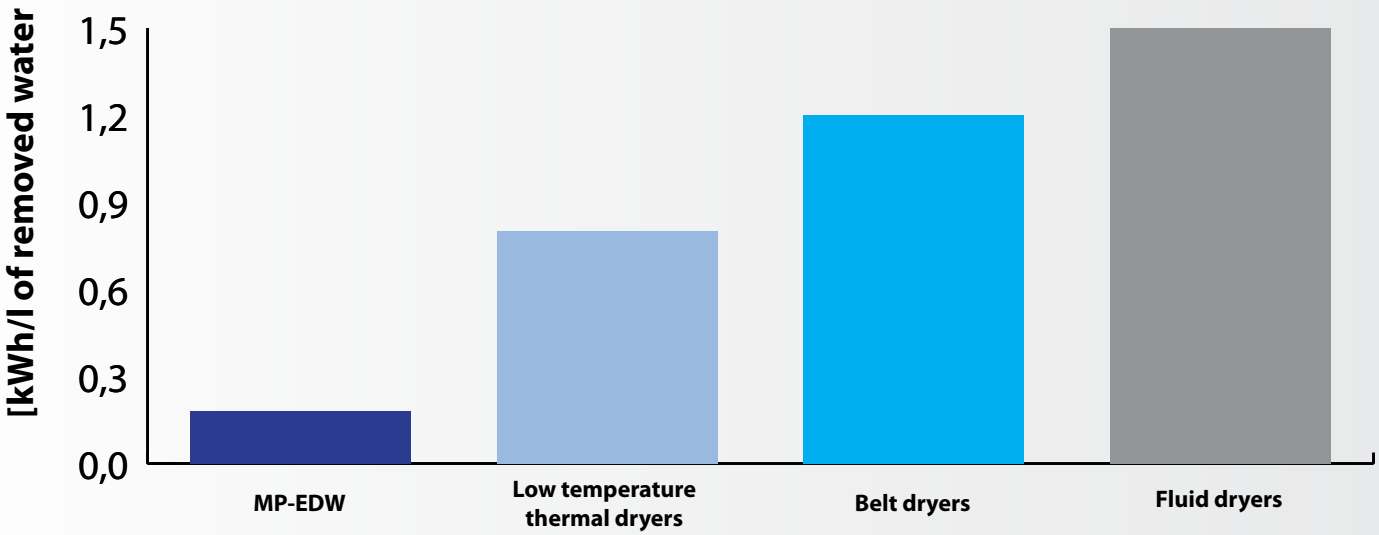
Modular design



MP-EDW vs. Thermal dryers

	MP-EDW	THERMAL DRYER
Operating principle	Elektroosmosis & electrophoresis	Water evaporation
Material processing time	3 minutes	Hours
Startup time	2 minutes	Hours
Cake volume reduction	Up to 60%	Up to 85%
Initial investment difference	25% X	X
Space requirements	9 m2 +	100 m2 +
Installation price	Low - Plug & Play	High
Maintenance	Minimal	High
Greenhouse gas production	Minimal	High
Increase in ambient temperature	None	Significant
Odor production	Minimal	High
Dust production	None	High

Energy consumption comparison



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MP-EDW-EL01S

Reference results

Type of sludge	**Municipal WWTP**
Mechanical dewatering machine	**Screw Press (MP-DW-201)**
Inlet sludge	**20.5% DS**
Outlet sludge	**55-60% DS**
Energy consumption	**0.18 kWH/l (of removed water)**

	Before MP-EDW	After MP-EDW
Escherichia coli [CFU/g]	**$7,5*10^4$**	**<50**
Enterococci [CFU/g]	**$8,9*10^4$**	**<50**
Salmonella [/50g]	**Positive**	**Negative**
Thermotolerant coliform bacteria [CFU/g]	**$1,2*10^5$**	**<50**

Outlet from MP-EDW

dry matter content after mechanical dewatering

Dewatered cake from MP-EDW

dry matter content after MP-EDW

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