

Budapest Waterworks

Tradition and Innovation



**BUDAPEST
WATERWORKS**



Gold Standard for
Utility Performance



Contents



Company overview



Our core activities

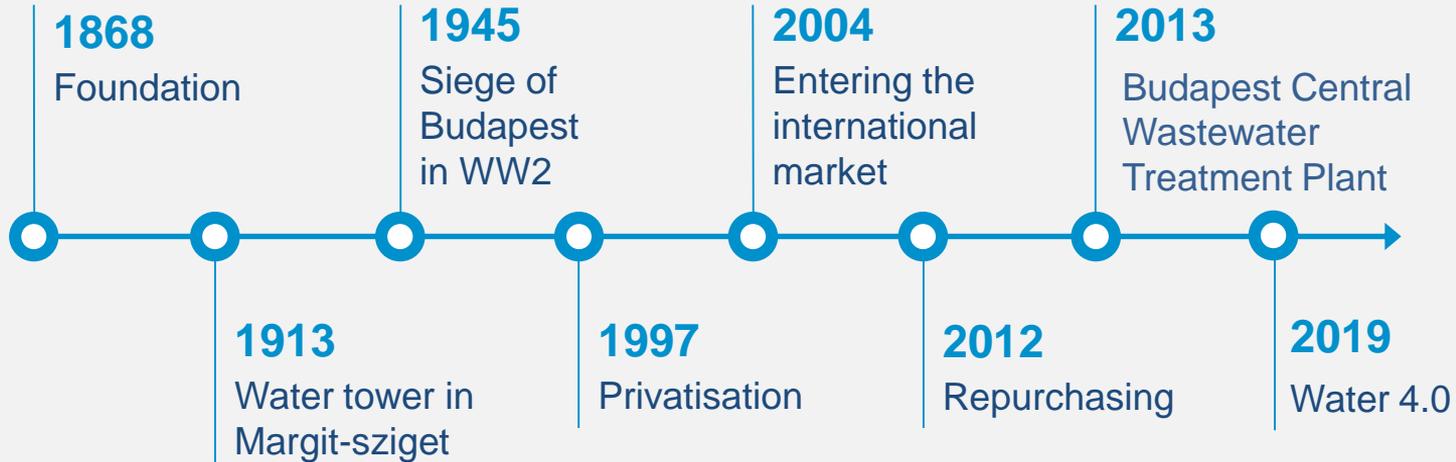


Professional water solutions

Company overview

History

150+ years
operational
experience



Key indicators of the Company

Drinking water

- **7 181 km** water network
- **1 million m³** daily capacity
- **756** wells
- **2** water treatment plants

Sewage

- **832 km sewer network**
- **86 million m³/year** treatment
- **373 000 m³** daily capacity
- **7** treatment plants

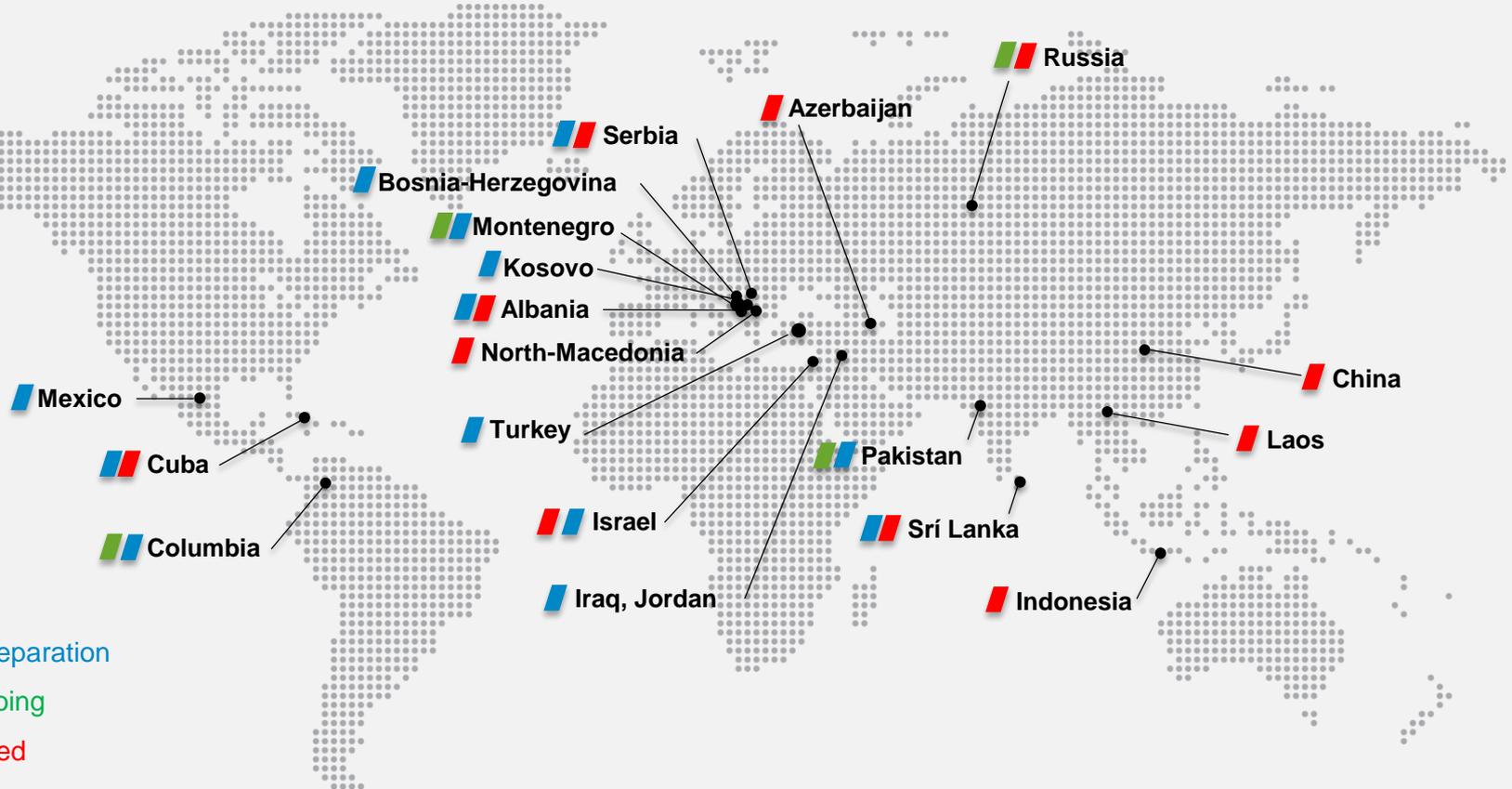
Clients & Headcount

- **2.4 million** user equivalent
- **1 500** employees

Income

- **USD 135 million** total revenue
- **USD 80 million** potable water
- **USD 27 million** wastewater
- **USD 28 million** export and other

International projects



Main international partners

ALBANIA

Tirana Water Utility Company (UKT)

AUSTRIA

Aqua Engineering

BELARUS

Minszkvodakanal

COLOMBIA

Aguas de Bogotá S.A. ESP
Novus Ingeniería S.A.S.

CUBA

National Water Resources Institute
Grupo Empresarial de Agua y Saneamiento

ECUADOR

Empas – Aqua De Quito
Conduto

HUNGARY

MOL
Grundfos South East Europe Ltd

INDIA

Tecton Engineering And Construction
WAPCOS Limited

INDONESIA

Regional Drinking Water Supply Company, Jakarta
Regional Waste Water Management Company, Jakarta
The Pt Jakarta Utilitas Propertindo (Jakpro), Jakarta

IRAQ

CPB Projects Development GmbH

ISRAEL

Booky Oren Global Water Technologies
Tel Aviv Mekorot Water Company Group Ltd

JORDAN

Taff Contracting Establishment Company

Kazakhstan

Astana Waterworks

LAOS

Vientiane Water Authority,
Department of Public Works and Transportation

MACEDONIA

Water and Land Solutions Doel
PE Water Supply and Sewerage Skopje

MEXICO

Tabasco – Dasur S.A. De C.V.,
The National Association of Water and Sanitation
Utilities of Mexico A. C.

RUSSIA

Water Eurasia

SRI LANKA

National Water Supply and Drainage Board
Access Engineering Plc
Arinma Holdings

SERBIA

Belgrade Waterworks and Sewerage
Subotica Waterworks

SINGAPORE

Public Utilities Board
(Singapore's National Water Agency)

TURKEY

Ankara Disaster and Emergency Management
Presidency
Ankara Water and Sewerage Administration
Istanbul Water and Sewerage Administration

VIETNAM

Hanoi – Hawaco

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World
Bank

European Bank for
Reconstruction and
Development (EBRD)

Global Water Operators'
Partnerships Alliance
(GWOPA)

The United Nations Human
Settlements Programme (UN
HABITAT)

Main international references



SRÍ LANKA

Complete reconstruction and capacity expansion of two water treatment plants supplying the capital of Colombo



INDONESIA

Construction of 36 medium water treatment plants on 4 islands



SERBIA

- Subotica Waterworks – capacity building (UN Habitat, GWOPA)
- Belgrade Waterworks – FOPIP and renovation of horizontal wells



AZERBAIJAN

- Introduction of an electronic job management system,
- quality assurance of the implementation of a computer technology project (MISZ),
- preparation of a 10 year-long IT strategy

WEST BALKANS REGION

Professional Technical Assistance Services for Business Planning and Commercial Efficiency Improvement project, Danube Water Programme (IAWD – World Bank)



ALBANIA

- Tirana Waterworks – technical audit and medium term technical development program
- Vlora Waterworks – technical audit



RUSSIA

- Nizhny Novgorod – complete technical, economic and business audit,
- Revda – WTP Construction
- Verhnyie Szergi – WWTP Construction



CHINA

Shanghai, Fengxian Waterworks – technical audit



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signed
international
contracts

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memoranda of
understanding for
cooperation

Our core activities

Drinking water facility operations

daily **1,000,000 m³**
nominal production capacity

7,181 km water network

32 well groups

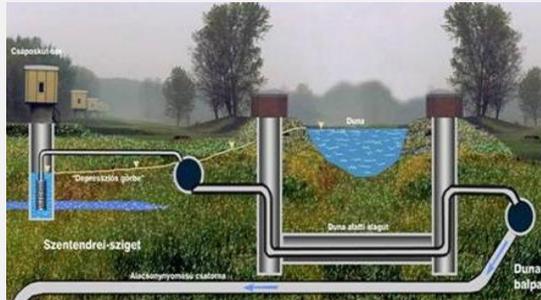
more than **756 wells**

2 water treatment plants

112 pumping stations

78 reservoirs
(71 distribution, 7 technological)

331,000 m³ storage capacity



Waste water facility operations

operation of **10 settlements'**
+ one industrial networks

832 km waste water network

6+1 waste water treatment plants

Budapest Central Waste Water Plant is the biggest waste water plant in Central Europe (2010, EUR 249 million)

capacity of **2,4 million** user equivalent

373,000 m³
daily capacity

900,000 m³/day
maximum capacity

86 million m³/year
treated waste water

Treatment of the waste water of Budapest

before BCWWTP: 50%
since BCWWTP: 95%



Professional water solutions

Key competencies

Design & Construction

- Water facilities
- Sewage facilities
- Mobile water purification systems
- Operation & Maintenance

Services

Business Consulting

- Technical and economic audit, benchmark
- Reducing physical and commercial water loss
- Efficiency improvement
- Corporate restructuring
- Development of water tariff policy
- Development of efficient customer service systems
- Project management
- Development of corporate strategies
- Optimizing organizational structure
- Call Centre and telemarketing services

Engineering

- Pressure management, DMAs
- Water metering strategy and water balance
- SCADA
- Workforce management
- Reconstruction planning
- GIS
- Water quality control
- Energy efficient improvement

Construction and reconstruction of water facilities



Hungary

Modernisation, extension of drinking and waste water treatment plants owned, operated by us (UV, ozonisation)

Sri Lanka

Rehabilitation, extension and construction of new sludge technology for Kalatuwawa and Labugama water treatment plants



Indonesia

Construction of 36 mid-sized water treatment plants (in the islands of Java, Sumatra, Celebes and Flores)

Non-revenue water, water loss reduction

**Strategic
goal:
14% NRW**

Basic condition
for efficient financial
management



Reasons:

- Technological loss
 - Operational water use
 - Illegally consumed water
 - Commercial loss
-

Solution:

- Water loss analysis
- Failure and leakage search
- Instrumental metering, advanced metering cars
- Pressure management
- Digitalised network maps
- Reduction of commercial loss

Integrated company operations
control and decision support system

Operation of wells, pumping stations
and monitoring the water supply system

Dedicated internal SCADA team

Coordination and control of energy
consumption

System operation, database maintenance



Workforce management

Aim

Efficiency improvement in network jobs and workforce management



Fields of Use

Preventive maintenance, repair and troubleshooting

- Improving the standard of centralized call centre
- Resource management optimization of troubleshooting
- Supporting itemized corporate cost settlement
- Reducing network operations costs

Characteristics

- **Modular setup**
- **Tailor-made to utility demands**
- **Integrated modules in the company's IT architecture**
 - + Corporate management systems (SAP),
 - + Geographic information systems (GIS),
 - + Vehicle tracking systems,
 - + Operation control systems (SCADA)

Pressure management

No. of pressure zones: 96

Reduction of the quantity of
water lost in hidden leakages

Reduction of number and size
of pipe bursts

Reduction of energy used by
distribution pump stations



Reconstruction planning

Condition lead (knowledge based) reconstruction planning

Condition assessment → risk analysis → prioritising

Condition assessment

Results in the geographic information system (GIS):

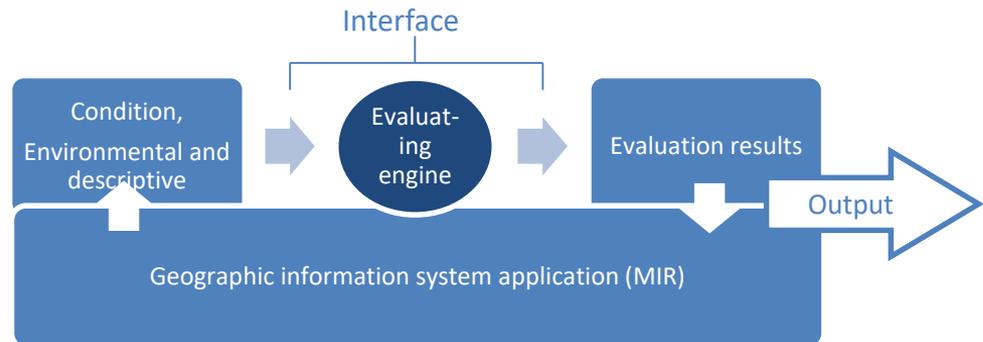
- Examination of pipe materials (destructive, non-destructive)
- Mapping areas threatened by soil electricity
- Making digital soil and ground water map
- Collecting information about the built environment and the traffic

Risk analysis

- Rules reflecting the experience
- Fuzzy logics

Prioritising

- Based on return and risks



Technical-economic audit, consultancy

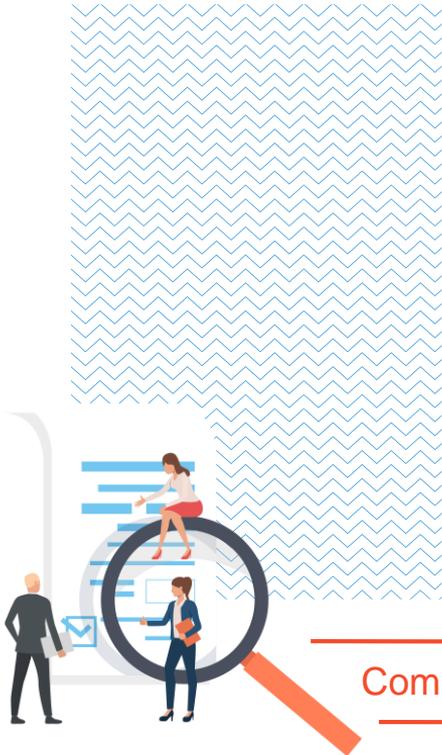
Economic audit

- Customer services activities
- Metering of non-revenue water
- Workforce management
- Setting up cost centres
- Water consumption forecast – water pricing
- Organisational structure rationalisation
- Water quality laboratories

Technical audit

- Water supply system structure
- Condition assessment of water treatment plants and pumping stations
- Hydraulic network calculations
- Setting up a GIS
- Introduction of process control (SCADA)
- Wastewater drainage challenges
- Energy audit

Complex audit of utility company management for efficiency improvement

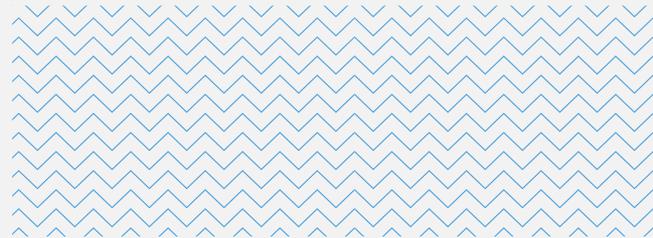


Diameter decreasing

- + No need for opening the pavement
- + No need for long work trenches

Applied technologies

- Pipe relining
- Pipe bursting
- Internal socket repairs in pipes of passable diameter
- Pipe rehabilitation, pipe lining technologies

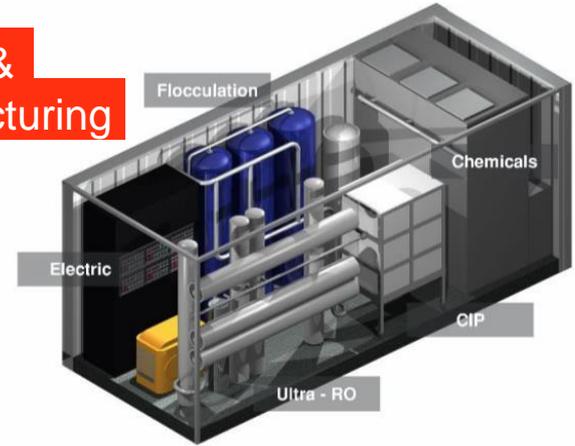


Mobile water purification and packaging systems

Temporary and permanent potable water supply for smaller settlements, districts and industrial facilities

Solution for extraordinary situations (network failures, water shortages etc.) and catastrophes

Design & manufacturing



Potable water from surface freshwater or seawater



From living water of any contamination level



Longer storage period by adding silver ions



Wide range of purification and filtration abilities

Alternative energy use

Solar power

3600 kVA



- 23 operating solar parks, 3 of these are small power plants
- Operational hot water production (BCWWTP, 40 kW)

Biogas

BCWWTP



- 3 biogas engines (1.4 MW each)
- Covering 87% of operational energy use

Heat exchangers

BCWWTP, Budakeszi



- The heat source in the treated waste water

Dwarf power plant

BCWWTP



- Utilising the effluent treated waste water (75 kW)

Thank You for Your Attention

Q & A

Keszler Ferenc
CEO

