SMARTCHLOR PROJECT
THE NEW TECHNOLOGY FOR DRINKING WATER

ISRAEL HUNGARY JOINT R&D PROGRAM

JULY 2017

NATIONAL RESEARCH, DEVELOPMENT AND INNOVATION OFFICE
HUNGARY

PROJECT FINANCED FROM THE NRDI FUND
MOMENTUM OF INNOVATION

Program 17/07/2017

Program Monday 17 July, 2017		location	responsible/participant
	Breakfast at the hotel	Danubius Helia Hotel	Udi Zukerman, Yossi Yaacobi, Omer Livni
10:15-10:30	Walk to Budapest Waterworks	1134 Budapest, Váci Street 23-27.	Till Gábor, Udi Zukerman, Yossi Yaacobi, Omer Livni
10:30-12:30	Kickoff meeting	Budapest Waterwoks Headquarter (1134 Budapest, Váci Street 23-27.,conference room "Balaton")	Mekorot, CQM, Inno-Water (Szabó Anita, Sándor Dániel), NUPS (Goda Zoltán, Salamon Endre), Budapest Waterworks
12:30-13:30	Lunch	Budapest Waterworks	Mekorot, CQM, Inno-Water (Szabó Anita, Sándor Dániel), NUPS (Goda Zoltán, Salamon Endre), Budapest Waterworks
alternative: 13:00-17:00	Inno Team Meeting	Budapest Waterworks, conference room 907	Yossi Yaacobi, Paksi Piroska, Dienes Adrienn, Till Gábor, Szabó Lujza
13:30-17:00	Kickoff meeting continues	Budapest Waterwoks Headquarter (1134 Budapest, Váci Street 23-27.,conference room "Balaton")	Mekorot, CQM, Inno-Water (Szabó Anita), NUPS (Goda Zoltán, Salamon Endre), Budapest Waterworks
18:50-21:15	Organised program (waterpolo) with dinner for the guests	Hajós Alfréd Complex, Margaret Island	Yossi Yaacobi, Udi Zukerman, Omer Livni, Till Gábor

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Program 18/07/2017

Program Tuesday 18 July, 2017		location	responsible/participant
10:00	Meeting at the hotel, ride to the site	Danubius Helia Hotel	Udi Zukerman, Omer Livni, Tóth Zsolt
10:30- 12:30	Site visit	Engine House No. 1. (1044 Budapest, 76502 hrsz)	Mekorot, CQM, Inno-Water (Szabó Anita, Sándor Dániel, Kovács Lilla), NUPS (Goda Zoltán), Budapest Waterworks
12:30-14:00	Lunch	Megyeri Csárda (1044 Váci út 106.)	Mekorot, CQM, Inno-Water (Szabó Anita, Sándor Dániel, Kovács Lilla), NUPS (Goda Zoltán), Budapest Waterworks
14:00-16:00	Site visit continues	Engine House No. 1. (1044 Budapest, 76502 hrsz)	Mekorot, CQM, Inno-Water (Szabó Anita, Sándor Dániel, Kovács Lilla), NUPS (Goda Zoltán), Budapest Waterworks
16:00	Ride back to the hotel in Budapest	Danubius Helia Hotel	
16:30	Free program		

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Program 19/07/2017

Program Wednesday 19 July, 2017		location	responsible/participant
	Breakfast at the hotel	Danubius Helia Hotel	Udi Zukerman, Omer Livni
8:45-9:00	Walk to Budapest Waterworks	Budapest Waterwoks Headquarter (1134 Budapest, Váci Street 23-27.,conference room "Balaton")	Udi Zukerman, Omer Livni,Till Gábor
9:00-10:30	Summary, closing	Budapest Waterwoks Headquarter (1134 Budapest, Váci Street 23-27.,conference room "Balaton")	Mekorot, CQM, Inno-Water, NUPS, Budapest Waterworks
10:30-13:00	Visiting Budafok Water Tower	1112 Budapest, Kamaraerdei köz	Mekorot, CQM, Budapest Waterworks
13:00-14:00	Lunch	(TBC)	Mekorot, CQM, Budapest Waterworks
14:00-14:30	Ride back to the hotel	Danubius Helia Hotel	Till Gábor
14:30	Free program		

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Program 17/07/2017

10:30-12:30	Kickoff meeting
12:30-13:30	Lunch

- **Suggested program for today (everything informal!)**
  - Brief introduction of participants
  - Tasks of the participants in the project
  - Connections between Israeli and Hungarian project parts
  - Introduction of the technology
  - Discussion

- AIM: to define exact tasks of each partner based on the proposals

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INTRODUCTION OF INNO-WATER INC. AND THE MAIN PROJECT TASKS DR. ANITA SZABÓ CEO

KICKOFF MEETING – SMARTCHLOR - DEVELOPMENT OF INTELLIGENT CHLORINATION SYSTEM FOR IMPROVING WATER SAFETY AND DECREASING OPERATION COST

17/07/2017

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INNO-WATER Inc. - Introduction

- The Inno-Water Environmental Research and Services Inc. (Inno-Water Inc.) was established by a few scientists and experts of the Budapest University of Technology and Economics in 2010.

- The mission of our consultant company is to **provide creative, innovative and cost-efficient solutions of environmental and water technology problems** and thus to provide effective and professional engineering services for the Clients at the utmost quality level.

- Main activity of Inno-Water Inc. is **engineering consultancy** and **technical research and development** in the fields of **environmental protection and water management.**

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INNO-WATER Inc. - Services

The Company provides engineering services, consultancy and R&D activity in the following topics (I):

- Development and testing of innovative environmental technologies;
- Environmental management,
- Environmental audits;
- Assessment of environmental damages; remediation;
- Design and operation of environmental (particulary water quality) monitoring systems;
- Evaluation of environmental status based on EU WFD;
- Environmental and water management issues of nuclear energy production;
- Micropollutants;
- Risk assessment, including biohazards and microbiological risks;

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INNO-WATER Inc. - Services

The Company provides engineering services, consultancy and R&D activity in the following topics (II):

- Decision support systems for solving water quality and water management problems;
- Technological investigations and intensification on various scale (water and wastewater treatment);
- Design and hydraulic investigation of water utility networks
- Modeling and measurements of biodegradation and toxicity profiles;
- Protection of natural resources;
- Testing and optimization of MBR systems;
- In-situ and laboratory measurements on all environmental fields related to water (groundwater, surface water, wastewater, drinking water, etc.).

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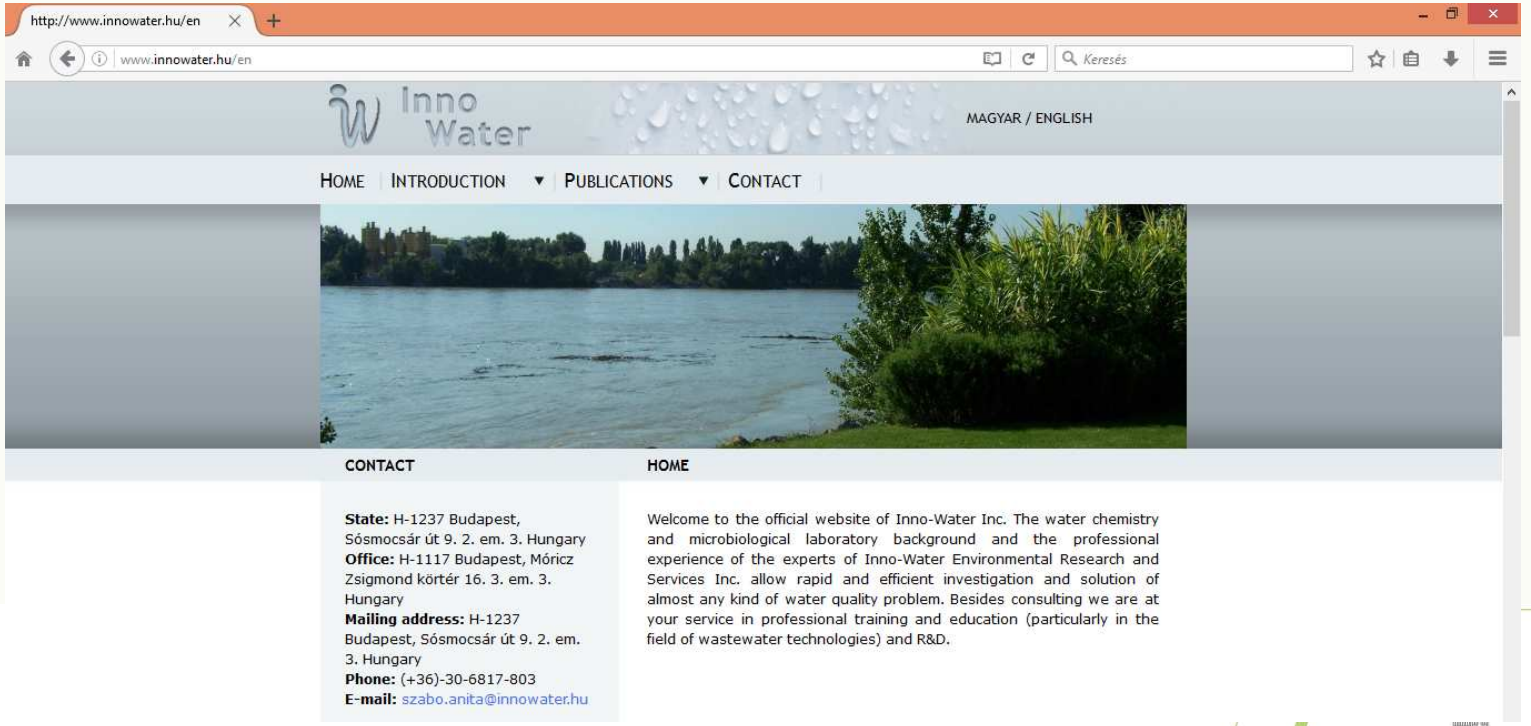
INNO-WATER Inc. – More info



www.innowater.hu/en

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Aims of the Project (I.)

- To develop a smart electrochlorination system by optimizing the required chlorine dosages
- Decreased and optimized chlorine dosage system that will improve the organoleptic properties of the drinking water while maintaining the low risk water quality
- The proposed electrochlorination system is able to adopt to the diurnal and seasonal changes of water flows and water quality distributed in the water network
- System is based on the detailed hydraulic model of the distribution system with an integrated water quality module

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Aims of the Project (II.)

- Adapt the new, patent pending electrochlorination unit that will be integrated into an intelligent water treatment and water distribution technology environment.
- Create a demonstration unit in the living (operational) system of the Budapest WaterWorks.
- Develop further the existent hydraulic model of the Budapest by integrating a water quality model module into it that will serve a predictor for the required chlorine dosage based on the water age, flow rates, water quality, type and age of pipelines within the distribution network.
- Mitigate the problem of the secondary water quality deterioration.
- Develop a methodology for novel process control.

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Advantages of the proposed system

- The savings on chlorination costs by dosing only the required amount of disinfectant at the points where needed.
- Stable free chlorine concentrations within the whole system due to strictly regulated chlorine production (regulated by water flow and quality)
- Increased water safety and security (stable operation under emergencies, such as sabotage, or natural catastrophes).
- Improved labor and health safety (no need to store and manage large volumes of chlorine gas)
- Decrease of corrosion problems in pipelines.
- Adaptability to water quality changes (plus diurnal, seasonal changes of raw water quality).

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Planned studies and experiments

- The adaptation of the hydraulic model system of the distribution network for the determination of the exact residence times of the water at different points of the network (water ages).
- Determination and prediction of the residual free chlorine concentrations on the operating distribution network.
- Laboratory and pilot scale experiments for the determination of the boundary conditions of the operation of the electrochlorination units.

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INNO-WATER Inc. – Project role

- Professional tasks
  - Examine the behavior of free chlorine
  - Carry out experiments in the drinking water distribution system in order to determine the algorithm of free chlorine utilization in the network
  - Develop an automatic control system for the electro chlorination system - together with Budapest Waterworks

- Project management and coordination
  - Information transfer inside the consortium (e-mails, meetings, etc.)
  - Contact with the national support agency and the EUREKA office
  - Organization of kick off meeting, site visit, knowledge transfer, etc.
  - Organization of preparation of project reports (input is needed from each participants – reporting in Hungarian and in English)

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CQM – Project role

- Fully design of the applied technology and manufacturing of the system.
- Test of the prototype system in CQM premises prior to manufacturing the alfa system.
- Do the necessary modifications required due to tests results.
- Supply the tested and modified system to the site and than supervise the installation and the on-site tests.

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National Univ. of Public Service – Project role

- Conduct laboratory scale experiments with different raw water compositions to examine the effect of pollutant substances and natural components on the change of free chlorine concentration.
- Examine the effect of drinking water treatment technologies on the necessary amount of added chlorine.
- Cost-benefit analysis of the proposed technology.

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