



HEAT4COOL

**OPERATION & MAINTENANCE
WORKSHOP – Demo 4 Budapest**

Operation and maintenance of
prototype equipment and wastewater
heat recovery system

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Heat4Cool is co-funded by the European Community Horizon 2020 Program for European Research and Technological Development (2014-2020) and has received research funding from the European Union


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Basic project data



- Expansion of units of Újpest enginehouse – in H2020 program project (HEAT4COOL)
<http://www.heat4cool.eu/>
- R&D → installing new heat exchanger and fine screen prototypes
 - 4 pc HEX blocks (2xA2,2xB2), 1 pc fine screen with built-in washer
- R&D → installation of new heat exchanger cleaning methods
 - *Construction period: March-May 2019*
- 1 year experimental operation and supervision, evaluation of system operation
 - *Operation period: May 2019 – May (-October) 2020*



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Division of O&M tasks

- Skilled Operator and Maintenance:
 1. Tasks to be performed during the test run after the execution
 2. Tasks to be performed during the period of experimental operation after the test run – comprehensive system operation and efficiency monitoring
 3. Operation and maintenance of equipment
- 4. Operational tasks of the end-user



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1. Tasks during the test run

- The test period lasts for 1 month
- Intended for checking the functionality of the system
- Adjusting the individual equipment
 - Firstly manual adjusting
 - Automatic adjustment
- Performing control measurements in order to ensure their accuracy
- Regular management of the test run log-book



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2. Tasks during experimental operation

- Continuous tracking of the system's operation
- Regular management of experimental operation log-book
- Regular evaluation and analysis of the measured data
- Determining the schedule and method of cleaning - for future operation
 - What kind of cleaning is needed
 - The frequency of the cleaning
 - Phases and parameters of cleaning (eg. rinse time, efficiency check, measuring the temperature and pressure losses, etc.)
- Scheduling on-site inspections



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3. O&M of equipment



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3. O&M of equipment


(A) WASTEWATER FINE SCREEN WITH BUILT-IN WASHER

- Regular assessment of the condition of the high-pressure washer par
- Cheking the quality and efficiency of washing
- Scheduling any other necessary cleaning of the filter
- Comparing and analysing the new and the existing screening unit's operation
 - Analysing the efficiency of the innovation (built-in high-pressure washer)


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3. O&M of equipment



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3. O&M of equipment




(B) HEAT EXCHANGERS


- Analysis of measurement data
 - Necessary modification of the operation instructions and the handbook
- Clarifying and finalizing maintenance processes – developing them together with the manufacturers
- Comparison of the two new types of heat exchangers
 - Comparing them with the existing ones as well

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3. O&M of equipment






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3. O&M of equipment




(B) HEAT EXCHANGERS

- Visual inspection of the extent of the clogging during an on-site supervision, by removing the flange
- Examining the different types of cleaning methods
 - Cleaning with reversed flow direction – counter-current cleaning
 - Cleaning with high pressure equipment (water jet)
- Performing overall analysis based on operational experiences and measured data

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3. O&M of equipment




(B) COMPARISON OF HEAT EXCHANGERS

- Comparing the two new types of heat exchangers with each other and with the existing ones
 - Examination of structural differences
 - Testing the performance of each heat exchanger
 - Analysis of the frequency and extent of clogging
 - Economic examination of each type

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4. Operation tasks of the end-user



- Proper alignment of the consumer side's system with the sewage heat system in order to achieve effective operation
- System administration authorisation (passive)
 - Heat generation, efficiency and CO2 saving information – only reading rights
- Reporting perceptions, requesting the operational change of the system from the operator
 - Cooling → heating, heating → cooling
- Commenting on the annual report (operations, malfunctions, status survey)

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Questions?

Thank you for your attention!

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