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**Installation Training Workshop – Demo 4 Budapest**

Subcontracting tasks that arise during project implementation

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**Basic project data**

- Expansion of units of Újpest enginehouse – in H2020 program project (HEAT4COOL)
  

- 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*
Division of execution tasks

- 1. Removal and restoration of the ceiling of the underground concrete structure – Construction works
- 2. Sewage pit's mechanical works
- 3. Heat exchanger assembly engineering works
- 4. Electrical and automation works

To be considered: several subcontractors work at the same time on the construction site!

1. Construction works

Defining the task

- Preparation of traffic engineering works
- After proper disposal of the stratum structure, removal of the mobile ceiling
- Professional lifting of the ceiling pieces as well as professional lowering (craning) and placement of the equipment
- Restoring the entire workspace back to their initial conditions after the work in the pit is concluded
To be highly respected during construction (1)

- Pulling up fences around the work site, placing instructional signs, considering the heavy car traffic in the parking lot
- Proper disposal of the stratum structure – special attention to maintaining the integrity of the waterproofing
- Placing the substance extracted at a sufficient distance
- After picking up the pavement in the parking lot (yellow bricks), it has to be removed from the site for conservational reasons

To be highly respected during construction (2)

- Strict adherence to crane rules
- Positioning the concrete panels at a suitable distance from the opened pit
- Reconstructing the original layer structure after the concrete panels have been restored, with particular attention to the insulation, ensuring the stability of the soil under the ceramic cover
2. Sewage pit’s mechanical works

Defining the task

- Demolition work to be carried out in the sewage pit
- Carrying out structural modifications for the equipment to-be-installed
- Installation of the new fine screen equipment and ww pump
- Piping the individual equipment, installation of fittings and connecting them to the existing system
2. Sewage pit’s mechanical works

Definition of the technical content

- Connecting the sewage cleaning profile to the incoming wastewater pipe
- Installation of the fine screen equipment
- Installation of the new pump next to the existing one
- Installation of the fittings
- After the installation, performing successful rotation tests for both the pump and the fine screen

Guidelines to be followed during implementation

- Complete cleaning of the sewage pit prior to starting the works
- Providing the appropriate ventilation during works
- Creating temporary closing on the incoming wastewater line
- Quality assurance of welded joints
- Accurately following the execution designs
Defining the task

• Craning the separate pieces of the new heat exchanger blocks down into the underground structure (after the removal of the ceiling)
• Placement of the heat exchanger blocks according to the execution designs
• Fitting and connecting the new heat exchangers to the existing system
3. Heat exchanger engineering works

Definition of the technical content

- Draining the existing system
- Demolition of the technological water pipeline presently running at the space of the new heat exchangers to be installed
- Recovering the technological water pipeline after positioning the new heat exchangers (as per execution designs)
- Installing new butterfly valves at the connection points (one each)
- Connecting the new heat exchangers to the existing system
- Installation of needed fittings, setting of measuring points
3. Heat exchanger engineering works

Guidelines to be followed during implementation

- Adequate compliance to the execution designs
- Proper installation of the necessary insulation on the technological water pipeline
- Precise and professional execution of welds and joints
- Joining the sewage water side of the heat exchangers can only be performed if the sewage pit is empty, thus it should be done parallel with the works inside the pit
- Setting the measuring points according to the designs
- Performing documented pressure tests after the installation work

4. Electrical and automation works

Defining the task

- Supplying electricity to the two new equipment to be installed inside the sewage pit
- Installing the proper sensors and their cables for the monitoring to conduct measurements
- Installation of transmitter measurement instruments (installation of 6-6 pressure and temperature meters)
- Installing a new mechanical control cabinet, connecting it with the existing ones
4. Electrical and automation works

Definition of the technical content

• Running the cables at the top of the existing cable trays
• Connecting the earthing points of the electric distributors, electric consumers and transmitters to the equipotential grid
• Installation of the new PLC unit in order to be capable of operating the whole system including the new technology as well
• Expanding the existing SCADA software to display the new technology too, as per the technical description
• Development of the pneumatic system for two closing valves with suitable fittings and compressor
4. Electrical and automation works

Guidelines to be followed during implementation

• Ensuring the proper connection to the existing system - timed to avoid any interference with its functioning
• The set-up and trials of the system can only be done under continuous on-site supervision
• Performing shock protection and cable insulation resistance measurements, compilation of their proper documentation
• Performing a complete operating test after the installations
• Creating the implementation plans and assembling the handover documentation

Thank you for your attention!

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