

# Italian Design for Digital Waste Incineration

A Waste Incineration Plant Harnesses the Benefits of Digital Technology with FieldConnex®



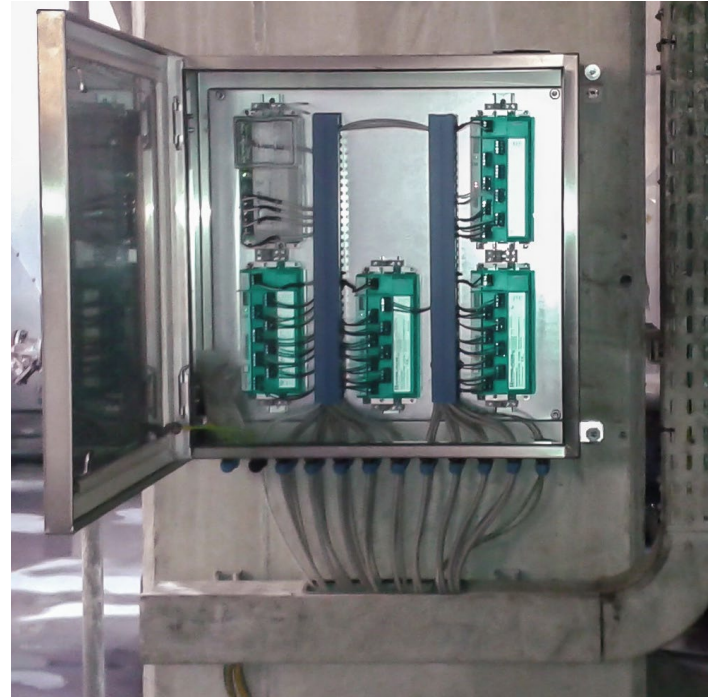
## The Application

A waste incineration plant in Trieste, Italy, is processing private and commercial waste as a means of recovering energy. The first step in the process is the transfer of the waste from the waste pit to the combustion chamber. The combustion process creates slag, which is collected in a slag pit. Flue gases are fed into a steam boiler where they generate electricity via a turbine. The remaining flue gases are filtered intensively and finally released into the atmosphere as clean air.

To operate the plant safely and efficiently, temperatures and pressures must be measured and valve statuses inspected continuously for each process step. A range of analysis equipment, motor starters, and frequency converters is also required to operate the plant. There are no explosion-hazardous areas in this incineration plant.



Simple connection of instruments via FieldBarrier in close proximity



New installation with the FieldConnex Temperature Multi-Input

### The Goal

The modernization carried out in 2010 involved replacing the steam generator, the combustion grate, and the measuring and control technology. Replacing the steam generator and combustion grate will increase the throughput and therefore significantly improve the plant's productivity. In addition, replacing the measuring and control technology ensures greater plant availability as well as greater efficiency and safety in daily operations.

### The Solution

As part of the modernization all 4...20 mA signals were to be replaced with digital communication. Because of the wide range of devices and potential applications, the owner decided for PROFIBUS. Analysis equipment, motor starters, and frequency converters were therefore connected via PROFIBUS DP. PROFIBUS PA was chosen for temperature, pressure, and flow measurements, as well as for valves.

When the products were selected, FieldConnex from Pepperl+Fuchs with Segment Coupler 3 and FieldBarrier was chosen. The FieldBarrier, which was originally conceived for explosion-hazardous areas and provides galvanic isolation between the device connection and the fieldbus main cable. This significantly increases the installation's tolerance for ground faults at the device connections, as they do not affect the trunk.

When new technology is used, there is initially an increased demand for information and training. The decision was therefore made that the responsible technicians in Trieste would carry out the installation and configuration independently. The experts from Pepperl+Fuchs were available to provide advice during this phase.

### The Benefits

The installation with PROFIBUS went faster than expected, as digital technology involves significantly less cabling, and fewer control cabinets were required. In addition, the automatic inspection of the installation with the FieldConnex advanced diagnostic module accelerated the commissioning of the plant. This significantly reduced the standstill phase. Future extensions will be equally straightforward, as additional measuring points simply require an available connection at a FieldBarrier.

Thanks to FDT/DTM technology and the PACTware™ software platform, the maintenance team can access comprehensive information for remote diagnosis. This meets all the requirements for predictive maintenance and minimizes time-consuming interventions in the field. Parameterization of the devices can even be carried out conveniently from the control room. Overall, this has reduced maintenance costs and increased plant availability.

From the owner's perspective, using PROFIBUS not only means the waste combustion plant is equipped with the latest technology and is ready for the future, but allows it to be operated much more efficiently as well.

### At a Glance

- Low wiring costs
- Rapid installation
- Comprehensive remote diagnosis data
- Predictive maintenance
- Flexible extension options
- More efficient operation