Fire Resistance Test Furnace

BESPOKE FURNACE MANUFACTURERS

MADE IN BRITAIN

HEMPEL

Hempel - Barcelona

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Hempel paints is one of the world leaders in intumescent passive fire protection coatings. In 2015, Northern Combustion Systems designed, manufactured and installed a new fire test furnace and control system, and upgraded their current furnaces in their coatings R&D centre in Poliyna, Barcelona, Spain.

Fast forward two years and NCS was contracted again by Hempel to design, manufacture and install four new indicative fire test furnaces for their purpose built, state of the art R&D Centre of Excellence in Santa Perpètua, Barcelona.

Four free standing indicative fire test furnaces were UK manufactured and tested before being delivered by the Northern Combustion Systems team. The 2m wide x 1.5m high x 2 m deep furnace consist of 8 low velocity nozzle mix natural gas burners with a total connected rating at 2240kW. The burners are positioned in a calculated pattern on the side walls to carry out various hydrocarbon and cellulose tests, including roof, wall and column tests where specimens are placed in various configurations. The burners are individually controlled permitting several burners to be selected or omitted for the various fire test. Each furnace has a heating rate from ambient to 1000°C in 10 minutes with a maximum operating temperature set at 1350°C. The system is designed to meet with current European safety standards EN746-2 2010, and fire testing standards EN1363-1, 1363-2

Sets of furnace roof and front panels supplied where designed to be interchangeable including with the furnaces in Poliyna.

The furnace incorporates air cooled observation ports in the rear of the wall and including ports in the front removable panels for subjective viewing of the firing cycle within the furnace.

Access platforms were provided to serve the four indicative furnaces.

Change over dampers were installed to the flue ductwork to feed an extraction system included two grade 316 lined 13m high chimneys including exhaust gas fans. This system to be on standby in case of failure of third-party installed filtration scrubbers.

Each furnace and associated extraction system have their own control panel with Siemens S7 PLC and HMI for local control and visualisation of status's. All the control panels are networked and communicating with each other via Profinet protocol, and remotely control via a Siemens SCADA system in a local control room.

The equipment is automatically controlled from the control room via the SCADA, and runs standard temperature-time curves, specifically EN1363-2 hydrocarbon and cellulose, with the ability to input custom curves. Pressure transmitters measure the furnace pressure and operate flue dampers to maintain a constant pressure as specified by the standards.

Each furnace had provision for up to 8 selectable control thermocouples to maintain the given setpoint, and provision for up to 64 load thermocouples for measuring the reaction of the specimen along with their coatings to the heat.

All data from the furnaces and extraction system is sent back to the SCADA system for real time viewing and data logging. Data is then securely saved for full comprehensive reporting in both numerical and graph formats.

Please click on the following link to view Hempel Paints opening ceremony of their new state of the art Center of Excellence. Click Here!