

Application**brief**

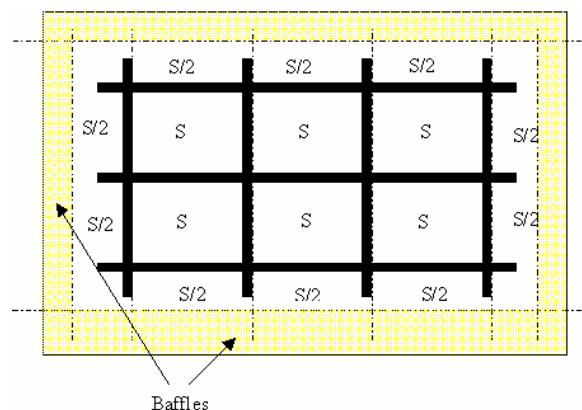
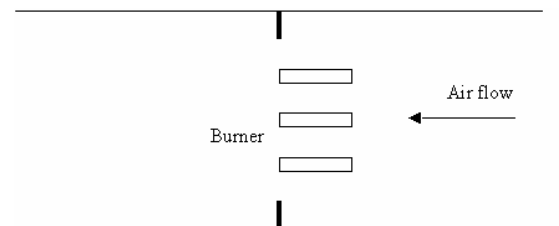
Eclipse Product: AH Burners

Submitted by: Thorsten Muller-Wimmers, Eclipse Combustion GmbH, Germany

Application: Plasterboard Dryer, Definition of technical specification

Description: This report details the project requirements for “in duct” industrial gas burners (Eclipse AH Air Heat burners) to be installed on a longitudinal gypsum plasterboard dryer. These dryers typically are divided in 3-4 zones with a burner capacity usually between 4 and 12 MW each. Together with the end customer – BPB Gypsum – Eclipse developed a technical specification to fit the following primary process requirements:

- Fired on Natural Gas, Propane, LPG or LNG
- Located inside the upper duct of the plasterboard dryer and within a recirculating process air flow.
- Situated in an area of negative pressure within the recirculation flow circuit with high humidity
- Preheated combustion air is generated from a waste heat recovery system and can vary from ambient temperature to approximately 100 °C.
- All equipment to meet EN 746-2 1997.
- Safety requirements for combustion and fuel handling systems according to EN 676 and local country specific requirements.
- The burner rail size is calculated with a burner output of 116 kW/element.
- Maximum firing rate 15% higher than the published values (additional margin for the benefit of the Client).
- The burners shall achieve a turndown of 20:1
- Standardized components to minimise spare's
- Burner availability requirement: > 99.8%. Preventative maintenance must be kept to an absolute minimum.
- For correct performance of the burner and to assist in uniformity of the outlet temperature profile, the burner chamber is fitted with baffles as shown below.



BPB's first dryer concept considering this technical specification regarding the burner technology was ordered at Grenzebach BSH in Germany for a plant in Thailand in 2004.

Grenzebach took over AKI Dryer based in Eugene, Oregon, USA in 2002. Together with AKI Grenzebach BSH developed a standard dryer concept in order to reduce the price level and shorter delivery time.

In August 2004 Eclipse received the order for three burners in Thailand with the following scope:

- Burner Zone 1: TAH-R 2680, Nominal capacity 7.8 MW (26,621,400 Btu/hr)
- Burner Zone 2: TAH-R 2680, Nominal capacity 7.8 MW (26,621,400 Btu/hr)
- Burner Zone 3: future option
- Burner Zone 4: TAH-R 1600, Nominal capacity 4.6 MW (15,699,800 Btu/hr)
- Each burner with gas train and high pressure reduction station, gas train provided with special components according to the specification,
- Burner panel for each burner located on the top of the dryer with communication modules for the main PLC
- Spare part package for the first year of operation
- Commissioning on site in Thailand
- Delivery time: 18 weeks (EXW Gouda)
- Scope and solution is shown on the attached PID and drawing

For these kinds of orders, a high level of internal and external communication is necessary. In order to improve our internal processes we installed a project management in Gouda (NL)

The communication with the German OEM Grenzebach-BSH was done by the German office.

Due to the large amount of technical information communicated during engineering and fabrication Eclipse installed a data base on internet filled with all necessary information's regarding the project. This tool enables the customer and us to be informed online about all valid information (mechanical / electrical drawings, material specification, project schedule) in any phase of the project.

Beginning 2005 an inspection in Gouda took place together with the OEM and BPB head office.

All our improvements and commitment led to a very successful result, both for the client and Eclipse.

Global activities

Since 2004 Eclipse Europe realized 5 additional projects for plasterboard dryers together with Grenzebach BSH / BPB:

- Belgium: 3 *TAH-R 480-560, nom. Cap.: 1.500 – 1.750 kW (5,120,000 – 6,000,000 Btu/hr)
- Rumania: 22 * TAH-R 40 – 240, dryer capacity : 11.200 kW (38,226,000 Btu/hr)
- Malaysia: 25 * TAH-R 40 – 240, dryer capacity : 12.500 kW (42,663,000 Btu/hr)
- Ireland I: 5 *TAH-R 360, extension of existing dryer: 6.000 kW (20,500,000 Btu/hr)
- Ireland II: 3 *Vortometric burners, revamp, 21.100 kW (72,000,000 Btu/hr)

BPB is planning a new dryer similar to the Thailand design to be ordered later this year and we are looking forward to this new challenge.

Based on the Vortometric order for Ireland Eclipse now develops a new technical specification together with BPB head office in UK.

This specification will be the base for all future revamps and extensions with this type of gas burners.



BPB longitudinal dryer



Order BPB Thailand

ECLIPSE
Innovative Thermal Solutions

Eclipse Combustion

www.eclipsenet.com