## PRODUCTION AND DRYOUT OF PREFORMED SHAPES MADE OF REFRACTORY CONCRETES AND MASSES



A ZAVNOBiH-a b.b. BA-72000 Zenica T +387 32 440 341 T/F +387 32 440 340 E info@termomatik-toplotehnika.ba URL www.termomatik-toplotehika.ba As a part of regular work in the field of refractory technology and installation of refractory materials, which is the main activity of the company TERMOMATIK-TOPLOTEHNIKA, production of special shapes of thermotechnical unit parts is usually being executed on site, during construction or repair.

Production consists of making the formwork/templates, preparation and installation of concrete and, upon completion of works, dryout. The objective shortcomings of this mode of operation are manifested in the following:

- A loss of time on making the formwork/templates
- Difficult control of preparation and installation of refractory concrete (distance between the place of preparation and the place of installation, risk of segregation of concrete during vibration due to discontinuous delivery, etc.)
- Difficult control of drying conditions and the first heating during the commissioning of the unit, which can cause cracking or complete destruction of the concrete shape

Also, in the event that a small-scale reparation of the refractory lining is executed, a significant loss of time is inevitable due to compliance with the heating curve of the built-in concrete block (e.g. replacement of burners, floor segments, etc.)







In order to produce such special shapes, the company TERMOMATIK-TOPLOTEHNIKA has built a production and dryout line, which consists of:

- Hall (15,0x10,0 m) and covered storage area (5,0x8,0 m)
- Two countercurrent mixers for preparation of refractory concrete. The capacities of mixers are 500/250 and 250/130 litres (working space/working capacity)
- Three vibrating tables with a working surface of 1,200x1,200 mm, with a variable number of oscillations of a fixed vibrator
- Three concrete vibrators with vibrating shafts Ø30 Ø60 mm
- Bridge crane with load capacity of 50.0 kN (5.000 kg) and span 8.0 m, for transportation of pallets and manufactured blocks
- One chamber furnace for dryout of preformed shapes. Two furnace hearths ensure the continuity in the prefabrication process













Furnace characteristics:

- Power source: electricity 380 V
- Furnace Power: 45 kW
- Workspace dimensions (LxWxH): 2,5x1,6x1,5 m (6,0 m<sup>3</sup>)
- Furnace capacity: up to 5.000 kg preformed shapes in one dryout cycle
- Temperature range: up to 450°C
- The forced movement of the atmosphere in furnace is provided by two 2,2 kW fans
- Temperaturni gradient inside the furnace: ±3°C
- Deviation from the set dryout curve: ±3°C
- The furnace is software controlled via PLC
- The dryout progress is monitored in real-time via HERALD IIoT Platform, which provides information on the current situation and allows immediate interventions during the dryout – on site or through the computer or mobile application.
- The dryout procedure is verified by a Protocol which contains the start and end times, default and actual dryout curve, as well as all other technical and commercial data on the prefabricate
- Maximum capacity of the production line is 1.200 kg/day













So far, the company TERMOMATIK-TOPLOTEHNIKA d.o.o. supplied approx. 185 tonnes of preformed shapes for:

- BECK u. KALTHEUNER F. E. GmbH Plettenberg, Germany (well blocks for argon purging plugs, walking beam furnace blocks)
- GIRK KALUN d.d. Drniš, Croatia (lime kiln burner blocks)
- SARAJ-KOMERC d.o.o. Gornji Vakuf, B&H (parts for tunnel furnaces)
- ARCELORMITTAL ZENICA d.o.o. Zenica, B&H (burner blocks for sintering machines)





















For the production of special shapes from refractory masses and concrete, TERMOMATIK-TOPLOTEHNIKA also makes reusable forms/templates (steel, panels), in accordance with the drawing of the finished shape, and makes and installs the necessary reinforcement and anchors made of fire-resistant steel, when they are an integral part of the production of the prefabricate.

Dimensional tolerances for preformed shapes are in the area defined for completed refractory products of this type or according to the special customer's request. Refractory material can be determined by the buyer (specific manufacturer and quality) or supplier of the finished product - shape (TERMOMATIK-TOPLOTEHNIKA). Also, the customers can supply their materials and their formworks/templates.

All production and supply conditions are defined in the Purchase Order or Contract, in accordance with the wishes and needs of the buyer.











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