

TURBOCASES

Dachser GmbH & Co. KG, Türkheim

Polarmatic Oy's TURBOMATIC thermal energy unit has been specifically developed for heating of aggregates and generation of all the hot water needed for process and heating purposes in concrete mixing plants and precast element factories. With more than 600 delivered units all around Europe and Russia, the TURBOMATIC has proven itself to be the most efficient, economical and environmentally friendly heating system available for concrete production.

The TURBOMATIC offers superior heating power and its consumes significantly less fuel oil than traditional heating systems. With the TURBOMATIC it is possible to produce reliably and continuously concrete in the desired volumes and at the required temperature even during the coldest of winters. For example, hot concrete can be produced at a temperature of 25°C or higher under all ambient temperature conditions.

Typical savings in the fuel consumption are in the range of 60-80% compared to traditional air- or steam- based heating systems. The TURBOMATIC is also environmentally friendlier than traditional air or steam based heating systems due to the inherently low fuel

consumption, utilisation of flue gases for heating of aggregates and the lowNOx-burner technology used as a standard solution, among other features. Most importantly, the TURBOMATIC ensures the best possible concrete quality by maintaining the optimum water-to-cement-ratio under all circumstances.

A typical example of the successful application of the TURBOMATIC heating system is the concrete factory of Dachser GmbH & Co. KG in Türkheim, Germany. The concrete produced by Dachser GmbH is used by Mindelheim-based building contractor Glass GmbH, which manufactures special components for tunnel construction – tunnel lining segments – at its precast factory located right next to the concrete mixing plant. These special segments set standards in respect of their manufacturing tolerances which cannot be compared to conventional precast components. One of the requirements to ensure the required quality of the tunnel lining segments is the temperature of the concrete. The temperature of the concrete must at all times be minimum 20-21°C.



fig 1. each silo is heated independtly



*fig 2. TURBOMATIC thermal energy unit
at Dachser gmbH & Co. KG*



Johann, Reiber of Dachser GmbH & Co. KG comments: "The heating power and effectiveness of the TURBOMATIC has been such that we have been able to meet the temperature requirement under all weather (temperature) conditions. This was not possible in the beginning of the tunnel lining segment-project when we had to produce the concrete in our old mixing plant which is equipped with a traditional air-based heating system. During the winter we even had several days when the outside temperature was as low as -25°C and with the TURBOMATIC we were able to easily produce concrete at $+25^{\circ}\text{C}$ on a continuous basis at the required capacity.

fig 3. outdoor storage area at Glass GmbH

It should also be noted that concrete could be produced at a daily capacity of $300\text{ m}^3/\text{d}$ – almost double as compared to the originally planned $170\text{ m}^3/\text{d}$." In addition to ensuring the continuous, uninterrupted production of concrete to the required quality standard, the TURBOMATIC has also provided significant cost savings. Mr Reiber continues: " With the TURBOMATIC the fuel oil consumption has been about $1\text{ litre}/\text{m}^3\text{-concrete}$ ($1.2\text{-}1.5\text{ l}/\text{m}^3$ during the coldest period) compared to $3.5\text{-}4\text{ l}/\text{m}^3$ with our other, traditional heating system. And more importantly we are not even capable of meeting the required temperature with our other heating system."

When the tunnel lining segment project is finished the faith of the concrete mixing plant is open. According to Mr. Erwin Dachser, Managing Director of Dachser GmbH & Co. KG : "If we do not get any new jobs I might sell the concrete mixing plant. One things is however sure. I will keep the TURBOMATIC heating system".



fig 4. tunnel lining segment production at Glass GmbH

Project facts

Concrete Mixing Plant

Plant – Liebherr Compactmix 1.0 A-R
 Aggregates – 4 hoppers
 Cement – 2 silos
 Capacity $50\text{ m}^3/\text{h}$
 Start-up year 2008

TURBOMATIC Heating System

Type – PMC 750 D
 Capacity – 0.75 MW
 Features:

- aggregate heating and hot water generation
- fully-automatic PC-control