



Cooling of industrial processes
in the low-temperature range
with the GEROtherm®

horizontal heat exchanger

Site report

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Due to the noticeable climate change in Central Europe, especially in recent years, there is a need for environmental protection measures and an associated reduction in greenhouse gases. This need is reiterated by the Federal Ministry for the Environment in the 2007 Federal Energy Programme.

In order to secure production processes and thus jobs in the future, intelligent energy use is necessary in view of rising raw material and primary energy prices. At the Gerodur MPM Kunststoffverarbeitung GmbH & Co. KG site, this need was recognised and implemented early on.

Implementation was carried out by using open spaces as energetic heat exchanger surfaces. Here, the temperature level of the subsoil and the ambient cold are used to recool production water in the low-temperature range.

The design of these heat exchangers is based on the principle of horizontal earth collectors. On a substructure consisting of a mineral mixture, the load-bearing layer was applied with a corresponding structure and the horizontal earth collector piping laid. The connection of the horizontal earth collectors with the distribution systems



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Installation of the heat exchanger

and connection to the existing cooling system was permanently ensured using corresponding connection technology.

In order to increase the efficiency of the heat exchanger surfaces by a factor of 4, the cover of the collector system was replaced by a special composite material.

This expansion of the storage and parking areas with the large-scale collector system, which has a surface area of approx. 18,000 m²

on the plant site, resulted in a saving of approx. 25 percent compared to conventional cooling.

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The aim is to increase the overall performance coefficient of the cooling system and to save additional secondary costs such as winter maintenance costs. The system was already running so efficiently in the 2006 / 2007 test period that the investment costs are expected to be amortised in two years' time.

Automated switching allows for individual control of the individual areas, thus ensuring logistics operations at all times, even with snow on the ground. The cooling system installed in the ground has the status of a pilot project. It is currently one of the largest installed geothermal heat exchanger plants in the low-temperature range for cooling production water in Germany. The average cooling capacity of the heat exchanger is approx. 1,500 kW, which is 25 times more efficient than conventional cooling systems.

The savings potential amounts to over 450 t CO₂/operating year. These CO₂ savings and energy savings have already been realised in the current operating year.

The GEROtherm® horizontal heat exchanger for industrial processes in the low-temperature range has a modular design and can be adapted to any of your technical requirements.



Existing parking area with snowfall



New parking area with snowfall

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