Making ceramic tile production greener with reused heat

Ceramics and other energy-intensive industries will achieve greater energy efficiency with lower costs, thanks to a heat pipe technology developed by an EU initiative.
Recovering heat for reuse

At ETEKINA’s core is a heat pipe prototype. This will help reduce both the environmental impact and energy bills of three different production plants in the aluminium, steel and ceramics sectors based in Spain, Slovenia and Italy, respectively. A news item on the project website notes that “there are savings to be made by implementing more energy efficient processes, and the European ceramics industry is experimenting with heat pipe heat exchangers (HPHEs) to recapture energy lost from piping hot kilns and transferring that energy to another point in the production chain.”

A kiln is a thermally insulated chamber, a type of oven used for firing, burning or drying porcelain or bricks. The primary energy use in ceramic manufacturing is for kiln firing and, in many processes, drying of intermediates also requires energy consumption. Natural gas, liquefied petroleum gas and fuel oil are used for most drying and firing operations, but solid fuels, electricity, liquefied natural gas and biogas/biomass are also utilised.

The same news item reports that “ETEKINA HPHEs will be tested on two kilns present within the new pilot plant at Ceramiche Atlas Concorde Spa.” It adds: “Rather than dispose of the heat, Ceramiche Atlas Concorde Spa wants to collect it and then use it within other processes inside the plant.” Quoted in the news item, Luca Manzini, in charge of energy management for Ceramiche Atlas Concorde Spa, part of Gruppo Concorde, says: “We will save some natural gas in this way. The idea is not a breakout in technology, it’s not like going to the moon. It’s something that we already do to some extent. But up until now we didn’t have the technology in order to recover the kiln exhaust energy.”

The ETEKINA project website explains the technology: “A heat pipe transfers
The ETEKINA project website explains the technology: “A heat pipe transfers thermal energy passively from a hot to a cold stream by a boiling condensation cycle inside a hermetically sealed metal tube. In this way, heat from the hot area can be transferred very efficiently to a cold part of the pipe. In the ETEKINA project, the engineers will combine many heat pipes to create a heat exchanger design according to the specific needs of each production plant.”

The ongoing ETEKINA (HEAT PIPE TECHNOLOGY FOR THERMAL ENERGY RECOVERY IN INDUSTRIAL APPLICATIONS) project is scheduled to end in 2021. As noted on the project website, it aims to recover 57-70 % of the waste heat stream in EIs.

For more information, please see: ETEKINA project website

Countries

Spain

Related projects

<table>
<thead>
<tr>
<th>ETEKINA</th>
<th>HEAT PIPE TECHNOLOGY FOR THERMAL ENERGY RECOVERY IN INDUSTRIAL APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PROJECT</td>
<td></td>
</tr>
</tbody>
</table>

24 February 2020

Related articles
Greener furnaces for energy intensive industries

6 June 2014

Last update: 8 November 2019
Record number: 411496


© European Union, 2020