



Department for
Energy Security
& Net Zero

Wienerberger (Kingsbury) Industrial Heat Recovery Support Case Study

Industrial Heat Recovery Support (IHRS)
Programme

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Context

The Wienerberger Group is the world's largest producer of bricks, paving blocks and roof tiles with 14 plants in the UK. Their Kingsbury Works site operates using a gas-fired tunnel kiln and dryer, employing a unique process to produce "Staffordshire Blue" bricks. Although previous efficiency works had been undertaken internally, they reached out to IHRS for external expertise to review additional heat recover options.

How IHRS has supported the project

Through IHRS funding, we were able to apply for funding that halved the fees to assess energy efficiency across the business. Starting with the main building of their newest facility, BEM Services reviewed existing energy usage and wastewater temperatures to assess potential for heat extraction measures.

From this, we liaised with heat pump manufacturers to examine whether extraction could be done using a range of equipment – including air to air and water to air heat pumps – before drawing up provisional schematics. We also explored solar panels and using excess heat to heat office spaces as additional cost saving measures.

We then calculated the possible energy savings, carbon reductions, payback periods and total financial costs of each option, which we examined through a series of meetings to find a viable solution.

Benefits and added value

Although monitoring and verification are still ongoing, our initial results show that we've been able to significantly reduce gas use by bringing our combustion air supply up to 180°C.

Additionally, there's been the unexpected benefit from the IHRS programme of a reduction in electrical consumption of the combustion air supply fans. Previously, we needed all three combustion air fans to deliver sufficient air flow and the required temperature. These fans were fitted with variable speed drives as part of this project, with air throttle dampers opened to maintain combustion ratios.

This appears to have resulted in three fans delivering a higher volume of air to the burners - both at a lower pressure and consuming less electricity.

Lessons learned

Due to how precise the process within the tunnel kiln is, we needed to ensure any heat recovery activity would not affect the pressure balance or other functionality.

During initial commissioning of the heat recovery from undercar space to pre-heater, it was discovered that this had an unexpectedly large impact upon the pressure balance within the firing chamber.

This would increase flame velocity of the jet, stemming from the air expansion due to the temperature and improving air turbulence inside the kiln. This had to be factored into our implementation plan, adjusting our heat recovery process accordingly to minimise impact..

“This project has demonstrated the benefit of pre-heating air combustion and we are now deploying this technology to other sites. This represents a significant step forward in improving our thermal processes across the business” – (Stephane Vissiere, Head of Major Projects and Energy)



Stacks of manufactured “Blue” Bricks



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