



CASE STUDY



SKF TUDELA: AN EXAMPLE OF DECARBONISATION IN INDUSTRY

TECHNOLOGY USED

- 2 x 30KAV
- 2 x 30XW-H
- 1 x 30RQP

INSTALLER

SEGUAS Aire Comprimido y Frío Industrial, S.L.

BENEFITS OF THE SOLUTION

SUSTAINABLE

Fuel consumption in the plant is reduced to zero.

INTEGRABLE

This solution can be applied with no need to shut down the installation

SCALABLE

Equipment can be added gradually.

RELIABLE

The installation is guaranteed to be reliable thanks to its redundant design.

PROFITABLE

Increased energy efficiency means reduced operating costs.

CO₂ EMISSIONS AVOIDED

470 tons of CO₂/year

COST SAVINGS

60%

A manufacturing plant geared towards energy savings

SKF, the company which invented the spherical ball bearing in 1907, is now a global reference in its sector, thanks to its wide range of products and services for practically all rotary and linear motion applications. The company was founded in 1973, in Tudela (Navarra, Spain), with a 14,000 m² plant dedicated to manufacturing bearings for the automotive sector.

The aim of this project was to fully decarbonise the plant, thereby eliminating fuel consumption, reducing CO₂ emissions and cutting operating costs to make the Tudela plant much more competitive in terms of its energy consumption.

"In this approach, we worked with Seguas and Carrier who helped us achieve our objectives, making the plant highly competitive in terms of its energy consumption and, now, it is also carbon neutral."

Julián Jiménez
General Manager
SKF Tudela Plant

Combining technologies to achieve the best result

After analysing the thermal requirements, an installation was designed with two main objectives: firstly, to meet the cooling requirements of the process, using highly efficient 30KAV air-to-water chillers; secondly, to extract the heat produced in the bearing manufacturing part and transfer it to the air conditioning part of the building and offices, via water-to-water chillers equipped with a heat recovery option.

An air-to-water heat pump was also installed for those times when the heat demand exceeds the heat which can be extracted from the manufacturing process, or in the event of a breakdown of any process equipment, thereby guaranteeing the necessary reliability to avoid any stoppage in the plant.

The result of this design is that the gas consumption of the installation is now zero, making the plant highly competitive in terms of its energy consumption and minimising its environmental impact.



30KAV
air-to-water chillers



30XWH
water-to-water chillers



30RQP
air-to-water heat pump



An integrated approach to decarbonising industrial installations

This installation is a perfect example of the way forward for decarbonising thermal installations in the industry, in which the following steps have been taken:

Firstly, define clear objectives in terms of sustainability; at the same time, establish a commitment to meet these, by defining a medium- and long-term plan to achieve them.

Secondly, understand the actual thermal requirements of the installation and identify the potential energy savings there, by analysing all residual heat sources inside the plant and working out how these could be used for our thermal installation.

Thirdly, define a solution that combines the best current technologies and best practices carried out in other installations, that will enable us to obtain the best possible result by optimising the energy efficiency of the installation.

And, finally, it is key to take into account the full life cycle of the installation, establishing a correct maintenance plan to ensure that the units remain in perfect condition for as long as possible.

A customised solution delivers the best results

“The aim of this project was to fully decarbonise the plant. The challenge was not only to ensure that the system met the objectives, but to do so in a cost-effective way, and this can only be achieved using reliable advanced technology.”

Jorge Cerrada
Head of Maintenance
SKF Tudela

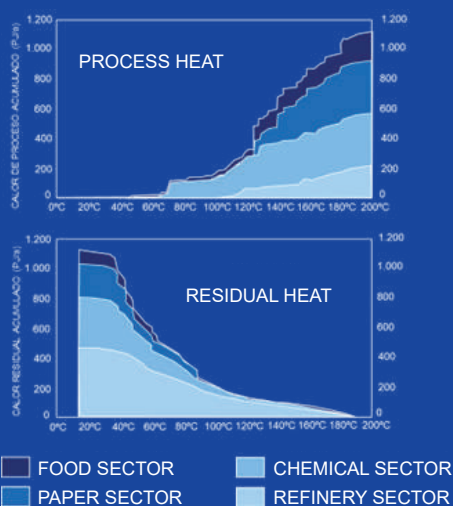


The potential of heat recovery

Depending on the type of industry, there are various sources of residual heat that can be used for a range of different applications. Process heating requirements can vary with each application and, to design a complete solution, it is critical to properly understand the existing process, flow rates, temperatures and demands.

Installations that have this residual heat can benefit from incorporating a heat pump in their thermal installation. This unit will use this residual heat for heat production which, depending on the technology, could reach temperatures of up to 120 °C. This reduces the fuel consumption required for traditional boiler-generated heating.

This configuration improves the overall efficiency of the system and reduces the operating costs associated with hot water production, making our industries more competitive in terms of energy consumption, while reducing their associated CO₂ emissions.



SOURCE: An estimation of the European industrial heat pump market potential. Marina, A. et al (2021)