



Image: Daniel Bagger, Facility Supervisor at Envases in Odense, Denmark, says, "We can now control our heating system down to the smallest detail."

Grundfos case story | **Commercial Building Services**

Factory optimises district heating with MIXIT intelligent controller

The situation

Envases Europe A/S in Odense, Denmark, produces tin packaging for the food and beverage sector. Its main buildings were first built in the 1950s. This included three heating boilers and one hot water boiler powered by gas. In 2020, the company decided to shut down its boilers and connect to the city's district heating system.

Additionally, Envases wanted to reuse the heat it generated in production. It was adding an extra metal printing line, which – along with other production lines, generated more heat than Envases could use in its 100,000 square meter facility. Therefore, the company added a heat recovery system. Any extra, unused heat generated from production would be sent back to the district heating facility and benefit the citizens of Odense.

"We had to acknowledge that gas heating with 140 degrees Celsius hot water in our pipe systems was not possible with the current system," says Henrik Knudsen, facility and maintenance manager at Envases Europe. "And Odense has an especially efficient district heating plant, so it was natural for us to go this way.



Image: An Envases mixing loop before the MIXIT retrofit.

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Possibility in every drop



Image: Envases produces food packaging in a 100,000-square meter facility at its Odense, Denmark, location.

The solution

The need for heat control was increasing with the district heating and the heat recovery. Heating systems and zones have different demands for flow and temperature. Controlling the flow and temperature for each type of building zone is done with a mixing loop, consisting of a pump, valves and sensors.

“We realised that all of our mixing loops were quite old,” Henrik Knudsen says. “We needed something with cutting-edge technology – and in that connection we found MIXIT. MIXIT is a unit that can control a mixing loop in a whole new way than before, where we were used to more or less needing to control them manually all over the plant. Now we have an intelligent control, which is connected to our automated Building Management System via the built-in fieldbuses in MIXIT, providing data and control from both the MAGNA3 pump and MIXIT unit. Through that, we can control and optimize all the mixing loops out in the production halls, warehouses and office spaces – all without ever needing to send a man out to the application, which saves human resources.”

The MIXIT units take over control from the setpoints users have defined. And then they can secure that they get the most out of their heat systems.

“It’s one thing that we have integrated MIXIT into our full building management system,” says Daniel Bagger, Facility Supervisor. He says it’s another thing that MIXIT can also be configured via the Grundfos GoRemote app – which is particularly helpful when the mixing loops are located in difficult-to-reach locations – like hanging from a high ceiling, or up ladders, etc. “Our technicians use GoRemote a lot. It means that we no longer need to visit each mixing loop. Now we just need to be within reach of a Bluetooth connection. Then we connect to the MIXIT with our smartphones and adjust things from there.”

“Since we are directly connected to the district heating system, we are very, very focused on our flow – and particularly our return temperature, because that’s what determines our bill with

the district heating company,” says Daniel Bagger. “It also means that when we have certain zones out here in the plant where we are registering poor return water temperatures, then we can program built-in limiters on these data points, which means that MIXIT will control the cooling at 30 to 35 degrees C. We are really satisfied with that, and it means we can control the system down to the smallest detail.”



Image: The mixing loop after the MIXIT retrofit. The Grundfos MIXIT unit is on the right, and a Grundfos MAGNA3 circulation pump is on the left.



Image: Two freshly installed mixing loops with Grundfos MIXITs and MAGNA3 at Envases.



Image: Installing a MIXIT unit by a MAGNA3 circulation pump for the Envases HVAC system.

The outcome

The high, red-brick smokestack at Envases is no longer in use. “This used to be an icon for Odense,” says Daniel Bagger. “But an era is over. We’re through with gas-fired boilers. We’re through with emitting emissions to the atmosphere from here. We have gone over to district heating. And we have become a much greener company. We can do even better – and particularly MIXIT can help us with that in the future.”

The MIXIT units make it possible for Envases Europe to recycle 23 gigawatt hours (GWh) a year, which corresponds to the amount of heat used by 1,300 Danish households a year. The company is also saving 14 GWh from the heat recovery system, which means about 3,000 tonnes of CO₂ emissions saved a year.

The entire retrofit to district heating and heat recovery – along with the 35 MIXIT units, some new MAGNA3 pumps, electrical cabinets and more – have an expected payback time of 1.5 years. “It makes me proud that we are able to take full advantage of our residual heat – that we don’t waste it and send it out to the birds,” says Henrik Knudsen. “We completed this project in a very short time, and by using very few resources – which consisted of just three people, plus a consultancy company who did the math on energy savings. It’s a pleasure when it can be realised in such a short time.”

Grundfos supplied:

Grundfos supplied 35 MIXIT units for the Envases heating system. The MIXITs rethink the whole idea of the traditional mixing loop concept. The all-in-one unit works together with the circulation pump (in Envases’ case the Grundfos MAGNA3) as a complete solution. Read more about Grundfos MIXIT.



Image: Installing a Grundfos MIXIT at Envases in Odense, Denmark.

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