

Tekniska Verken in Linköping is Europe's largest producer of biogas and is a world leader within waste incineration. Each year approx 230 000 tons of waste is received from households and companies in Linköping and 30 municipalities in the region. The plant at Gärstad incinerates waste with energy recovery as a method and approximately 215 000 people in Linköping and the surrounding area benefit in the form of heating and electricity.



## Expander® System secures district heating production in Linköping

Every hour, around the clock, approx 55 tons of waste is lifted from the storage bunkers to the incinerators at Tekniska Verkens new waste plant in Gärstad, Linköping. The orange peel grab, which handles the waste can take up to 10 cubic metres or approx 5 tons in one lift. A significant volume and weight – which also places high demands on the construction!

- Our highest priority is accessibility, says Olle Svanfeldt, maintenance manager for the waste plant at Gärstad.
- Because nearly all combustible material is handled by this particular grab there is no real alternative other than that it operates at maximum capacity around the clock.

**The new plant has been in operation for just over a year.**

– We noticed instability in the arms almost immediately, and it soon became "flapping". At about the same time the lubrication channels became blocked, presumably by worn out bushing materials, the arms began to seize and the first breakdown soon occurred. The manufacturers were helpful in every way. They supplied new shafts and bushings – but the result was the same. As chance would have it we had a spare grab, which meant that we managed to continue. But the situation felt unsustainable; so we decided to take radical action.

**Expander – a natural choice!**

– The problem of failed pivots in grabs was a new one for us, says Olle Svanfeldt. We changed to the Expander system in six different grips as long as 15 years ago. Since then all of them have worked without needing more than a simple bushing replacement. It was therefore natural for us to turn to Expander to solve the problem.



**New stable design solution.**

The original pivot consisted of a pin bolt design through the "crown" to the arm's two outer mounting lugs. The bolt was fixed at the centre and the arm moved over the outer ends of the fixed shaft, carried on bronze bushings. Expander suggested another solution. A traditional box construction, with stable mountings in the arm's outer lugs – and instead pivoted by an Expander bolt with a hardened steel bushing at the centre section. – We purchased the solution, Olle says, despite the greater cost of the design. But we saw it as a "one off cost" – and something radical was required anyway. For safety's sake, while the grab was disassembled, we also changed the hydraulic pivots to Expander.

**Today the grab is in full operation!**

– Order is restored, says Olle Svanfeldt, and we can look forward to normal procedures for both operation and maintenance. For example, it was hardly realistic being forced to stop work every 8 hours for a one hour lubrication as was previously the case, says Olle. We can now return to normal practice, with lubrication about once a week. In addition, we calculate that we should be able to run around the clock for 10-15 years without any interruptions or stoppages for maintenance. – Possibly with the exception of replacing one or two bushings, a pleased Olle Svanfeldt concludes.



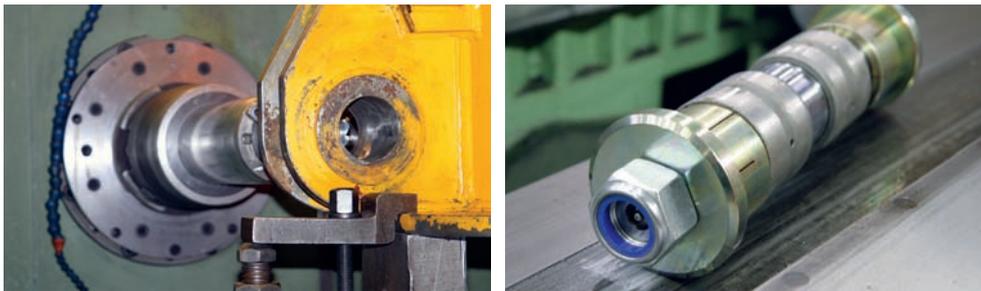
# From pin bolt to permanent solution with Expander®System



Part of the crown without the arms. Note the deformation of the materials and remains of the damaged mounting.

Removed arms. The mounting lugs must be cleaned but need not be rebored – the Expander system takes up the deformation and unevenness.

Damaged pin bolts and remains of worn bronze bushings – Cause of both seized pivots and blocked lubrication channels.



One of the seven centre sections is bored out, from 75 to 85 mm in diameter, to provide space for the Expander bolt and the hardened steel bushings.

The Expander system with the double hardened steel bushings. Note the slotted, conical sleeves on the outer ends, which take up unevenness and provide stable locking in the respective mounting lugs.

The renovated crown; a permanent solution with a 10 year function warranty!



10 year function warranty on Expander®System

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