

31% Energy Savings For Skanderborg Waste Water Treatment Plant With New 55 kW Atlas Copco ZS Blower

With a savings goal set at 25 % for the Danish waste water industry, optimizing all parts of the operation, so even the aeration, is of the highest importance.

In 2011, The Skanderborg Waste Water Treatment Plant replaced one of its 75 kW lobe blowers with a new 55 kW Atlas Copco ZS screw blower and were able to reduce their energy consumption with 31%.

Up to 70 % of the energy consumed by a WWTP (Waste Water Treatment Plant) consists of low pressure aeration of the waste water, why savings in this part of the process is of paramount importance.

– Atlas Copcos' ZS screw blowers are on average 30 % more energy efficient than lobe blowers. This has been proven by independent tests by TÜV and by WWTP's in Scandinavia. Skanderborg WWTP had problems with their aeration using lobe blowers so we suggested that they would try the Atlas Copco ZS blowers, says Flemming Broksø Sales Engineer Oil-free Air at Atlas Copco Compressor Technique Scandinavia.



In May 2011 Atlas Copco delivered a new 55 kW variable speed drive blower operating at 0.7 bar(e) to Skanderborg WWTP, replacing a 75 kW lobe blower in one of the aeration process lines.

– We chose Atlas Copco as supplier of our new blower as they showed us possible energy savings of 30 % compared to our old lobe blower. We had also been having problems with our old lobe blower during the Skanderborg Summer Festival when the load on our aeration process and blowers were especially high, says Ivan Andersen at Skanderborg WWTP.

Two identical aeration process lines are used at Skanderborg WWTP. Both lines are equipped with two blowers each – one variable speed drive and one fixed speed. The operations are set up so that the variable speed drive blowers function as the primary blowers and the fixed speed blowers come in when the demand for low pressure air increases.

Line 1

- 1 75 kW lobe blower, variable speed drive
- 1 75/62 kW (dual speed) lobe blower, fixed speed

Line 2

- 1 Atlas Copco ZS55VSD-700 screw blower, variable speed drive
- 1 75/62 kW (dual speed) lobe blower, fixed speed

During August every year in Skanderborg the traditional Summer Festival takes place. This is the time of the year when the work load is at its highest for Skanderborg WWTP, and where the blowers operate on maximum capacity. During the festival in August 2011, a test was carried out by Skanderborg WWTP comparing the energy consumption of the two identical aeration process lines. The result was:

Line 1:

Total energy consumption: 19 989 kWh.

Line 2:

Total energy consumption: 14 492 kWh.

This means a total saving of energy for the second process line– including the Atlas Copco ZS screw blower – at 31 %.

– The Atlas Copco ZS screw blower is working really well, better than expected. It runs smooth and has, besides replacing a bigger lobe blower, lowered the amount of time that the fixed speed lobe blower has to support the VSD blower in its aeration process line. This has given us big energy savings and we are calculating a payback time of the ZS blower as low as only 16 months. We also made it through the Skanderborg Summer Festival without any downtime, and it runs much more silent than the old lobe blower, says Ivan Andersen.