

Pumps for bitumen and wax

Moving and processing petroleum-based products involves special challenges. Pumps used in this activity must be capable of moving liquids that have very good lubricating properties as well as liquids containing abrasive components. Depending on the particular process step, high discharge pressure or high capacity may be needed. Finally, viscosity of the pumped liquid can vary from finished, flowing petroleum products to highly viscous liquids like bitumen. Allweiler AG provides the right pumps for virtually any pumping task, from unrefined crude oil to finished fuel or lubricating oil. At *Nyrosten Korrosionsschutzmittel GmbH & Co.* of western Germany, Allweiler's screw pumps have been in continuous service for decades.

Nyrosten has been manufacturing corrosion inhibitors and lubricants for steel cables since 1929. Today the company is an international market leader in its field. Its products are ideally suited for stationary and moving cables, as well as cables of any thickness, from just a few millimeters in diameter to as large as a person.

Nyrosten starts with petroleum-based raw materials and refines them into high-performance end-products for its customers. Starting materials are very thick, with viscosities around 5000 cSt at 160 °C. These are primarily waxes, bitumen, and extracts of highly viscous petroleum products and their derivatives. To keep the materials flowing during delivery and facilitate processing, they are delivered at a temperature of about 180 °C and this temperature is maintained during the manufacturing process.

This places two special demands on the pumps. First, it must be possible to heat the pumps, because this is the only way to ensure that the liquids will not stagnate and solidify. Secondly, the pumps must be designed to handle these high temperatures. In order to keep the pipes from clogging, the system runs 24 hours per day nonstop. Each pump/motor unit is a double unit for redundancy. According to Frank Goris, Technical Director at Nyrosten: "These pumps must be totally reliable without any failures or only very short periods of downtime." This is the only way to prevent thick liquids from stagnating, cooling, and solidifying inside the system. If repair is required – something that Nyrosten has never experienced so far – it is easy to replace the insert unit and screw-set while the pump is installed.

For nearly 40 years, Nyrosten has depended on Allweiler pumps for these purposes. Screw pumps of the SNH series have proven to be outstanding choices. In fact, these pumps have been running in continuous operation for 30 years without maintenance or a single failure. So it comes truly as no surprise that Nyrosten, when outfitting its new plant in 2007 and 2008, chose four identical pumps of size 210 (Q=110 l/min; p=15 bar) as well as one discharge pump of size 660 (Q=510 l/min; p=15bar). A critical aspect of these pumps is their precise dimensions. Their speed is

adapted exactly to the unusual liquid. Due to the high temperatures of the liquid, it is essential that tolerances inside the pumps be calculated with precision and that parts are produced to equally high tolerances. Through examination of the selected parameters, Allweiler chose a special designed screw, a configuration that has proven to be extremely reliable in continuous operation.

When Nyrosten's products are ready to leave the factory, it is important that air inclusions in the liquid are first removed. The specially designed pump chamber takes care of this. "Although we charge by weight, we want to avoid delivering drums that are only half full," according to F. Goris. When filling, it is also useful to have the ability to finely regulate pump speed and adapt speed to each liquid.

All pumps meet current safety regulations and have associated certifications. With a heating jacket, they can maintain the desired temperature even without liquid. A pressure relief valve on each pump prevents damage to the system.



Nyrosten manufactures approximately 8000 metric tons of lubricants and corrosion inhibitors per year. Eighty-percent of their production is exported to global markets.



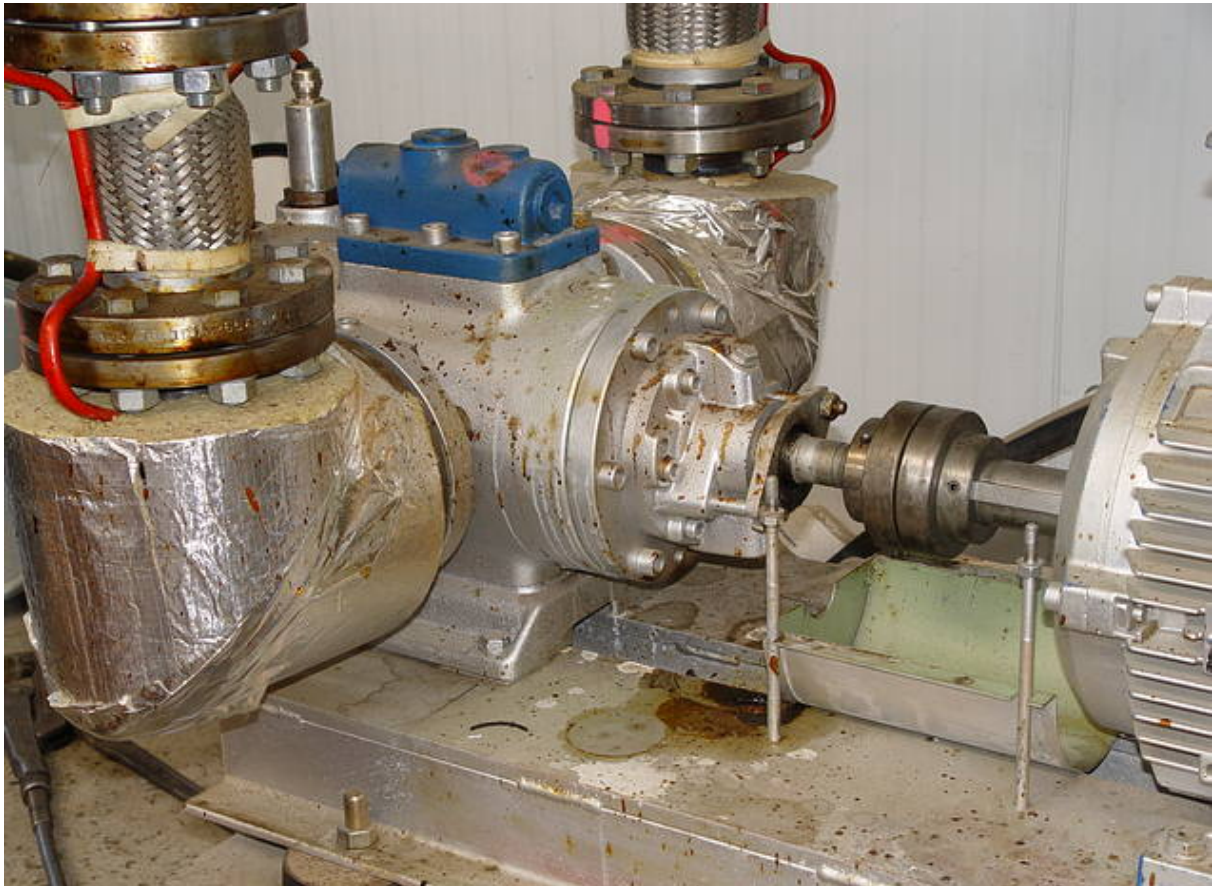
The pumps are mounted on base plates and installed in series. For this reason, they must be capable of precise proportioning and each one must run at the same capacity.



Peter Wriedt, Production Manager at Nyrosten. "Our new plant uses the exact same pumps that have served us flawlessly in our original plant for more than 30 years."



Frank Goris, Technical Director: "Our products are used with cables in all types of applications and in every climate on earth."



The pumps of Allweiler's SNH series have capacities up to 5300 l/min. with maximum discharge pressure of 100 bar and maximum liquid temperature of 250 °C. At Nyrosten, maximum capacity is 510 l/min., maximum pressure 15 bar, and maximum temperature 180 °C.