

NETZSCH Pumps Smooth Processing for Seaweed Harvester

For a plant that processes hard-to-handle seaweed into agricultural fertilizer products, a successful trial of a NETZSCH progressing cavity pump led to an installation with low total cost of ownership.

The Quebec-based company that specializes in the manufacturing and commercialization of marine and seaweed-based products for agriculture and horticulture is located in the maritime region of the lower St-Lawrence River in Quebec, Canada. This location that provides easy access to the fresh marine raw materials they need – specifically, the seaweed *Ascophyllum Nodosum*.

The seaweed is harvested by tractor at low tide, with areas worked on a rotating basis in order to allow the seaweed to grow back. After harvesting, the seaweed is dried on-site in greenhouses to ensure the optimal preservation of the raw material — which is ultimately processed to yield high-quality crop fertilizer and soil amendments.

In processing the seaweed, the raw product is introduced with hot water and caustic solution into a 3,000-gallon (11,000 liter) tank, and then mixed until the lengths of seaweed dissolve into a more or less liquid form. From the tank the liquid is transferred by a NETZSCH NEMO® progressing cavity pump into a centrifuge, where the solution is dewatered (decanted).

Efficient conveying system sought

After the seaweed extract is dewatered, the remaining seaweed extract is very viscous – having a thick, sticky gelatinous consistency, somewhere between solid and liquid. The extract has a high PH value, and is running at approximately



In the seaweed extract application, the NETZSCH pump was installed with a custom flanged hopper to connect to the centrifuge discharge, which conveys the end product into totes.

90 degrees Celsius (195 Degrees F). In seeking to install a piece of production equipment capable of conveying the dewatered seaweed extract from a centrifuge to packaging areas in the plant the customer first tested a conveyor that was positioned at the discharge of the centrifuge. However, the open nature and inflexibility of the conveyor solution brought the customer to seek an alternative solution.

Because NETZSCH already had a NEMO® progressive cavity pump at the plant that was used for feeding a centrifuge, the customer reached out to NETZSCH for a custom solution. During a pump trial at the processing plant, it was discovered that the trial pump was able to combat pressures incurred when the client chose to split the discharge hose and serve

Pump Data

Pump type:	Nemo Progressing Cavity
Capacity:	Approx 1 gpm / .23 m ³ /hr
Pressure:	40 psi / 3 bar
Medium:	Decanted Seaweed Extract
SG:	1.2 kg / dm ³
Temperature:	195° F / 90° C
Solids %:	25%+ TS
Speed:	43 rpm

two packaging areas. This eliminated need for separate batches serving the same purpose, increasing production efficiencies. Final pump selection was based on the trial with the demo pump, which provided valuable insights. With questions about the consistency of the end product, on-site consultations with NETZSCH sales engineers trouble shooting with the customer during the trial run was also a major factor in selecting NETZSCH equipment.

NEMO BF pump selected for service

The NEMO® BF pump selected for this application is used in all branches of industry to provide continuous, pressure-stable, gentle and low-pulsation conveyance with dosing in proportion to rotation speed. It is employed primarily for highly viscous, compacted and crumbly substances that do not have a tendency to bridge.

The NEMO® pump selected for seaweed processing application features an open hopper design in stainless steel construction with special feed screw, and a stainless steel rotor suitable for 194 degrees Fahrenheit (90 degrees Centigrade). The patented design of the pump feed screw allowed the NETZSCH pump to succeed in this application where other pumps could not. The feed screw design overfeeds the pump chamber creating a mixing and homogenizing effect in the force feed chamber, by introducing a backflow through the gap between the feed screw and the hopper housing. Also, the screw rises above the joints on both the drive side and the rotor side, thus avoiding dead areas in the joint region.



During processing, the *Ascophyllum nodosum* seaweed extract becomes a very viscous liquid and difficult to transport.

The customer also requested an EPDM food-grade stator and packed stuffing box. The pump was installed with a right angle 10 hp inverter duty gearmotor with severe duty protection, a 10 hp VFD controller with coupling and guard mounted on 304 stainless steel baseplate with a stainless steel 3" to 2" Triclamp discharge connection.

With the NETZSCH pump, the customer is now able to cleanly and efficiently move product throughout the plant to different packaging areas. In lieu of the open conveying system that was originally examined, the closed piping afforded by the NETZSCH pumping solution also eliminates production odors.

The NETZSCH open hopper pump was installed in late summer 2013, delivering exactly the performance that the trial pump demonstrated.

Contact NETZSCH

NEMO® Progressing Cavity Pumps have a very broad application range and are used in all branches of industry for the continuous, pressure-stable, gentle and low-pulsation conveyance of almost any substance. Whether for sludge, chemical substances, adhesives, petroleum or yogurt, one of the eleven pump types by NETZSCH in four rotor/stator geometries and a selection of engineered joints are sure to suit your application.

NETZSCH customers rely on our rigorous standards in design, engineering and manufacturing to deliver products with absolute functional reliability and exceptional quality. NETZSCH service, like NETZSCH quality, is geared to surpass our customers' expectations.

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