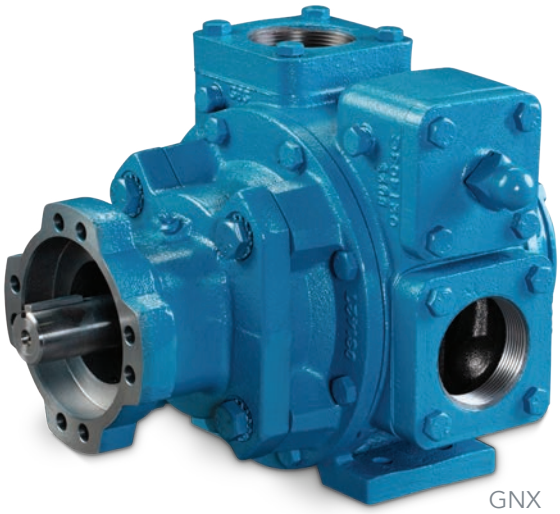
Vegetable Oils

APPLICATION DOCUMENT

Vegetable oils are among the most versatile materials that are used in manufacturing processes. Just look around your house and take inventory of all of the cooking oils, soaps, salad dressings and peanut butter that line the cupboards and refrigerator shelves. What do they have in common? All of them feature a vegetable oil of some type.



GNX

Just as the list of products that are made with vegetable oils is extensive, so is the roster of oils – most of which are derived from the seeds, fruits and nuts of various plants – that are used in their production. Among the most traditionally used are corn oil, peanut oil, linseed oil and cottonseed oil. However, as manufacturers look for new ways to make their food products healthier, more and more are relying on oils with no unsaturated fats like palm oil, which is extremely expensive and oftentimes needs to be imported to the United States from faraway countries such as Malaysia.

The top challenges in handling vegetable oils – whether it be from the railcars and transport trucks that deliver them to the processing facility or their movement within the production process itself – is their varying viscosities (as measured in centipoise [cP]) and shear sensitivity. Positive displacement (PD) sliding vane pumps stand out when handling vegetable oils because their self-adjusting vanes allow them to handle high-viscosity liquids with no reduction in flow rates. The shear-sensitive operation of sliding vane pumps also maintains the oil's integrity and results in a final product that meets all requirements for look, feel and taste.

The new GNX Series Sliding Vane Pump from Blackmer, part of the Iron Line, set a new standard when handling high-viscosity, shear-sensitive vegetable oils through a design featuring a commercial-grade, single-stage gearbox that is positioned between the pump and motor and held in place by a permanent dowelled connection. The result is a pump that will not need to be realigned either at installation or after a maintenance procedure. GNX Series pumps can achieve flow rates from 7 to 500 gpm (26 to 1,893 L/min). Another option is the X Series pump, also in the Iron Line, which is available in 2-, 2.5-, 3- and 4-inch flanged sizes with flow rates from 10 to 528 gpm (38 to 1,999 L/min).

Some food processors prefer stainless-steel pumps when handling edible oils and for them Blackmer offers SNP Series Sliding Vane Pumps. Part of the Stainless Line, SNP Series pumps are available in 2- and 3-inch models with flow rates from 75 to 275 gpm (178 to 1,040 L/min) with operating temperatures up to 350°F (177°C).

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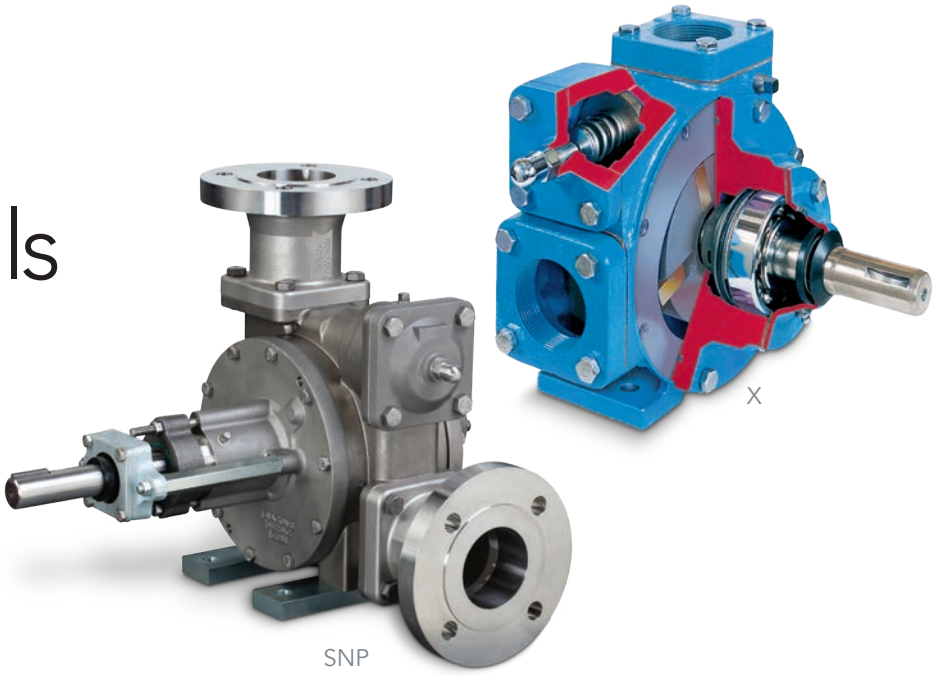


BLACKMER SOLUTIONS

- GNX Series Sliding Vane Pumps
- X Series Sliding Vane Pumps
- SNP Series Sliding Vane Pumps

COMPETITION

- **Gear Pumps**

Are not self-adjusting, so they will not maintain volumetric consistency when pumping fluids with higher viscosities.

- **Air-Operated Double-Diaphragm (AODD) Pumps**

The pump's diaphragms have operational limits that can hamper their ability to handle high-viscosity and shear-sensitive liquids.

- **Centrifugal Pumps**

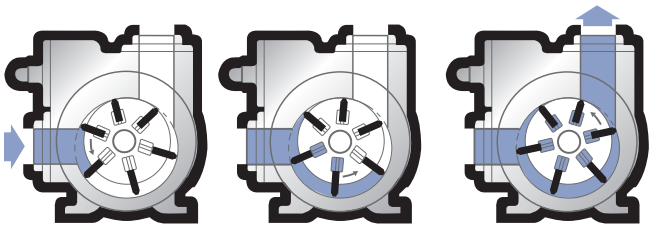
Do not possess the line-stripping capabilities needed for operations that handle a wide variety of vegetable oils, which can result in product cross-contamination.

GLOSSARY

Centipoise (cP) – a unit of dynamic viscosity defined as the amount of force needed to move a layer of liquid in relation to another liquid; considered the standard unit of measurement for liquids of all types.

Shear – in manufacturing, unaligned forces that push one part of a liquid in one direction and another part in the opposite direction; excessive shear forces can damage the structural integrity of sensitive liquids and compromise end products.

HOW BLACKMER SLIDING VANE ACTION WORKS



For more information on these additional solutions, visit us at blackmer.com.

Where Innovation Flows

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