

IPPT

CANADA'S PROCESS NETWORK

INDUSTRIAL PROCESS PRODUCTS & TECHNOLOGY

June 18, 2010
A Swan Erickson Publication
Volume 22 / Issue 3

www.ippt.ca

MOBILE SOLUTIONS FOR VALVE DIAGNOSTICS

VALVE AUDITS HELP MANUFACTURERS

PUMPS: VALUE BASED PURCHASING FOR MECHANICAL RELIABILITY

REMOTE MONITORING, DATA ACQUISITION & THE INTERNET

FLEXIBLE SCREW CONVEYORS SAVE MAINTENANCE AND SANITATION COSTS



MOYNO MAG DRIVE SERIES 500 PUMPS PROVIDE ZERO LEAKAGE
Page 11



OMEGA'S DIGITAL FORCE GAUGES WITH ADVANCED OPERATING MODES
Page 14



LOVE CONTROLS' SCZ10 CONTROLLERS FROM MOD-TRONIC INSTRUMENTS
Page 30



HAYWARD GORDON'S EXACTA HYDRAULICALLY ACTIVATED PUMP
Page 22



Air Mail
Par Avion

CANADA	POSTES
POST	CANADA
Postage Paid Letter-post	Post Paye Poste aux lettres
1121626	
HARRISON MAILING LTD	

3173
PAULA JACOBS
MEDIA DIRECTOR
RAPP ADVERTISING
30 COMMERCE STREET
SPRINGFIELD NJ 07081

PM # 40065542

Flexible Screw Conveyors Save Maintenance and Sanitation Costs for Peanut Processor

Nutco is hardly a household name, yet the company's peanut butter and roasted split peanuts are widely distributed throughout North America. Located in this small town north of Toronto, Nutco is one of Canada's largest peanut processors and

feed goes for peanut butter production.

The production process

In Nutco's operation, shelled peanuts are roasted, then the skins are removed in a process called blanching. About 80% of the volume goes through an attrition mill that grinds the peanuts into paste for peanut butter. The rest of the peanuts are either packaged as roasted, blanched split peanuts for retail or put through a granulator to obtain chopped peanuts. These are used for crunchy peanut butter or vacuum-packed for wholesale distribution.

Nutco receives shelled peanuts in 1,984–2,645 lb (900–1,200 kg) bulk bags. Samples from each bag are laboratory-tested for mold, then the bags are stored in a cooler until they are needed for processing. At that point each bag is hung on a bag-lifting frame by four loops located at the top of the bag, and each frame is forklift loaded onto a bulk bag discharger.

Bags are unloaded into an 8 cu ft (226 l) floor hopper, from which the peanuts are transported by a flexible screw conveyor to a 10 cu ft (283 l) surge hopper that feeds the process line. The bulk bag unloading stations, hoppers and flexible screw conveyors were all supplied by Flexicon.

Worrell explains that two bulk bag unloaders are used in order to maintain a continuous flow of product to the gas-fired roaster, through which the peanuts pass on a conveyor. While a bag is being unloaded at one station, an empty bag can be replaced with a full bag at the other.

Bags are unloaded through a manually operated, 12 in. (305 mm) dia iris valve that

is pulled over the bag spout. At the lower end, the valve is sealed to an interface chute in the hopper cover via a dust-tight snap action door. This arrangement minimizes dust as well as controls the flow of material. As a bag empties, periscoping extension arms automatically raise the top of the bag, stretching it into a cone shape, thereby promoting complete discharge.

The flexible screw conveyor consists of a rotating, stainless steel spiral screw, housed in a 25 ft (7.6 m) long polymer tube of 4-1/2 in. (115 mm) O.D. The rotating screw draws in peanuts from the hopper and transports them at a 45° incline to the top of the surge hopper.

A 5 hp (4 kW) electric motor rotates the screw at a variable speed. The motor is located at the top end of the conveyor, above the discharge point, precluding product from contacting the gearbox seals. The stainless steel screw profile not only efficiently moves the peanuts at the required rate, but has been designed to minimize grinding and other damage to the product.

Bulk bags save labor

Prior to the installation of the Flexicon equipment, peanuts were received in 110 lb (50 kg) burlap bags. These were loaded onto skids and raised by a forklift onto a mezzanine, where they were lifted two at a time by a jib crane and dumped into the surge hopper.

The bulk bag system has improved efficiency and saved more than \$100,000/yr in labor costs, says Worrell. "Previously, it would take two or three workers to unload the 50 kilo bags and load them onto the skids," he says. "Now, it takes one operator with a fork truck."

From the surge hopper, the peanuts drop onto a 10 cu ft (283 l) gravity separator, a perforated table that uses a combination of vibration with upflowing air to remove dirt, stones and other debris. The peanuts then move by conveyor through the roaster and the blancher, where the skins are removed and the nuts are split by pressing and rolling them between two converging conveyors. The skins are vacuumed from the line and the product is given a final cleanup by an electro-optical sorting machine that rejects peanuts considered too dark, along with



Two bulk bag unloaders, each with a 25 ft (7.6 m) long flexible screw conveyor, maintain a continuous flow of shelled peanuts to the gas-fired roaster in background. The fully enclosed system enhances plant sanitation and reduces manual handling.

Canada's biggest supplier of organic peanut butter to the U.S., and specializes in packaging most of its production for sale under private labels. Nutco also supplies peanut butter in bulk to confectioners and bakers.

Several years ago, Nutco installed two bulk bag unloading systems for incoming peanuts and two flexible screw conveyors to transport peanuts and peanut fines within the plant. Besides improving efficiency, the equipment reduced manual handling and improved plant sanitation, says John Worrell, plant manager. "The flexible screw conveyors haven't needed any maintenance," he says, "and they require very little sanitation to speak of because they are completely enclosed."

Based on its experience with the conveyors, the company now plans to substitute a flexible screw conveyor for a bucket elevator that delivers the peanuts to a hopper, from which most of the



Peanuts are discharged from the bulk bag into the receiving hopper through a manually operated 12 in. (305 mm) diameter iris valve attached to the bag spout.

Some call it the
8290 Piston Valve.
We call it "the
problem solver."
ASCO. ALWAYS RELIABLE.

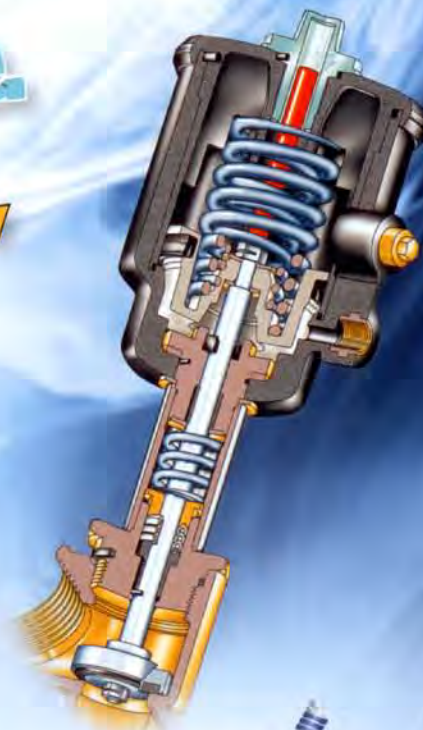
What's flexible, economic, and good for countless fluid applications? ASCO's 8290 Piston Valve. Ideal for handling aggressive fluids such as steam, hot water, solvents and light slurries, 8290 Piston Valves are as reliable as they come – solving your challenges with a single, reliable source.

So choose the pressure operated valves you can always count on.

Ask for ASCO.

ASCO Valve Canada

For product information:
www.ascovalue.ca/8290
Tel: (519) 758-2700
ascmail@asco.ca



EMERSON
Industrial Automation



Each 25 ft (7.6 m) long flexible screw conveyor consists of a rotating, stainless steel spiral screw, housed in a 4-1/2 in. (115 mm) o.d. polymer tube.

any extraneous material. After passing through the sorter the peanuts fall into a bucket elevator, which discharges into a hopper that feeds the attrition mill for making peanut butter. Milling is followed by the addition of ingredients, such as salt and sugar, plus several more process and purification steps to obtain the final product.

About 80% of the peanuts is used for making peanut butter, as noted earlier. The other 20%

is removed from the hopper through a separate port to be sold as split peanuts or processed into chopped peanuts to be used in the production of crunchy peanut butter.

In the latter case, the peanuts pass through a granulator, then over a vibrating screen that removes the fines. Chopped peanuts pass over the screen and are conveyed by a bucket elevator to the peanut butter operation.

Fines drop through the screen into a 1 cu ft (28.3 l) hopper. From there the material is moved by a flexible screw conveyor to the bucket elevator that feeds the attrition mill. In this case the flexible screw conveyor measures 30 ft (9 m) long, with an O.D. of 3.5 in. (90 mm), and with a spiral profile screw designed for moving the fines.

Previously the fines were dropped into a drum set on a truck that was pushed away manually when the drum was full. "Now we have an automated process, with no manual handling," says Worrell. "Before, we had to have someone there all the time, so we are probably saving \$20,000/yr in labor costs."

Next, Nutco plans to install a flexible screw conveyor in place of the bucket elevator that serves the attrition mill. "That bucket elevator is messy and has to be cleaned and sanitized weekly," says Worrell. "It also requires a great deal of maintenance because of the chains that drive the buckets. We replace about 75 buckets every year, at a cost of \$50/bucket."

Even though it's a sanitary design it tends to drop peanuts on the floor. Peanut meal and dust stick to the buckets." Worrell estimates that a flexible screw conveyor will have about a three-year payback, based on savings in maintenance and sanitation.

Flexicon www.flexicon.com

Circle 114 on ippt.ca/rsc

All-polyimide heaters operate to 260°C



These new Thermofoil heaters from Minco combine Kapton insulation with polyimide adhesive to achieve a temperature rating of 260°C (482°F), 50°C higher than previously possible with Kapton heaters and 15°C higher than silicone rubber heaters. The new construction, called "AP", allows 80 watts per square inch (13 watts per square centimeter) for faster warm-up and rapid response to changing heat loads. The result is higher throughput in many thermal processes.

www.mod-tronic.com
Mod-Tronic Instruments
Circle 116 on ippt.ca/rsc

Signal conditioners receive safety standard

The 2-channel MIT and the 2- and 4-channel MIX mini-MOORE products now meet UL 508 criteria, the UL safety standard for industrial control



equipment. miniMOORE Signal Conditioners have received UL approval under NMTR.E159337 for (Industrial Control Equipment) Power-circuit and motor-mounted apparatuses. miniMOORE products are now approved to be mounted in UL 508 cabinets for use in ordinary locations in accordance with the National Electrical Code, NFPA 70.

www.miinet.com
Moore Industries International
Circle 117 on ippt.ca/rsc

New wireless communications catalog

The Dilbert Blue Cat New Horizons in Wireless Communications catalogue contains 68 full color pages of products including wireless sensors, transmitters and receivers, and Ethernet

CPV O-SEAL SYSTEM



**Positive control
of high-pressure
liquids & gases**

The CPV O-Seal System of valves and fittings offers leakproof assurance for liquids and elusive gases from vacuum to 6000 psi. It is a total system. The O-ring, flat faced fittings provide the reliability of a heat-sealed system plus the convenience of "slip-in, slip-out" separable connections.

O-Seal valves, with their unique soft-seat cartridge design assure years of service and thousands of bubble-tight shutoffs. Available in tube & pipe sizes from 1/8" to 2". Call for more information, or visit www.cpvvmfg.com



CPV Manufacturing, Inc.
851 Preston Street,
Philadelphia, PA 19104-1598
Tel.: 888-278-5449
Fax: 215-387-9043
www.cpvvmfg.com

Since 1915

Circle 115 on ippt.ca/rsc

Power Up...

with Rare Earth Magnets!








Eriez' SafeHold® Lift Magnets

Eriez' offers the widest selection of compact permanent lift magnets. SafeHold® is available in four different styles to meet any price or performance requirement with capacities up to 10,000 lbs.

Call **888-300-3743** or visit www.eriez.com



NEW

SafeHold
Selection
Guide!



Circle 119 on ippt.ca/rsc

www.ippt.ca June 2010 25