

Centralized Vacuum for Food Packaging

Vacuum centralization is based on the installation of one or more vacuum pumps outside of the production area and their connection to the packaging machines by means of a sole main vacuum manifold

Article by Eng. Francesco Amati published on "Tecnalimentaria", July 2015 - Integral version



Pic. 1 - Rotary Vane Technology

Food packaging industries use vacuum to increase the shelf life of food products. Here the product is placed in an air-tight pack, the air is sucked out and the package is sealed. The aim is to hermetically shrink-wrap the contents from environmental influences and, thus, to minimize the oxygen presence inside the package, avoiding the activity of microorganisms to grow and spoil the product.

In most of these applications the vacuum is provided by single and small on-board vacuum pumps installed on their own packaging machine. Now the question is whether this solution is the most convenient and the easiest one. The short term approach and the attractive initial lower investment make this situation still the most popular, being the same suppliers of packaging machines offering the solution as 'standard' to end users, simplifying the lives of decision makers involved in the equipment choice.

Pneumofore, interacting with customers operating in this application, successfully introduced the 'centralized vacuum' concept in 2001, year of the first UV pump installation at Kerry Food in Ireland. Here and afterword in many other plants, the vacuum was moved from 'local' to centralized. The vacuum centralization is based on the installation of one or more vacuum pumps outside of the production area and their connection to the packaging machines by means of a sole main vacuum manifold.

The temperature during the packaging process must not exceed 2°C and the resulting elimination of heat generation in the cold rooms makes the expensive over-conditioning unnecessary. Noise, smell and any pump leakage are no longer a production concern. All these benefits are considerable and immediate.

In this application the UV pumps can operate together with a booster, mounted directly on top or in series along the pipeline or even under the packing machines. With the two-stage configuration, the system achieves a better and stable ultimate vacuum that - according to the kind and size of the food to be packed - grants 1 mbar(a) to the packaging machine. The entire process benefits thereof, increasing the process speed up to 20%.

Considering the growing cost of electrical power, which represents the largest share of the equipment's Life Cycle Cost (15 years or more for 24/7 operation), Pneumofore offers the Variable Speed Drive option to further improve the performance, allowing to set exactly the requested pressure value, therefore optimizing the power consumption. The inverter can be connected to the PLC of the factory, to be fully integrated for remote control and monitoring.

Pneumofore pumps are full air cooled, complete with electrical cabinet, all have controls for an automatic operation, sound proof canopy, intake filter and oil separation system for a clean exhaust without oil carryover. The easy and fast maintenance of the UV pumps is performed only twice a year with an additional advantage compared to the on-board single pumps which require food grade coolant and air filter replacement every 2 months, in order to comply with the restrictive food-industry safety norms.

At full customer satisfaction, Pneumofore has supplied vacuum systems to dozens of plants, among them are Kerry Foods, Hilton Foods, Edenmore Farm Meats, Park Food, Rosderra Meats, Denny Gold Meat, Branagan Meats, Dawn Farm Foods, Staunton Foods, Irish Country Meats, Marine Harvest, Globino Meat Factory, Franzin Carni and Bandon Vale (cheese).



Pic. 2 - UV50 Vacuum Pump, air-cooled, lubricated, rotary vane, single stage