

Danfoss Case Story: ICF Flexline™ valve station application in ice cream factory

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During a recent refitting of an ice cream manufacturing plant, the application of ICF Flexline™ valve stations from Danfoss led to a significant reduction in production down-time. It was estimated that approximately 80% improvement was realized when compared to traditional valve assemblies. Also, due to the small footprint of ICF Flexline™ valve stations and their ready-built feature, installation was made much easier and faster. This led to substantial savings in installation costs, component costs, and loss of valuable production time.

The ice cream factory in Vladivostok, Russia, was founded in 1986. Over the years, increased requirements for product quality and changing technical standards, as well as changes in market demand, mandated that they carry out a full technical re-equipment of their manufacturing plant.

The main goals of the re-equipment were to reduce energy consumption, to install modern and efficient equipment, to optimize temperature levels and to add the possibility of producing more varieties of deep-frozen products.

The ammonia refrigeration plant with compound and single-stage compressor units is supplied by circulation pumps. It supports three different temperature levels: -45°C , -40°C and -30°C . Ice-water is cooled by a liquid separator. The total cooling capacity of the unit is 2.5 MW.

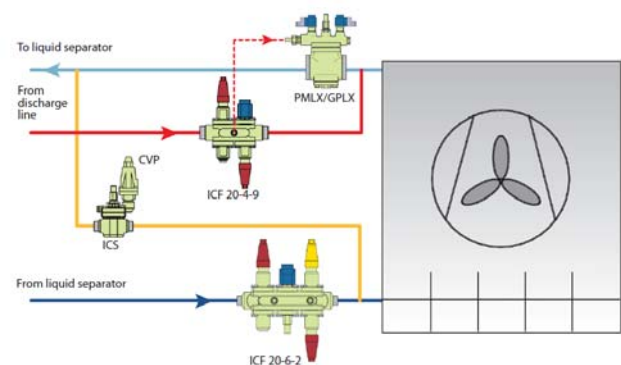


Fig 1: Principle of the evaporation system based on ICF Flexline™ valve stations.

The new refrigeration unit had to be installed within the existing rooms in the plant. However, since the ICF Flexline™ valve stations are very compact in size, this could easily be accommodated. This was one of the benefits the system engineer cited as a reason for developing a solution based on the Danfoss ICF Flexline™ valve stations.





Fig 2: The use of ICF Flexline™ valve stations on the distribution lines of evaporators in storage rooms

Due to the lack of space and the limited time available for installation work, the combined ICF Flexline™ valve station was applied on the distribution lines of the storage chambers. The ICF Flexline™ valve stations were installed on the liquid ammonia lines for the evaporators (fig. 1 and 2) and the hot ammonia gas lines used for defrosting the evaporators (fig. 1 and 4).



Fig 3: ICF valve stations fitted on evaporator defrosting lines

A similar solution is used in the deep freeze packing shop in the ice cream factory. ICF Flexline™ valve stations are installed in the distribution sections of fast-freezers. The compact design of the valve stations meant that the installation took up six times less space than traditional valve assemblies. Also, ICF Flexline™ valve stations require up to 80 % less time in installation, which meant that interruption of the production process for the installation was significantly reduced.

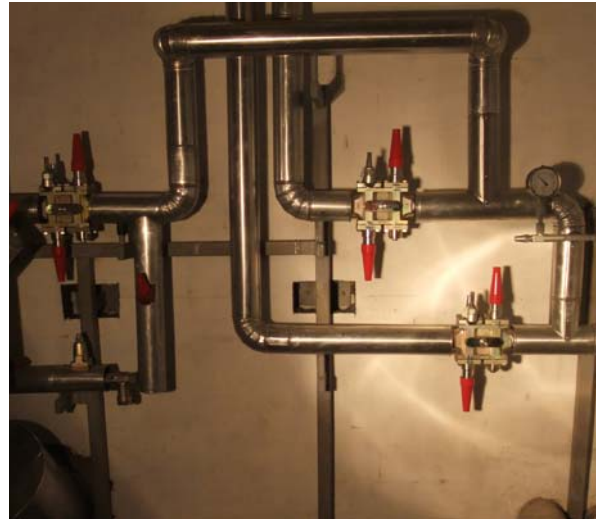


Fig 4: ICF Flexline™ valve stations on defrost lines

The ICF Flexline™ valve station design is based on a multi-ported body less than a foot long that will accept a combination of function modules chosen specifically for the customer's applications. The modular function inserts that can be mounted on an ICF Flexline™ body include stop valves, strainers, solenoid valves, check valves, combination stop/check valves, and motorized or hand expansion valves. Side ports can also be used as shown in Fig.1, 2 and 3. Once ordered, the valve station is delivered by Danfoss fully tested and ready to be installed with just two welds and no disassemble required.

The installation of ICF Flexline™ valve stations was made fast and convenient due to the unification of parts, the compactness and the small amount of ammonia used in the running of the stations.

For help in creating this article we thank technical director of the company OOO "OK", M.Sc. Mr. Kalunov and the head of the compressor shop at the ice cream factory Mr. Mutzhenko.

For further information on the ICF Flexline™ valve stations please visit our website www.danfoss.com/ICF or contact your Danfoss representative.