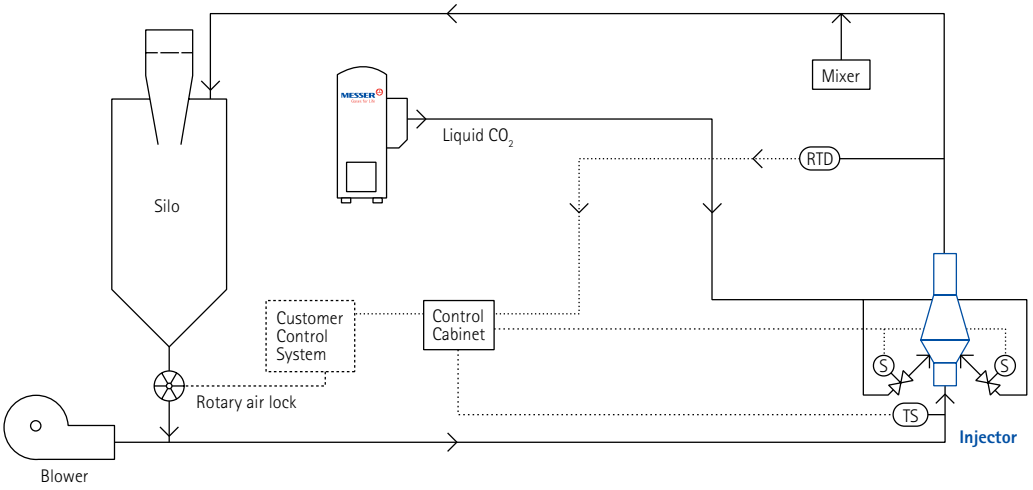
Dry Ingredient Chilling System.

Mode of operation

TS: Temperature switch S: Solenoid valve RTD: Resistance temperature sensor



General Information

The dry ingredient chilling system from Messer, which operates at more than 50 locations, is designed to pneumatically cool conveyed products such as flour, sugar, cocoa, etc. When used for flour in the baking industry, it ensures a consistent, top-quality product from every batch of dough. Achieving an accurate and even dough temperature plays a major role in determining the quality of baked goods, where the most important – yet most unpredictable – ingredient is usually flour. The dry ingredient chilling system from Messer chills flour in the transfer line, adding only the precise amount of refrigerant needed to obtain the desired flour temperature.

The system can be used with either a vacuum or a pressure pneumatic conveying system. A programmable controller (PLC) monitors the injection of cryogen in order to guarantee a uniform and consistent flour temperature. The dry ingredient chilling system produces accurate flour temperatures within one degree of the set point.

Unlike other chilling methods, Messer's dry ingredient chilling system introduces no additional moisture into the dough and shortens the processing time by chilling the dough more quickly than ice or other conventional methods. This system is is also fully automated, which eliminates costs associated with purchasing and handling ice.

Mode of operation

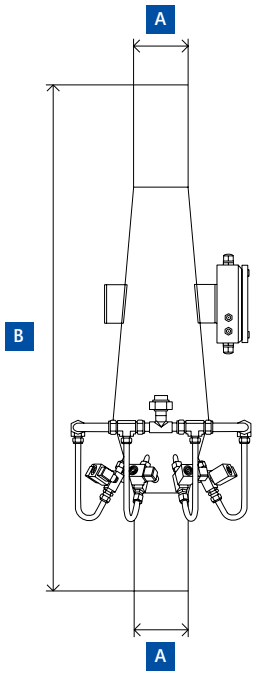
The silo powder valve and blower provide information to the PLC regarding the flow of ingredients into the system. The PLC regulates the amount of cryogen entering the system at the injector. Further down the line, a resistance temperature sensor (RTD) senses the temperature of the ingredients in the line and relays it to the control panel, which compares the actual temperature to the set point. Valves then open and close, controlling the amount of cryogen released into the system to precisely maintain the set point temperature. The set point can be easily changed as needed.

Benefits

- Consistent powder temperatures provide repeatable batch-to-batch dough quality
- Cryogenic cooling eliminates problems of excess moisture, unreliable timing, and labor costs associated with ice
- Improved machinability of dough increases processing rate
- Shorter processing time improves efficiency
- Less wasted dough increases profits
- Easy installation

Design of the injector

A Diameter B Length



Technical data

Type	Unit	Injector	Injector	Injector	Injector
Model		ICS-300	ICS-400	ICS-500	ICS-600
Injector diameter (A)	in	3	4	5	6
Injector length (B)	in	28	37-3/8	46-5/8	56
Number of injection nozzles/valves		4	6	6	8
Liquid CO_2 operating pressure	psi	220-290	220-290	220-290	220-290
Gaseous CO_2 operating pressure	psi	120-190	120-190	120-190	120-190
Liquid CO_2 pressure max.	psi	360	360	360	360
Gaseous CO_2 pressure max.	psi	360	360	360	360
Max. pressure conveyor piping	psi	14.5	14.5	14.5	14.5
Electrical connection for valves	V	120	120	120	120
Weight	lbs	33	40	44	55
Noise level	dB (A)	<70	<70	<70	<70
Type of protection	ATEX	Class 21	Class 21	Class 21	Class 21
Electrical connection for valves	V	120	120	120	120
Weight	lbs	33	40	44	55
Noise level	dB (A)	<70	<70	<70	<70
Type of protection	ATEX	Class 21	Class 21	Class 21	Class 21

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