THE LINDE GROUP

PLASTINUM® Foam E. Eco-friendly, cost-efficient extrusion foaming with DSD 400 inert gas metering unit.

DSD 400 metering unit

CO_2-foamed XPS insulation board

Extruded polystyrene profiles foamed with carbon dioxide

Challenge

Carbon dioxide (CO_2) as a physical blowing agent for extrusion-foamed plastics like XPS insulation boards is an established, excellent alternative to conventional foaming agents (such as HCFCs, HFCs or hydrocarbons). It offers performance, cost, environmental and climate mitigation benefits.

The production of particularly low density foams of high quality using CO_2 hinges on the accurate metering of CO_2 against fluctuating counterpressure. Due to its unique physical properties, CO_2 is more challenging to dose into extruders than traditional liquid foaming agents.

Solution

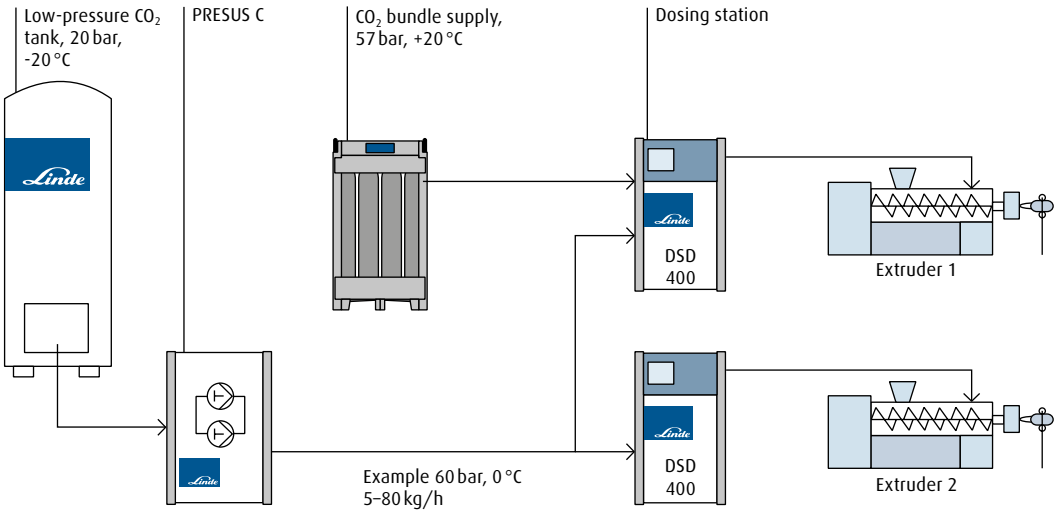
Linde offers a range of premium CO_2 solutions for plastic foaming applications. This includes PLASTINUM® Foam E, designed specifically to meet the metering challenges of CO_2 extrusion foaming systems. This proven high-pressure CO_2 supply and metering system is highly reliable and ensures excellent foaming results of consistently high quality. Reaching beyond innovative hardware and gas supply concepts, we also support our customers with leading-edge process consulting for maximum quality, capacity and profitability gains.

The DSD 400 inert gas metering unit – the heart of our PLASTINUM Foam E technology suite – ensures a stable flow of CO_2 irrespective of pressure and temperature. The DSD 400 basically consists of one CO_2-tuned, high-performance booster operated by compressed air, a mass-flow meter and a flexible control valve, which adjusts the flow to the pressure conditions in the extruder. A state-of-the-art flow regulation concept maintains the flow rate even in the event of strong counterpressure fluctuations. Unlike standard metering pumps, the DSD 400 does not require pre-cooled CO_2.

Benefits

- → Accurate mass flow control based on pneumatic feedback control system
- → Also suitable for other inert gaseous or fluid blowing agents, e.g. nitrogen or argon
- → Reliable and stable metering even in extreme climate conditions
- → No additional cooling devices required
- → Compact design enabling easy and inexpensive installation
- → Simple operation via operator panel and PLC

Overview of one-stop CO_2 foaming solution



Technical data

Min. – max. flow rates (model-specific)	0.7–7.0 kg/h CO_2 1.1–13 kg/h CO_2 4.0–30 kg/h CO_2
Booster	DLE30-75-2-GU-C
Extruder pressure	Max. 350 bar
Agent	Nitrogen (N_2)/carbon dioxide (CO_2)
CO_2 feed with dip tube (cylinder)	Max. 20 kg/h
CO_2 feed with liquid (tank), high-pressure supply	Max. 30 kg/h
N_2 feed with standard cylinder, inlet pressure 200 bar to 20 bar residual pressure	Max. 2.0 kg/h
Compressed air pressure	4–10 bar
Gas inlet connection	Ermeto 8S
Gas outlet connection	1/8" Swagelok
PLC	Siemens S 7
Display	6", 320x240 colour display
Power supply	230 V/50 Hz
Weight	Approx. 206 kg
Size of housing (WxDxH)	670 mm x 700 mm x 1750 mm

Know-how and complementary services

- One-stop supply concept including storage tank, pressure booster (e.g. PRESUS® C liquid CO_2 compressor station) and DSD 400
- Expert advice on customisation of PLASTINUM Foam E technologies to individual application challenges
- Gas management services such as SECCURA® automated delivery and ACCURA® remote gas monitoring
- On-site demonstration and trials

Safety

We provide safety information and safety data sheets on the safe handling and usage of CO_2. You will find these on our website.

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