

## PLASTINUM™ Foam E. Eco-friendly polymer foaming. DSD 500 inert gas metering device.



### Introduction

Carbon dioxide (CO<sub>2</sub>) as a physical blowing agent for foamed plastics like XPS insulation boards is an established, excellent alternative to conventional foaming agents (such as HCFCs, HFCs or hydrocarbons). It guarantees maximum compatibility with foamed plastics and environmental concerns due to its low Global Warming Potential and zero Ozone Depletion Potential. In addition, the use of CO<sub>2</sub> offers remarkable cost benefits compared to conventional blowing agents.

Due to its unique physical properties, the exact dosing of CO<sub>2</sub> into the extruder is more challenging compared to applying traditional liquid foaming agents. The accurate metering of carbon dioxide against fluctuating counter pressures is the key to producing particularly low density foams of high quality.

### Solution

Linde offers premium solutions for supplying liquid CO<sub>2</sub> (LCO<sub>2</sub>) for foaming: Customized LCO<sub>2</sub> storage and supply system, pressure increase unit and flow metering system. A first stage PRESUS® C pump system brings LCO<sub>2</sub> to a higher pressure and delivers LCO<sub>2</sub> in a bubble-free state to all types of high pressure metering systems.

The DSD 500, a second stage booster and high pressure metering system, is the core of Linde's PLASTINUM Foam E technology. It provides a stable flow of LCO<sub>2</sub> independent of pressure and temperature. The DSD 500 consists of one or two high-performance pneumatically driven boosters, a mass-flow meter and a highly dynamic control valve which adjusts the flow automatically to the pressure conditions in the extruder. The constant flow rate is achieved by a patented flow regulation concept and is not affected by strong counter pressure fluctuations. Unlike other metering pumps, the DSD 500 does not require pre-cooled LCO<sub>2</sub>.

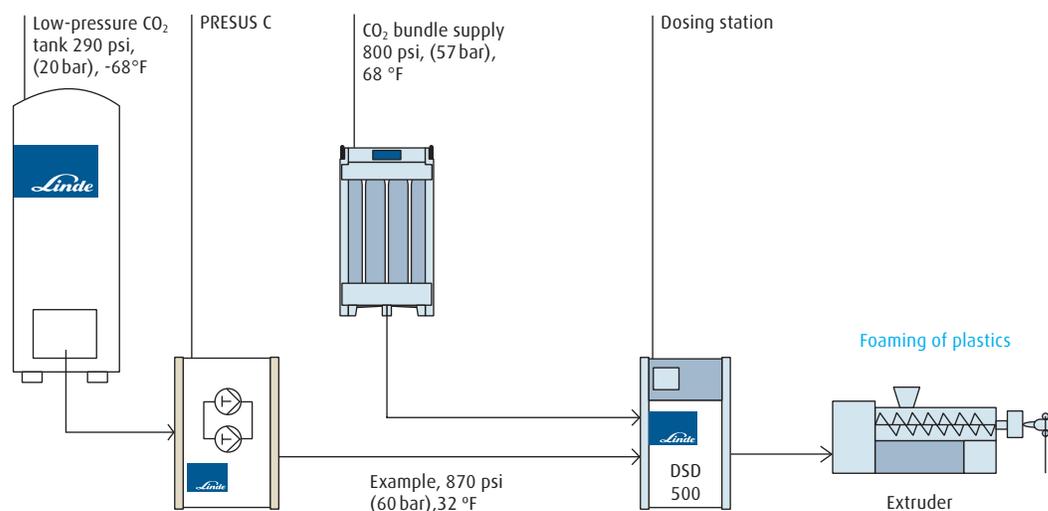
### Operation benefits

- Extremely accurate mass flow control
- Delivery of LCO<sub>2</sub> without pulsation
- Prompt reaction to process fluctuations
- Automatic adjustment to the extruder pressure
- Also suitable for other inert gases or fluids, e.g. nitrogen or argon

### Installation benefits

- No additional cooling device required
- Easy and inexpensive installation
- Simple operation via operator panel and PLC
- Compact design

### Schematic of CO<sub>2</sub> supply options for the DSD 500



#### Technical data

Maximum compressor pressure	7250 psi (500 bar)
Maximum injection pressure	6090 psi (420 bar)
Available standard flow rates	0.12 - 6.6 lb/h LCO <sub>2</sub> 1.1 - 22 lb/h LCO <sub>2</sub> 4.4 - 66 lb/h LCO <sub>2</sub> 13.2 - 132 lb/h LCO <sub>2</sub>
Power supply	230 V, 50 Hz, 2 A
Compressed air supply	87 psi (6 bar)
Floor space	2ft x 2.3ft
Height	6.6ft

#### Additional services

- Linde offers a complete supply solution, including tank, pressure boosting equipment and the DSD 500 metering device
- Support of trials/demonstrations at the customer site, using Linde's test equipment
- Consultancy and guidance

#### Typical application

The DSD 500 ensures exact metering of inert gases to an extruder (extrusion foaming) or other plastic processing machines (e.g. polyurethane foaming) for continuous as well as for non-continuous operation.

#### Safety considerations

Please read operation instructions and refer to Linde safety data sheets.

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