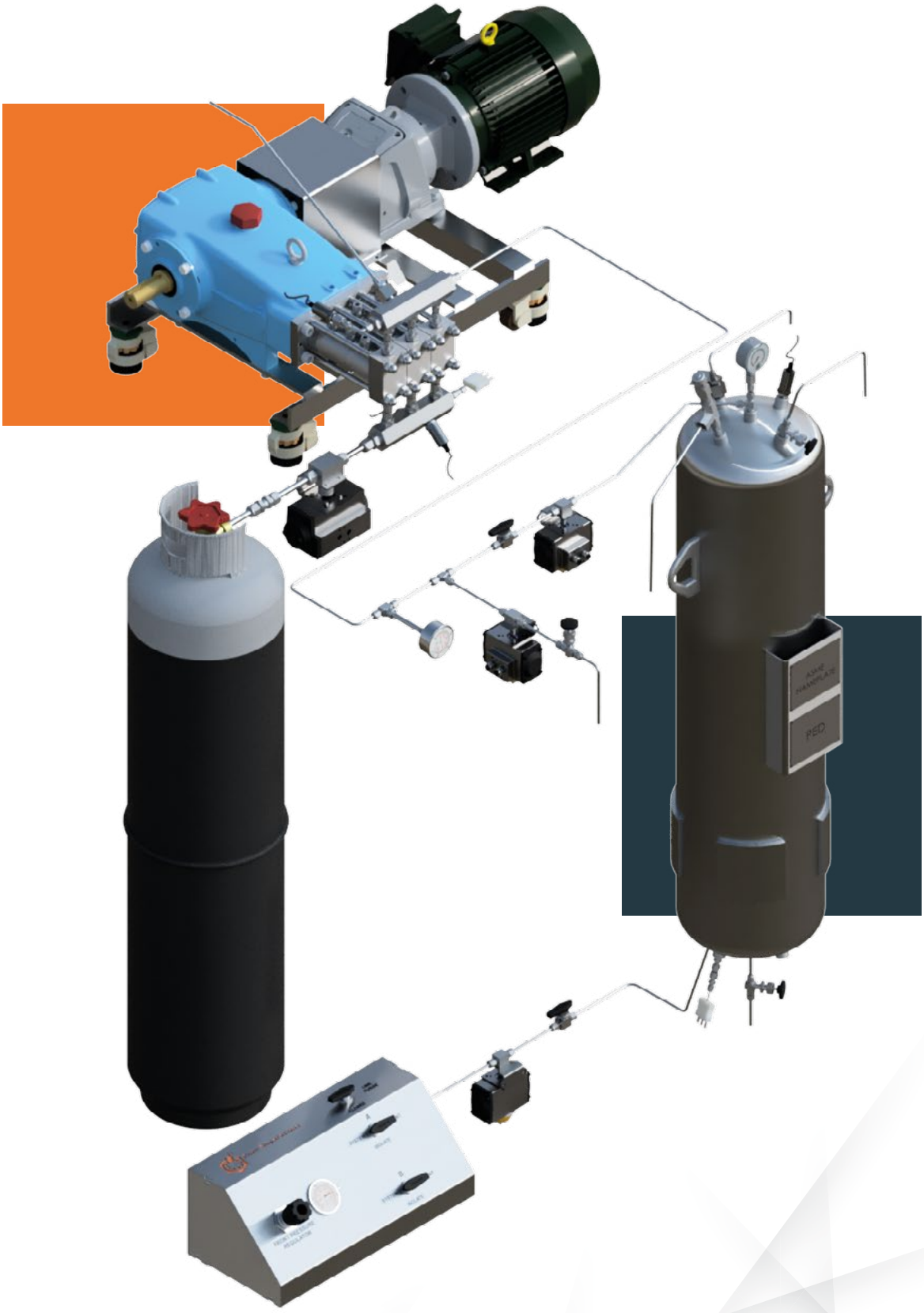
SECTION 16

Core | **BDS**
Bulk Delivery System

The Core Separations bulk delivery system (BDS) is designed for users operating multiple SFC systems who require an intermediate supply of cryogenic CO_2 without the need for large-scale bulk storage typically provided by major gas suppliers. It offers a cost-effective solution for delivering high-pressure CO_2 to laboratories with continuous demand, while significantly reducing the need for manual handling of individual CO_2 cylinders. The Core Separations BDS can be configured to meet a broad range of requirements, from supplying CO_2 to analytical instruments through to supporting preparative SFC applications with significantly higher CO_2 demands.

Core | **How BDS works?**



The BDS

The bulk delivery system is designed to compress cryogenically stored liquid CO_2, initially supplied at 22 bar, making it ready for use in either Supercritical Fluid Extraction (SFE) or Supercritical Fluid Chromatography (SFC) systems. It operates at a maximum pressure of 80 bar, allowing CO_2 to be delivered at 74 bar to prevent common issues with phase change from liquid to gas when CO_2 is piped over long distances at lower pressures. The delivery pressure is adjustable to meet specific requirements. The system requires no active cooling and maintains the buffer tank at 80 bar, with a front-end pressure regulator supplying CO_2 to the instrument at the desired pressure.

VESSEL SIZES AVAILABLE

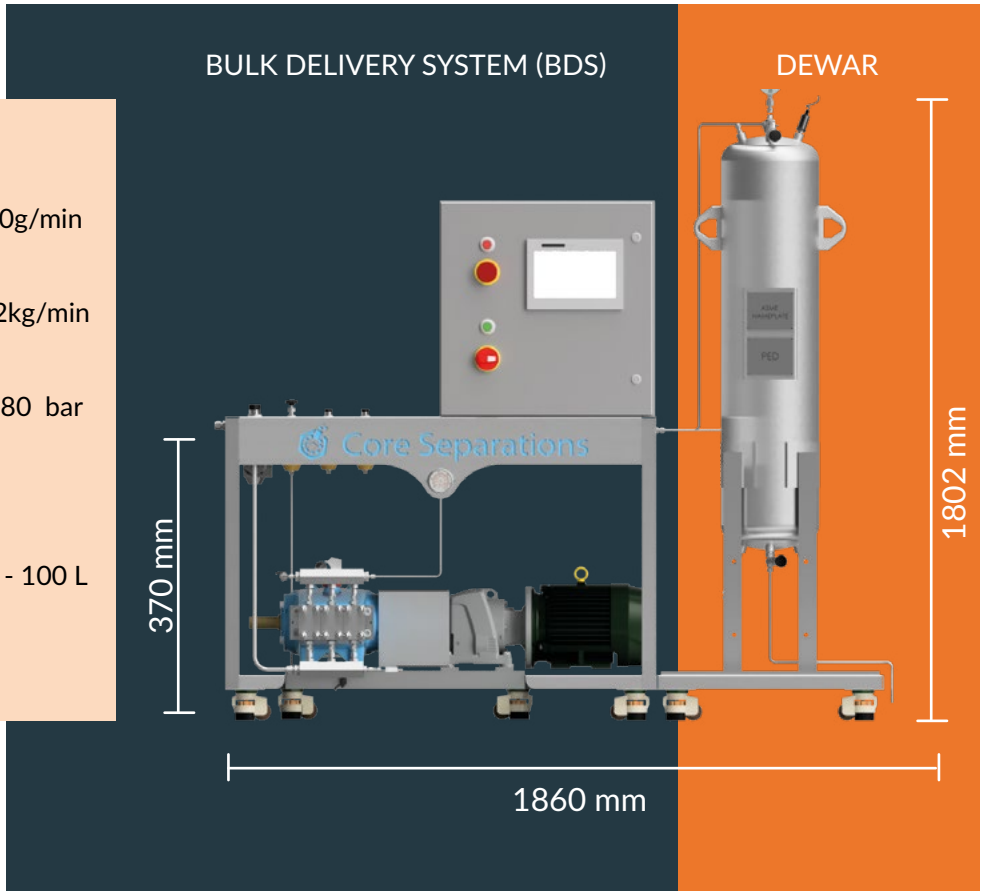
50L | 100L

BDS

CO2 flowrate (Without Cooling)	500g/min
CO2 Flow Rate (-20°C Cooling)	2kg/min
Max pressure	80 bar

Dewar

Capacity	50 - 100 L



SPECIFICATION

Power requirements
400-460 V (32A) (main Panel)
220V - 240 V (13A) Remote Panel

Pneumatic Air Pressure (bar/psi)
6.9 bar / 100 psi, 1/4" compression inlet

CO_2 Inlet
20 bar, 1/4" compression inlet

Vent Line
1/2" compression outlet

Weight
100 kg (depending on options)

Chiller
Optional

PC & Monitor
Minimum of 1.5 GHz, 16 GB RAM, 250 GB storage, Ethernet port for control panel, wired or wireless connection for Internet connectivity. Google Chrome browser. Monitor 21" minimum with 1920 x 1080 pixels resolution

High-Flow CO_2 Delivery Without Cooling

"Our bulk delivery system operates efficiently without the need for cooling on either the pump or the incoming CO_2 supply. Under these conditions, it can deliver up to 500 g/min, depending on the pump model."

Enhanced Performance with Integrated Cooling

Applying cooling to both the incoming CO2 and the pump heads significantly enhances system performance—boosting flow rates by up to four times and enabling output of over 2 kg/min. This increased capacity supports greater delivery efficiency, making the system an ideal choice for high-demand applications where consistent performance and reliability are essential

Advantages

Reduced Manual Handling – Eliminates the frequent need to swap out CO2 cylinders, improving safety and workflow efficiency.

Lower CO2 Cost – Cryogenic CO2 is generally more cost-effective than using individual cylinders.

Improved Pressure Stability – When CO2 is delivered over long distances (e.g. from outside to inside the lab), pressure drops can cause a biphasic liquid-gas mix when using cylinders. This can disrupt compression in the SFC system until the gas is purged. The BDS mitigates this by delivering CO2 at 74 bar, significantly reducing the likelihood of gas formation during transit.