



CO2 Liquid (and N2 mix) Cylinder Filling System - Automatic cylinder loading, fully automatic control of filling

Our system solutions have been developed from many years of experience in gases engineering, equipment manufacture and operations. The end result is a range of manual to fully automatic systems that are highly productive, easy to operate and cost effective for the modern gases industry.

This data sheet details our Single Cylinder Filling System for Liquid CO2 and Liquid CO2/gaseous N2 mixtures and encompasses the latest technology and methods for the filling of individual cylinders: and can comprise of the following modules:

- Integrated Supply System
- Filling Station, complete with remote support facility
- Integrated Analysis system
- Integrated Vacuum System

Product Technology

These systems are built as a single assembly comprising of 2 or more filling points, suitable for 1, 2, 10, 20, 30 & 50-litre cylinders. The smaller cylinders are filled directly on the conveyor, while the 50-litre cylinders are filled off the conveyor, but using the same fill position. This state-of-the-art filling system has been developed to provide our Clients with a system that meets and exceeds all their requirements – Reduced Manual Handling; Safety; Productivity, Quality, and Validation:

- 1. Reduced Manual Handling** pallet lifters and conveyors aid the journey of the cylinder to and from the point of filling
- 2. Safety** incorporates best practice design for CO2 systems; over-pressure protection; key process safety interlocks; and operator protection
- 3. Productivity** one man operation, yielding productivity in excess of 25% improvement over conventional systems
- 4. Quality** cylinders are: automatically checked for residual pressure before proceeding to a vacuum cycle; and filled individually by weight and flow control. All details during the fill are recorded automatically against a batch and cylinder ID. The system is Paperless as all

records are generated and stored electronically and each can include: latest tanker analysis; latest vessel analysis (liquid batch); operator ID; fill cycle details; batch cylinder analysis

- 5. Validation** each system is supplied with 'Lifecycle' validation documentation.



The systems are all built and tested off site, which significantly reduces the on-site installation and validation time.

The operator removes the cylinder from the pallet to the conveyor and moves to the fill station, selects recipe, connects the cylinder and presses 'Start Fill', then moves to the next fill station. The process from this point on is fully automatic: residual cylinder pressure confirmation; vacuum cycle; profile fill cycle by weight; cylinder valve closes; vent manifold; alert operator to remove and replace cylinder; cylinder moves and rotates to position for loading into pallet.



Existing pumping systems can be utilised or can we can provide new systems – see Product Data Sheet ‘*Tank, Pumping & Vaporiser Systems*’

List of common features:

- Pallet lifters
- Converyor system
- Back flow prevention System
- Fill, Vent & Vacuum
- Proportional flow control
- 100% certainty of Gas Quality
- Return pressure checking
- Multi-Tasking
- Pressure Safety
- Control Interface
- Pre-built and testing Workstation
- Interface for Barcode reader or electronic tag (if required)
- Interface for automatic batch label generation
- Ergonomic design
- Easy to use operator interface

Documentation

Each of our systems/projects comes with a comprehensive document package, which includes:

- Design Documents
- CE Build Files
- P&ID's and Process Descriptions
- Validation Documentation

- Safety Studies
- Spares and Maintenance lists
- Operating Instructions
- Certification for all materials/parts

Summary of Benefits

- Flexibility of Design
- Ergonomic design
- Validation
- Minimum on site Installation
- Turnkey Project or Equipment Only (with commissioning service)
- High Productivity (minimum manning)
- Full Documentation with Safety Study

Also see our other Product Data Sheets:

- Storage, Pumping & Vaporiser Systems
- Fully Automatic Filling Systems
- Manual Filling Systems
- Semi Automatic Cylinder Filling Systems
- Single (Medical) Cylinder Fill System
- Plant Systems
- Gas Generation Plant
- Gas Mixing & Distribution Systems
- Special Projects

