



# Next Generation Energy Saving Cycling Dryers

Lower greenhouse gases.

Lower total cost of ownership.

Small footprint.



Energy efficient compressed  
air treatment

**CDF-ES Series**  
Cycling Refrigeration Dryers

# Next Generation Energy Saving Refrigeration Dryer

## High efficiency air treatment

Quality, efficiency and sustainability are just as important for compressed air treatment as they are for the generation of compressed air. The new Cycling Dryers from CompAir deliver consistent high performance along side optimised energy efficiency, increased environmental credentials and a lower total cost of ownership.

EU regulations are constantly pushing the boundaries for improved sustainability and a reduction in global CO<sub>2</sub> footprint. These new dryers from CompAir are a step ahead – supporting sustainability with low GWP refrigerants for ISO Class 4 (+3°C PDP) markets.

The CompAir Cycling Dryers offer best-in-class performance and low carbon footprint on variable flow demand – in air and water-cooled options. The high efficiency design and construction of these cycling dryers helps achieve better performance, at the same time reducing energy consumption – the high-efficiency

heat exchanger combined with a thermal mass circuit delivers energy savings at any load, and automatically deactivates the refrigerant compressor when not needed.

## Investment protection through compressed air quality

Modern production systems and processes demand high quality compressed air, which is defined in the 6 classes outlined in international standard ISO 8573-1:2010 as illustrated below. These are only achievable with filtration, water separation and drying. Users in the food and pharmaceutical industry must adhere to stringent compressed air quality guidelines, as well as local legislation. Other industries may also follow specific advice regarding, the quality of compressed air they use to ensure the protection and efficiency of process equipment and finished product.

## Compressed air quality classes according to ISO 8573-1:2010

ISO 8573-1: 2010 Class	Solid Particulate				Water		Oil
	Maximum number of particles per m <sup>3</sup>			Mass Concentration [mg/m <sup>3</sup> ]	Vapour Pressure Dewpoint [°C]	Liquid [g/m <sup>3</sup> ]	Total Oil (aerosol liquid and vapour) [mg/m <sup>3</sup> ]
	0.1 - 0.5 µm	0.5 - 1 µm	1 - 5 µm				
0	As specified by the equipment user or supplier and more stringent than Class 1						
1	≤ 20,000	≤ 400	≤ 10	—	≤ -70	—	0.01
2	≤ 400,000	≤ 6,000	≤ 100	—	≤ -40	—	0.1
3	—	≤ 90,000	≤ 1,000	—	≤ -20	—	1
4	—	—	≤ 10,000	—	≤ +3	—	5
5	—	—	≤ 100,000	—	≤ +7	—	—
6	—	—	—	≤ 5	≤ +10	—	—

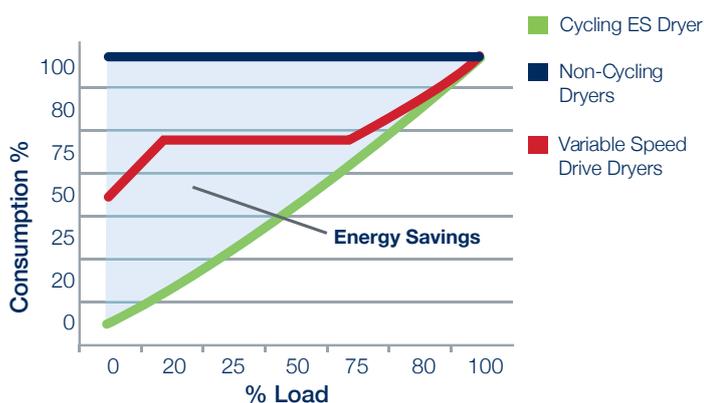
“ Achieve maximum energy savings, while ensuring a continuous supply of dry high-quality air and timely return on investment.



## Advanced Environmental Credentials

By shutting off the refrigerant compressor during low loads, CompAir’s cycling dryers dramatically reduce energy consumption. Using environmentally-friendly R513A refrigerants with the lowest Global Warming Potential, also contributes to reducing greenhouse gas emissions. High quality components provide longer lasting dryers that require fewer replacement parts, again minimising impact on the environment.

### Energy Savings by Technology



## Save energy with cycling refrigeration dryers

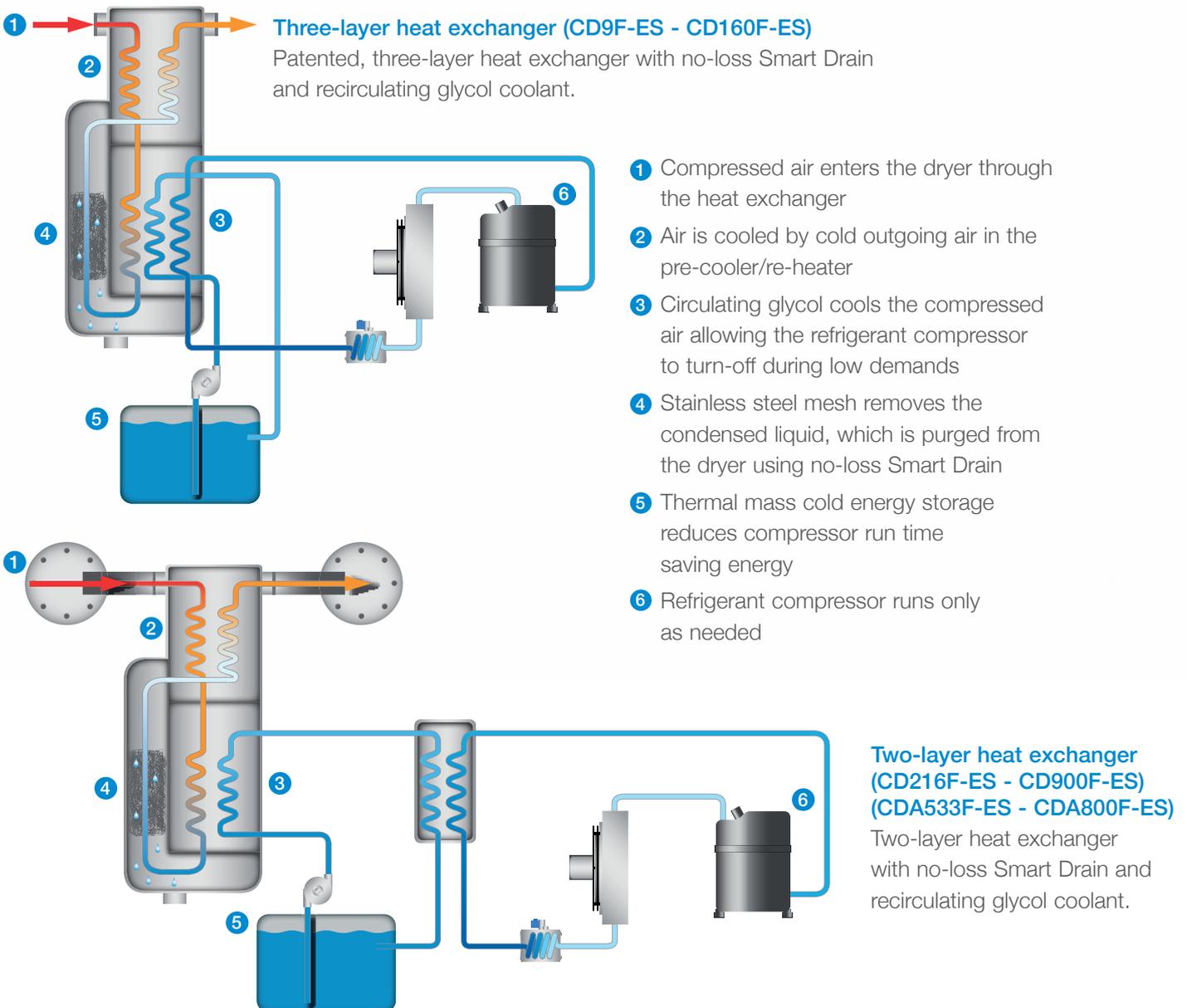
The cycling dryer is designed to deliver the lowest cost solution by focusing on all of the cost contributors. In a typical compressed air dryer, the refrigerant compressor runs continuously regardless of demand.

- Patented heat exchanger design achieves highest heat transfer efficiency in the industry, reducing compressor run time and therefore lowering energy costs
- Lowest pressure drop in the industry, averaging less than 0.2 bar g
- Thermal mass cold energy storage reduces dryer's compressor run time
- High quality air with ISO Class 4 dew point (+3°C)
- Smart drain - electronic no-loss drain eliminates compressed air loss
- R513A, R410A refrigerants also reduce energy consumption
- Advanced circuit design eliminates the need for thermal expansion valves and fan control switches
- True plug-and-play with single point connections for minimal installation costs

# Reliable, efficient & clean dry air

## How the cycling refrigeration dryers work

Most applications operate with varying degrees of compressed air usage. CompAir's cycling dryers match that by minimising operating time through the use of thermal mass, cold energy storage.



“CompAir’s cycling refrigeration dryers deliver the very best combination of high efficiency, low pressure drop and small footprint.”

## Features are your benefits

### Reliable and Simplistic Design

Microprocessor control and no-loss Smart Drain increase reliability, while dryer self-regulation, plug-and-play installation and readily available parts make for simple and easy maintenance.

### Innovative Control Panel

With all the main functions you would expect to control and monitor the unit:

- Anti freeze mode – shuts dryer off to avoid icing
- Alarm display: Dew Point, high/low temperature, High ambient temperature
- Remote ON/OFF optional up to CD160F-ES, standard from CD216F-ES
- Alarm history
- Condensate drain management
- Ready for Industrial IOT with adoption of iConn, remote monitoring, preventive maintenance, free cloud portal

### New 3-layer Heat Exchangers

Designed and developed in our laboratories to deliver the highest levels of performance with the lowest pressure drop. The adoption of the new CompAir heat exchanger has enabled the removal of the inlet and outlet headers.

### Glycol Pumps

Provides a constant circulation of glycol with the compressor on or off.

### Innovative No-loss Smart Drain

Fitted as standard, a sensor is installed directly in the moisture separator and control logic is managed by the main Control Panel.



# Reliable efficient design



## No-loss Smart Drain

The powerful no-loss electronic Smart Drain is standard on all units and eliminates the need for pre-setting the unit. It uses state-of-the-art software combined with a special transducer interface to measure the presence of condensate so that it is released only when needed. Continuous monitoring ensures fast and effective discharge of the condensate with no deficit of compressed air.

## Correction Factors

Correction Factors for working pressure															
bar	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
FC1	0.7	0.78	0.85	0.93	1	1.06	1.11	1.15	1.18	1.2	1.22	1.24	1.25	1.26	

Correction Factors for inlet air temperature							
°C	30	35	40	45	50	55	60
FC2	1.2	1	0.85	0.71	0.58	0.49	0.42

Correction Factors for dew point temperature									
°C	3	4	5	6	7	8	9	10	
FC3	1	1.04	1.09	1.14	1.18	1.25	1.3	1.33	

Correction Factors for ambient temperature (for air cooled)							
°C	25	30	35	40	42	45	50*
FC4	1	0.96	0.92	0.88	0.85	0.8	0.7

\*units up to, and including CD160F

Correction Factors for different water inlet temperature (for water cooled version)									
°C	15	20	25	29.4	30	35	38	40	
FC4	1.08	1.06	1.03	1	0.99	0.95	0.91	0.88	

Calculation for correct Dryer Air flow = Nominal Dryer Air Flow x FC1 x FC2 x FC3

## Energy Consumption

Model	kW Nominal Power at % Load			
	100%	75%	50%	25%
CD9F-ES	0.24	0.19	0.14	0.09
CD12F-ES	0.32	0.25	0.18	0.11
CD18F-ES	0.45	0.35	0.25	0.14
CD24F-ES	0.51	0.39	0.28	0.16
CD30F-ES	0.54	0.42	0.29	0.17
CD40F-ES	0.64	0.49	0.34	0.19
CD50F-ES	0.79	0.60	0.42	0.23
CD60F-ES	0.94	0.72	0.49	0.27
CD80F-ES	1.03	0.78	0.54	0.29
CD100F-ES	1.28	0.83	0.57	0.30
CD130F-ES	1.80	1.16	0.79	0.41
CD160F-ES	2.18	1.40	0.95	0.50
CD216F-ES	2.14	1.64	1.14	0.64
CD250F-ES	2.45	1.87	1.29	0.71
CD300F-ES	2.92	2.22	1.53	0.83
CD375F-ES	3.68	2.79	1.91	1.02
CD430F-ES	4.69	3.55	2.41	1.27
CDA533F-ES	6.68	5.10	3.53	1.95
CDA700F-ES	7.18	5.48	3.78	2.07
CDA800F-ES	7.18	5.48	3.78	2.07
CD900F-ES	9.74	7.36	4.98	2.60

# CompAir Cycling Refrigeration Dryer - Technical Data

CompAir Dryers from 0.9 to 90.00 m<sup>3</sup>/min

Model	Air Flow-Rate	Absorbed Power	Power Supply	Dew Point	Max Pressure	Air Connection	Refrigerant	Dimensions	Weight	Recommended Filter**
	3°C [m <sup>3</sup> /min]	[kW]	[V/Ph/Hz]	[ISO Class]	[bar g]	[BSP]		WxDxH [mm]		
CD9F-ES	0.90	0.24	230/1/50	4	16	½"	R513A	386x500x651	39	CF013
CD12F-ES	1.20	0.32	230/1/50	4	16	½"	R513A	386x500x651	43	CF013
CD18F-ES	1.80	0.45	230/1/50	4	16	¾"	R513A	386x500x651	48	CF018
CD24F-ES	2.40	0.51	230/1/50	4	16	¾"	R513A	386x500x651	51	CF025
CD30F-ES	3.00	0.54	230/1/50	4	16	1"	R513A	423x567x771	67	CF032
CD40F-ES	4.00	0.846	230/1/50	4	16	1"	R513A	423x567x771	71	CF067
CD50F-ES	5.00	0.65	230/1/50	4	16	1½"	R513A	500x718x980	105	CF067
CD60F-ES	6.00	0.78	230/1/50	4	16	1½"	R513A	500x718x980	108	CF067
CD80F-ES	8.00	0.84	230/1/50	4	16	1½"	R513A	500x718x980	120	CF0100
CD100F-ES	10.00	1.05	230/1/50	4	16	2"	R513A	779x720x1360	186	CF0100
CD130F-ES	13.00	1.62	400/3/50	4	16	2"	R513A	779x720x1360	227	CF0133
CD160F-ES	15.83	2.08	400/3/50	4	13	2"	R513A	779x720x1360	237	CF0167
CD216F-ES	21.67	2.68	400/3/50	4	14	3'	R513A	806x1012x1539	394	CF0260
CD250F-ES	25.00	3.22	400/3/50	4	14	3'	R513A	806x1012x1539	394	CF0260
CD300F-ES	30.00	3.74	400/3/50	4	14	3'	R513A	806x1012x1539	394	CF0305
CD375F-ES	37.50	4.32	400/3/50	4	14	3'	R513A	806x1012x1539	399	CF0383
CD430F-ES	43.33	6.68	400/3/50	4	14	3'	R513A	806x1012x1539	399	CF0450
CDA533F-ES	53.33	6.8	400/3/50	4	14	DN150 PN16	R513A	880x1819x1796	810	CF0700
CDA700F-ES	70.00	7.18	400/3/50	4	14	DN150 PN16	R513A	880x1819x1796	840	CF0700
CDA800F-ES	80.00	11.12	400/3/50	4	14	DN150 PN16	R513A	880x1819x1796	840	CF0950
CD900F-ES	90.00	12.15	400/3/50	4	13	DN150 PN16	R513A	1510x1500x1555	1020	CF0950

Features	CD9F-ES – CD40F-ES	CD50F-ES – CD80F-ES	CD100F-ES – CD160F-ES	CD216F-ES - CD900F-ES
Dew Point Indication	•	•	•	•
On/Off Switch	• <sup>1)</sup>	•	•	•
Terminal for Remote Alarm Signal	•	•	•	•
High Pressure Switch			• <sup>3)</sup>	•
Fan Pressure Switch			• <sup>3)</sup>	•
Alarm History (Last Entries)	10	10	10	50
Heat Exchange Layers	1 x 3	1 x 3	1 x 3	2 x 2
Anti-Freezing Protection	•	•	•	•
No-loss Smart Drain	•	•	•	•
Glycol Circulator	•	•	•	•
Aluminium Heat Exchanger with Anti-Corrosion Manifold	•	•	•	•
% Energy Saving Display	•	•	•	•
Number of Probes*	2	2	2	4
Quick Restart Function			•	•

• Standard Feature "blank" not applicable

\* 2 probes = glycol control and frigorific circuit, 4 probes = glycol control, refrigerant suction, compressor oil, air inlet + 1 thermal switch contact on refrigerant discharge line

\*\* We recommend the installation of additional pre and post filters depending on air quality requirements

<sup>1)</sup> Only on CD40F-ES    <sup>2)</sup> Only on CD100F-ES    <sup>3)</sup> Only on CD130F-ES & CD160F-ES

# Innovation & Engineering Excellence



A leading global manufacturer of a wide range of world-class compressed air solutions, CompAir is dedicated to providing a complete solution for our industry partners. From the latest advances in oil-free and oil-lubricated technologies to a complete range of downstream equipment, air treatment and accessories.

An extensive network of dedicated CompAir sales companies and premium partners across all continents provide global expertise with a truly local service, ensuring our advanced technology is backed up with the right support.

CompAir has consistently been at the forefront of compressed air systems development, culminating in some of the most energy efficient and low environmental impact compressors on the market today, helping customers achieve or surpass their sustainability targets.

## CompAir compressed air product range

### Advanced Compressor Technology Lubricated

- Rotary Screw
  - > Fixed and Regulated Speed
- Portable
- Vane

### Oil-Free

- Water Injected Screw
  - > Fixed and Regulated Speed
- Two Stage Screw
  - > Fixed and Regulated Speed
- Rotary Scroll
- Ultima®

### Complete Air Treatment Range

- Filter
- Refrigerant and Desiccant Dryer
- Condensate Management
- Heat of Compression Dryer
- Nitrogen Generator

### Modern Control Systems

- CompAir DELCOS Controllers
- SmartAir Master Plus Sequencer
- iConn - Smart Compressor Service

CompAir policy is one of continuous improvement and we therefore reserve the right to alter specifications and prices without prior notice. All products are sold subject to the Company's conditions of sale.

### Value Added Services

- Professional Air Audit
- Performance Reporting
- Leak Detection

### Leading Customer Support

- Custom Engineered Solutions
- Local Service Centres
- Genuine CompAir Parts and Lubricants