Atlas Copco

Heat-of-compression rotary drum dryers
ND series (1000-2500 l/s, 2290-5297 cfm)

Sustainable Productivity

Atlas Copco

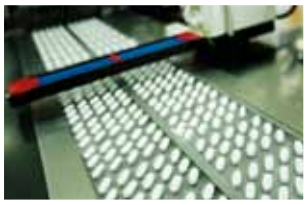
Cost-effective dry air for your application

Dry and clean compressed air is essential for a broad range of industrial applications. Yet it must be produced reliably, energy-efficiently and cost-effectively. Atlas Copco's heat-of-compression rotary drum dryers protect your systems and processes. Their robust design ensures they operate with total reliability and deliver the desired quality of air.

FOOD & BEVERAGE

A RELIABLE SUPPLY OF DRY AIR

- Avoid any risk of contamination to your end product by using high-quality dry compressed air.
- Eliminate any moisture to safeguard your process air.



PHARMACEUTICALS

A TIGHT CONTROL ON QUALITY

- Strict moisture control is key in the manufacture of most drugs and medicines.
- When producing high-quality medicines, the presence of dry air in the processing area and machinery is vital.

POWER GENERATION

A FOCUS ON PRODUCTIVITY

- All kinds of power plants rely on dry, clean compressed air to operate pneumatically controlled valves and other components.
- High-quality dry air is the key to achieving plant productivity and cost savings.

PROCESS AIR

A CONTINUOUS FLOW OF DRY AIR

- High-quality dry air is vital for efficient pneumatic and instrumentation control.
- A dependable stream of high-quality dry air is essential to ensure your process continuity.

PROTECTING YOUR REPUTATION AND PRODUCTION

By removing moisture from compressed air with a pressure dewpoint as low as -45°C/-49°F, ND heat-of-compression rotary drum dryers eliminate system failures, production downtime and costly repairs.

KEEPING YOUR PRODUCTION UP AND RUNNING

Atlas Copco's proven rotary drum technology ensures maximum reliable process continuity thanks to the use of high-quality materials. In addition, its simple design eliminates any risk of losses and advanced control and monitoring is available for optimal energy efficiency.

DRIVING DOWN ENERGY COSTS

As the heat-of-compression is used to dry the desiccant, limited energy is required for drying. The energy required to rotate the drum is negligible. Furthermore, there is no loss of compressed air, ensuring 100% flow capacity at output. ND dryers* are also characterized by zero purge by design*, an extremely low pressure drop, and no filtration requirements.

**Optional for ND 1000-1300 range.*

EASY INSTALLATION AND LONG MAINTENANCE INTERVALS

The combination of an easy-to-service vessel, minimal maintenance downtime and long service intervals reduces your maintenance time and costs. The dryers have a small footprint thanks to an innovative all-in-one design. Delivered with inter-connecting piping, installation is straightforward, minimizing costly production downtime.

ASSURING YOUR PEACE OF MIND

Through continuous investment in our competent, committed and efficient service organization, Atlas Copco ensures superior customer value by maximizing productivity. With a presence in over 170 countries, we offer professional and timely service through interaction and involvement.

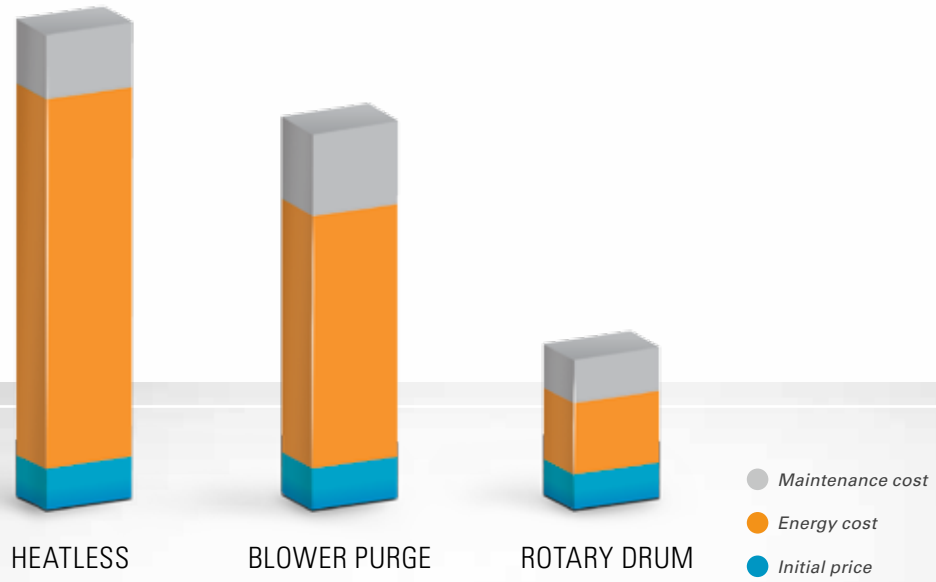
Why rotary drum dryers?

A dry compressed air system is essential to maintain the reliability of production processes and the quality of end products. Untreated air can cause corrosion in pipe work, premature failure of pneumatic equipment, and product spoilage.

A heat-of-compression dryer is an energy-efficient way to produce dry air. It uses the heat that is generated in the compression process to regenerate the desiccant. This heat is typically wasted in other drying technologies. Dewpoints as low as -45°C/-49°F can be achieved, depending on the site conditions.

PERFECT FOR OIL-FREE COMPRESSORS

Heat-of-compression rotary drum dryers are especially designed to operate with oil-free screw and centrifugal compression technologies.



LIFECYCLE COST

Energy can constitute up to 80% of the total lifecycle cost of a dryer. You therefore need to look closely at energy efficiency when selecting a dryer. The illustration compares the lifecycle cost of heatless, blower purge and rotary drum dryers sized to dry 1950 l/s of air.

The heatless desiccant dryer is the most expensive to operate as 15% of its rated flow capacity is consumed as purge air. The rotary drum dryer can lead to significant energy savings because of its unique design and controls. Even compared to a blower purge dryer, rotary drum dryers can save up to 50% of the lifecycle cost.

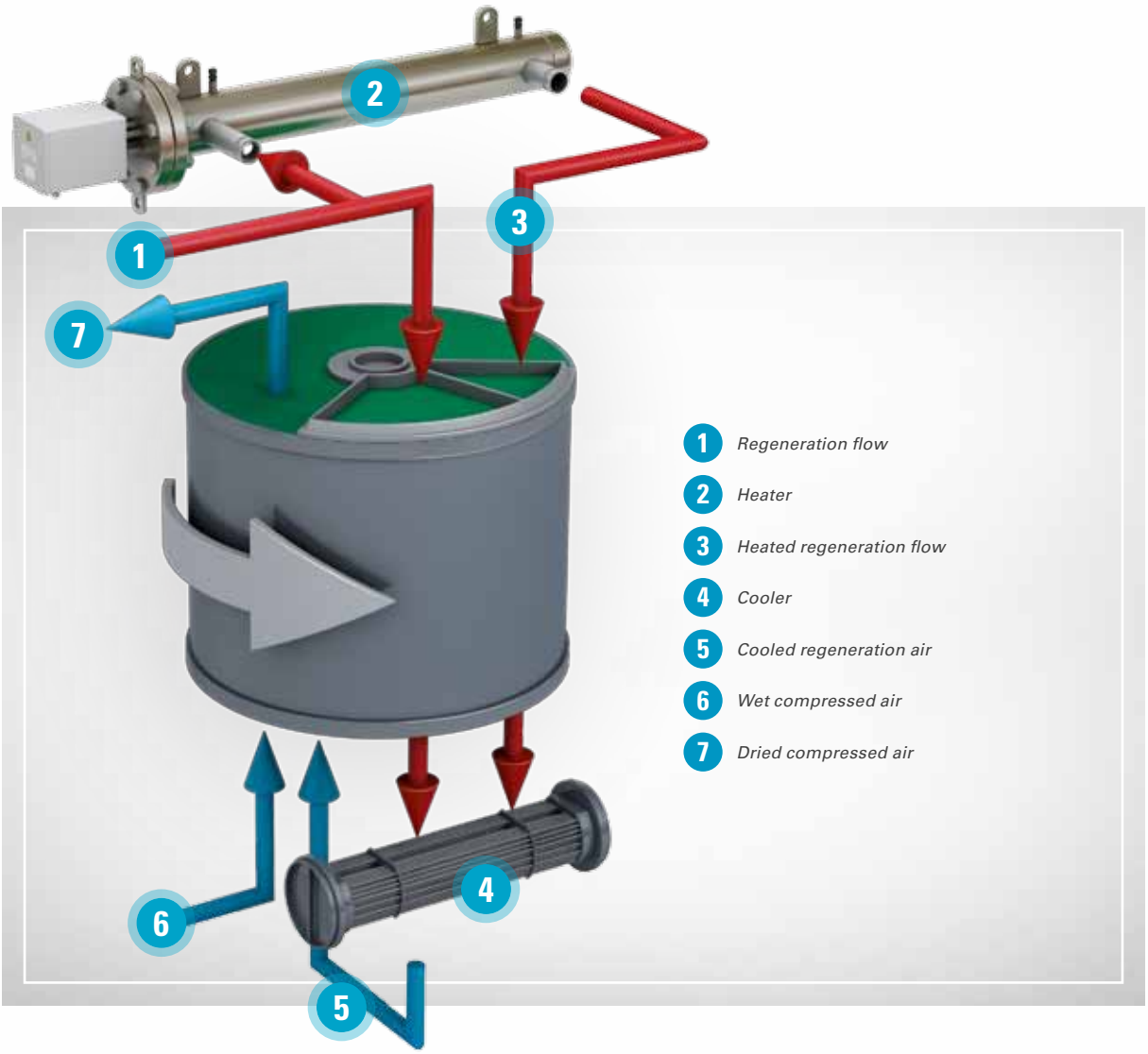
WORKING PRINCIPLE

The working principle of the ND rotary drum dryer is based on using hot compressed air from the compressor to regenerate the desiccant.

The single pressure vessel is divided into two sectors: one for drying (75%) and one for regenerating (25%). Desiccant, impregnated on a honeycomb glass fiber drum, slowly rotates through these two sectors.

Hot air leaving the last stage of the compressor is divided into two streams, 6 and 1. The main stream – branch 6 – passes through the compressor's aftercooler (not visible in below image) and then enters the dryer for drying. The other stream 1 (hot saturated air) is headed for desiccant regeneration. The hot unsaturated air passes through the regeneration heater and is further heated to achieve deeper dewpoints (if required). It then enters the regeneration section of the drum, removes the moisture through adsorption and regenerates the desiccant. The now saturated regeneration air flow is cooled in the regeneration cooler and then mixed with the main incoming flow (cold saturated air).

The uniqueness of the ND dryer lies in the fact that the loss of compressed air is completely avoided. Due to the usage of the generated heat from the compression process, a minimal amount of electrical power is required to achieve very low dewpoints.



ND: Reliable and compact

1

Regeneration air cooler

- Stainless steel for water-cooled versions; aluminium for air-cooled versions.
- Efficient heat transfer and high reliability.
- Integrated in the dryer.

2

Electric motor

- Drives the rotating drum, consuming minimal power (Variable Speed Drive is optional on selected models).
- Greased for life.

3

Rotary drum

- No loose desiccant, compared to twin tower dryers.
- Improved reliability as there is no need for pre- or after-filtration.

4

Compact design

- Minimal floor space required.

5

Controls

- User-friendly interface in 32 languages.
- Comprehensive maintenance display.

6

Bypass*

- Integrated for extra compactness.

**Optional for ND 1000-1300 range.*

7

Low wattage heater

- Stainless steel design ensures long lifetime.
- Nickel-plated heater pipe protects against corrosion.
- Double thermostat protection.

8

Rotor

- Rugged and reliable for a long lifetime.
- Bonded dessicant; no pre- or after-filtration required.

9

Electronic water drains

- No loss drains with superior reliability for efficient condensate removal.

10

Vessel

- Internally painted.

Superior energy-efficiency

Features of ND dryers which contribute to increased efficiency are zero purge by design, a low pressure drop, no filtration requirements and no loss of compressed air. A Variable Speed Drive (VSD) dryer version is available to match VSD compressors.

SMART HEATING AND BEST PERFORMANCE

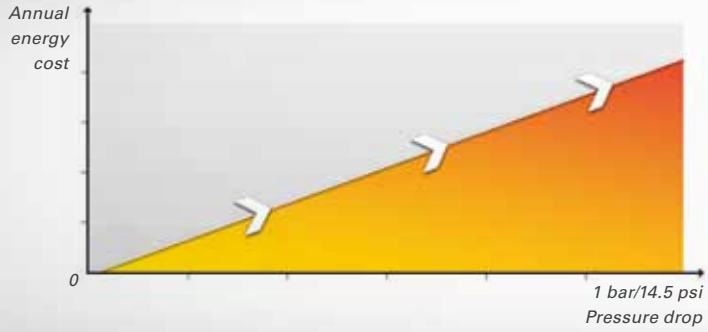
Available in 32 languages, this graphical 3.5-inch high-definition color display with pictograms and LED indicators for key events is easy to use. The keyboard is durable to resist tough treatment in demanding environments.

NO LOSS OF COMPRESSED AIR

Since no compressed air is lost in the drying process, your oil-free compressor will run at full efficiency.

ZERO PURGE BY DESIGN

Whereas other desiccant dryer types can consume up to 15% of the compressed air, the ND dryer guarantees 100% flow capacity at the output.



LOW PRESSURE DROP

If a desiccant dryer experiences a high internal pressure drop, the compressor discharge pressure must be set higher than required, which wastes energy and increases operating costs. Atlas Copco has therefore put considerable efforts into minimizing pressure drops in its dryers. Compared to twin tower dryers, the system pressure drop is very low.

NO FILTRATION REQUIREMENTS

ND dryers need no pre-filters, no after-filters and no dust filters, all of which can cause pressure drops. Typically a set of pre- and after-filters can have an average pressure drop exceeding 0.5 bar and lead to an extra 3.5% energy consumption.

Economical, compact and environmentally-friendly

Taking technology to a new level, ND dryers will help you achieve a deep dewpoint at a low cost. What's more, they have a small footprint and lead to minimal ecological impact.

LOW OPERATING COSTS

The ND dryer is very economical in use. Since heat-of-compression is used for regeneration, less energy is required to reach very low dewpoints.

COMPLETE, COMPACT PACKAGE

The small footprint of ND dryers means they take up minimal space in your facility. They come in a completely integrated package; all piping and connections are included as standard. A convenient lifting eye makes them easy to maneuver.

LOW MAINTENANCE

The combination of an easy-to-service vessel, minimal maintenance downtime and long service intervals reduces your maintenance time and costs. In addition, there is no need to change filter cartridges.

ENVIRONMENTALLY FRIENDLY

ND dryers are totally oil-free and use no Freon or CFCs, and a minimal amount of desiccant (only 5-10% of conventional adsorption dryers). 95% of all components can be recycled, and the units have very low noise levels.

A step ahead in control and monitoring

Atlas Copco's Elektronikon® control and monitoring system takes continuous care of your ND dryer to ensure optimal productivity and efficiency at your site.

USER-FRIENDLY INTERFACE

Available in 32 languages, this graphical 3.5-inch high-definition color display with pictograms and LED indicators for key events is easy to use. The keyboard is durable to resist tough treatment in demanding environments.

COMPREHENSIVE MAINTENANCE DISPLAY

Valuable items of information displayed include the Service-Plan indicator and preventive maintenance warnings.

CONTROL AND MONITORING

Internet-based visualization

The Elektronikon® system monitors and displays key parameters such as dewpoint, vessel pressure and inlet temperature, and includes an energy-savings indicator. Internet-based visualization of your dryer is possible by using a simple Ethernet connection.

ES fully optimized system

A properly managed compressed air network will save energy, reduce maintenance, decrease downtime, increase production and improve product quality. Atlas Copco's ES central controllers are the most efficient way to monitor and control multiple compressors simultaneously as well as dryers and filters. An ES controller offers one central point of control for your whole compressed air network, ensuring all compressors and dryers provide optimum performance for your process. The result is a completely dependable and energy efficient network, giving you peace of mind and keeping your costs to a minimum.

Optimize your system

SCOPE OF SUPPLY

Air circuit	Interconnecting piping
	Integrated electronic no loss drains
	Integrated regeneration air cooler
Connections	DIN-flanges
	ANSI-flanges
Electrical components	Pre-mounted electrical cubicle
	Elektronikon® control and monitoring system
	IP54 protected
	Voltage-free contacts for remote alarm and warning signals
Mechanical approval	PED approval
	ASME approval
	CRN approval
	ML approval
	MHLW approval
	AS 1210 approval
	MDM approval

OPTIONS

Options
Stainless steel interconnecting piping
Pressure dew point sensor
Variable Speed Drive variant (for VSD compressors)
By-pass for ND 1000
Silicone-free rotor

TECHNICAL SPECIFICATIONS

DRYER TYPE	Inlet flow 7 bar(e)/100 psi(g)			Rated heater power*		Outlet conncetions	Dimensions						Weight	
							mm			in				
	l/s	m³/hr	cfm	kW	hp	flanged	A	B	C	A	B	C	kg	lbs
ND 1000	1080	3888	2290	9	12	DIN 100/ANSI 4"	1337	1711	2058	53	67	81	1300	2870
ND 1100 VSD	1145	4122	2430	9	12	DIN 100/ANSI 4"	1337	1711	2058	53	67	81	1300	2870
ND 1300 VSD	1275	4590	2700	9	12	DIN 100/ANSI 4"	1337	1711	2058	53	67	81	1300	2870
ND 1800	2075	7470	4399	15	20	DIN 125/ANSI 6"	1497	1879	2322	59	74	91	1750	3850
ND 2000	2100	7560	4452	36	48	DIN 125/ANSI 6"	1497	1879	2411	59	74	95	1800	3960
ND 2100VSD	2100	7560	4452	15	20	DIN 125/ANSI 6"	1497	1879	2392	59	74	94	1750	3850
ND 2500VSD	2500	9000	5300	15	20	DIN 125/ANSI 6"	1497	1879	2392	59	74	94	1750	3850

** Actual power consumption is lower than the stated heater power and would depend on the conditions.*

Reference conditions:
Performance data per ISO 7183:2007.

Driven by innovation

With more than 135 years of innovation and experience, Atlas Copco will deliver the products and services to help maximize your company's efficiency and productivity. As an industry leader, we are dedicated to offering high air quality at the lowest possible cost of ownership. Through continuous innovation, we strive to safeguard your bottom line and bring you peace of mind.

Building on interaction

As part of our long-term relationship with our customers, we have accumulated extensive knowledge of a wide diversity of processes, needs and objectives. This gives us the flexibility to adapt and efficiently produce customized compressed air solutions that meet and exceed your expectations.

A committed business partner

With a presence in over 170 countries, we will deliver high-quality customer service anywhere, anytime. Our highly skilled technicians are available 24/7 and are supported by an efficient logistics organization, ensuring fast delivery of genuine spare parts when you need them. We are committed to providing the best possible know-how and technology to help your company produce, grow, and succeed. With Atlas Copco you can rest assured that your superior productivity is our first concern!

FSC
www.fsc.org
MIX
Paper from responsible sources
FSC® C019064

CO2 neutral print
Certificate Number
887-10506-1111-1028
www.climatepartner.com

LLOYD'S REGISTER QUALITY ASSURANCE R ISO 14001

LLOYD'S REGISTER QUALITY ASSURANCE R ISO9001

Atlas Copco

www.atlascopco.com