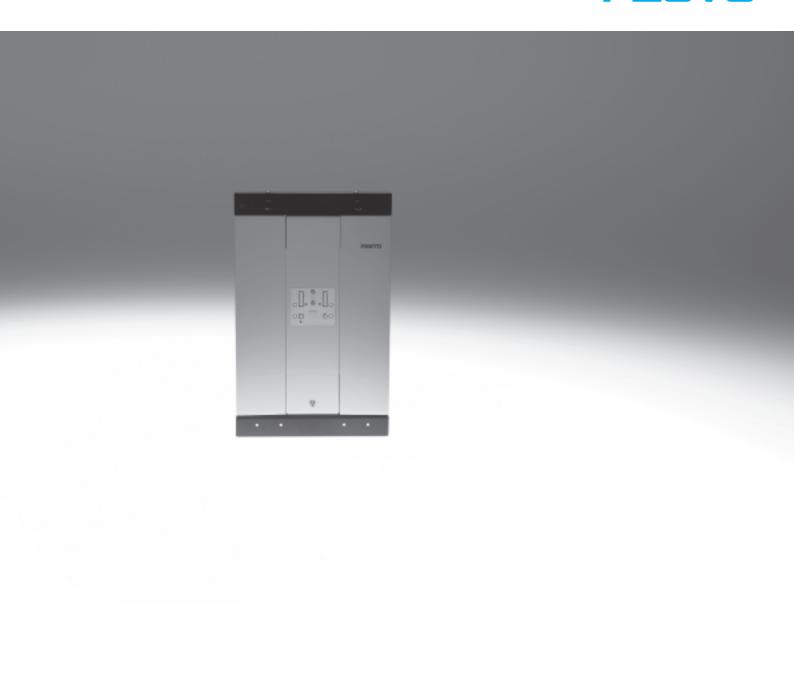
Adsorption dryers PDAD

FESTO



Adsorption dryers PDAD

Key features



Description

Cold-regenerating adsorption dryer with defined pressure dew point and high flow rate for decentralised compressed air drying The utilisation of adsorption dryers is

The utilisation of adsorption dryers is always required when pressure dew points of less than -20 °C need to be achieved reliably.

Areas of application

- Sensors
- Semiconductor manufacturing
- Manufacture of foils and packaging
- Transportation of powder
- Dental technology
- Painting systems
- · Food industry
- Pharmaceuticals

Features/Advantages/Benefits

- The solution for dry and clean compressed air
- Greater service life of pneumatic components
- Pressure dew point -40 °C or -70 °C (with reduced flow rate)
- Additional filtering of oil and particulate
- Produced for decentralised compressed air drying
- High flow rate performance up to 2,400 l/min
- Selectable voltage for electrical connection
- Low purge air consumption and noise levels
- Complies with air purity class at the output up to 2.1.1 in accordance with DIN ISO 8573-1 at a pressure dew point of -70 °C

Lower costs

Controlled, decentralised drying directly at the consuming device is advantageous because only the actually required amount of dry air is prepared. This reduces energy costs, and prevents corrosion, thus extending the service life of components.

Reduced maintenance costs

Complete cartridges containing drying agent allow fast and easy replacement of the drying agent. Pre-filled cartridges guarantee fast and clean cartridge replacement. Maintenance costs are reduced because the integrated secondary filter (grade of filtration 1 μ m) in every cartridge retains the abraded particles of the drying agent.

Flexible installation

Space-optimised and flexible mounting thanks to the integrated secondary filter.

User-friendly

A clear operating display shows drying cycles and service functions.

Function

The air stream is passed through the supplied prefilter, a micro filter with grade of filtration 0.01 µm. It protects the drying agents from contaminating dirt and oil particles (oil significantly reduces the service life of the drying agent). The adsorption dryer consists of two cartridges (four in the case of the PDAD-100) filled with drying agent. Moist compressed air flows

through the two cartridges alternately, and the water from the air accumulates on the surface of the drying agent. After a predetermined period of time, the flow of air is switched to the other cartridge and a portion of the dried air (purge air) is used to regenerate the drying agent in the first cartridge. The purge air escapes into the atmosphere.

Notes

The drying agent has a service life of approx. 12,000 operating hours.

The average purge air requirement under nominal conditions
(7 bar/25 °C) is approx. 17%. If the dryer is used under different operating conditions, the input air/purge air ratio may change as the purge air

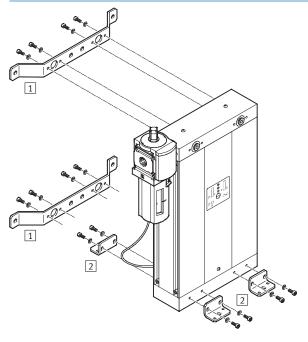
consumption is only dependent on the input air and not on the used output flow rate.

The volume of purge air must therefore be adapted to different supply pressures by replacing the air blast nozzle (air nozzle set with 3 air blast nozzles ADNA → 9).

Adsorption dryers PDAD Peripherals overview and type codes

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Peripherals overview



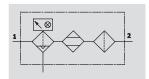
Mou	nting attachments and accessories	
		→ Page/Internet
1	Wall mounting kit	8
	ABMW	
2	Foot mounting	8
	ABMF	
-	Service kit	9
	PDAD-SP	
-	Air nozzle	9
	ADNA	

Type codes PDAD G3/8 22 **Basic function** Adsorption dryer Output flow rate under nominal conditions (supply pressure 7 bar, pressure dew point -40 °C, temperate of medium at input 25 °C) 87 l/min 13 126 l/min 22 212 l/min 51 506 l/min 73 729 l/min 100 994 l/min Pneumatic connection PDAD-09/13/22/51 G3/8 Thread G3/8 PDAD-73/100 Thread G1/2

Adsorption dryers PDAD Technical data

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Function



Flow rate

40 ... 2,400 l/min

Temperature range

+2 ... +50 °C

Pressure

4 ... 16 bar

Pressure dew point -40 °C or -70 °C



General technical data												
Туре		PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100					
Pneumatic connection 1,	2	G3/8				G½						
Design		Cold regenerati	ng adsorption dryei	f								
Type of mounting		With accessorie	es .									
Mounting position		Upright										
		Horizontal										
Pressure dew point	[°C]	-40										
		-70 (with reduced flow rate)										
Air purity class at the out	put	Compressed air in accordance with ISO 8573-1:2010 [2:2:2] (at a pressure dew point of -40 °C)										
		Compressed air in accordance with ISO 8573-1:2010 [2:1:2] (at a pressure dew point of -70 °C)										
Electrical data												
Electrical connection		2 connections	12 24 V DC or 11	.0 240 V AC) for po	wer supply sockets							
Power consumption	DC	Approx. 9.6 W	(24 V/0.4 A typ.)									
	AC	Approx. 16 VA	(230 V/0.07 A typ.)									
Protection class		IP65 (to DIN 40	050)									
Materials												
Body		Wrought alumi	nium alloy									

Operating and environmental	l conditions						
Туре		PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100
Supply pressure	[bar]	4 16					
Operating medium		Compressed air in a	ccordance with ISO 8	3573-1:2010 [6:4:4]			
Note on operating/pilot mediu	ım	Operation with lubri	icated medium not p	ossible			
Ambient temperature	[°C]	+5 +50					
Temperature of medium	[°C]	+2 +50					
Storage temperature	[°C]	-20 +60					
Corrosion resistance class CRC	_1)	2					
CE mark (see declaration of co	nformity)	In accordance with E	EU EMC directive				
		In accordance with E	U Low Voltage Direct	tive			
		In accordance with E	EU Pressure Equipme	nt Directive			

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]						
Туре	PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100
Adsorption dryer	13,000	14,000	16,500	24,000	31,000	47,000

Adsorption dryers PDAD

Technical data



Note

Please do not use the average consumption values (flow rate) as your guide when setting up the dryer, instead use

- a) the inlet pressure of the dryer,
- b) the peak value for the flow rate
- c) the maximum permissible supply temperature.

The adsorption dryers are designed for continuous operation.
Intensely pulsed or intermittent operation leads to the premature aging of and/or damage to the drying agent and thus to the failure of the dryer.

If the adsorption dryer PDAD is nonetheless to be used in pulsed or intermittent mode the use of buffer reservoirs, through which the compressed air flows, is recommended for smoothing the pressure peaks. Depending on the application these can be mounted upstream and/or downstream of the dryer. The volume of a reservoir should be approx. 50% of the flow rate for one minute.

Note

On delivery the adsorption dryer PDAD is configured with an air nozzle for a supply pressure of 7 ... 9 bar.

If a different supply pressure is used, the air nozzle must be replaced. The set containing the other air nozzles must be ordered separately \Rightarrow 9.

Nominal flow rat				O °C (temp	perature of	medium at	inlet 25 °C	C saturated)				
q_n		ressure p [b		1	1	1	1				1		T .
	4	5	6	7	8	9	10	11	12	13	14	15	16
PDAD-09													
Inlet	73.6	88.3	103.1	117.8	132.5	147.2	162.0	176.7	191.4	206.1	220.9	235.6	250.3
	Air nozzl	e no. 9		Air nozzlo	e no. 7		Air nozzl	e no. 6		Air nozzl	e no. 5		
Purge air	33.0	30.0	34.0	31.0	36.0	40.0	31.0	34.0	37.0	30.0	32.0	34.0	36.0
Outlet	40.6	58.3	69.1	86.8	96.5	107.2	131.0	142.7	154.4	176.1	188.9	201.6	214.3
PDAD-13													
Inlet	109.6	132.5	153.7	176.7	197.9	220.9	242.1	265.1	286.3	309.2	330.4	353.4	374.6
	Air nozzl			Air nozzl	e no. 8		Air nozzl			Air nozzl			
Purge air	42.0	52.0	61.0	51.0	54.0	68.0	45.0	49.0	54.0	62.0	67.0	71.0	76.0
Outlet	67.6	80.5	92.7	125.7	143.9	152.9	197.1	216.1	232.3	247.2	263.4	282.4	298.6
PDAD-22													
Inlet	186.2	225.3	261.3	300.4	336.4	375.5	411.5	450.6	486.6	525.7	561.7	600.8	636.8
	Air nozzl			Air nozzl	e no. 12		Air nozzl	e no. 10		Air nozzl	e no. 9		
Purge air	76.0	89.0	106.0	88.0	97.0	107.0	86.0	96.0	106.0	89.0	96.0	103.0	111.0
Outlet	110.2	136.3	155.3	212.4	239.4	268.5	325.5	354.6	380.6	436.7	465.7	497.8	525.8
PDAD-51													
Inlet	416.3	503.6	584.2	671.5	752.0	839.3	919.9	1,007.2	1,087.8	1,175.1	1,255.6	1,342.9	1,423.5
	Air nozzl	_		Air nozzl			Air nozzl			Air nozzl		1	
Purge air	166.0	204.0	230.0	165.5	194.5	216.0	165.0	182.5	198.5	160.5	176.0	182.5	201.5
Outlet	250.3	299.6	354.2	506.0	557.5	623.3	754.9	824.7	889.3	1,014.6	1,079.6	1,160.4	1,222.0
PDAD-73				1			1	1					1
Inlet	613.5	742.1	860.9	989.5	1,108.3	1,236.9	1,355.7	1,484.3	1,603.0	1,731.7	1,850.4	1,979.1	2,097.8
	Air nozzl		Tarra	Air nozzl		T	Air nozzlo		T	Air nozzlo		1	1
Purge air	233.0	270.0	311.0	261.0	302.0	339.0	248.0	272.0	295.0	243.0	261.0	282.0	301.0
Outlet	380.5	472.1	549.9	728.5	806.3	897.9	1,107.7	1,212.3	1,308.0	1,488.7	1,589.4	1,697.1	1,796.8
DDAD 4.22													
PDAD-100	1004 -	I a a a a	14.450.0	14 225 2	14 (0) 2	14 (5)	14.045.4	14.007.0	124/62	12.240.2	12 / 70 2	12 (50 5	12.000 1
Inlet	821.7	993.9	1,153.0	1,325.3	1,484.3	1,656.6	1,815.6	1,987.9	2,146.9	2,319.2	2,478.2	2,650.5	2,809.6
	Air nozzl		1,,,,,	Air nozzlo		1,,,,,	Air nozzlo		100=0	Air nozzlo		10/50	1,00.5
Purge air	332.0	408.0	460.0	331.0	389.0	432.0	330.0	365.0	397.0	321.0	352.0	365.0	403.0
Outlet	489.7	585.9	693.0	994.3	1,095.3	1,224.6	1,485.6	1,622.9	1,749.9	1,998.2	2,126.2	2,285.5	2,406.6

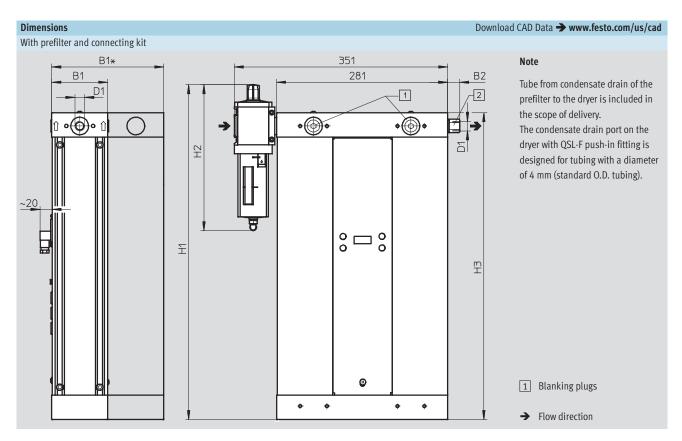
Adsorption dryers PDAD Technical data



q _n	Supply p	ressure [ba	ar]										
	4	5	6	7	8	9	10	11	12	13	14	15	16
PDAD-09													
Inlet	51.5	61.8	72.1	82.5	92.8	103.1	113.4	123.7	134.0	144.3	154.6	164.9	175.2
	Air nozz	le no. 9	•	Air nozzl	e no. 7		Air nozzle	e no. 6		Air nozzle	Air nozzle no. 5		
Purge air	33.0	30.0	34.0	31.0	36.0	40.0	31.0	34.0	37.0	30.0	32.0	34.0	36.0
Outlet	18.5	31.8	38.1	51.5	56.8	63.1	82.4	89.7	97.0	114.3	122.6	130.9	139.2
PDAD-13													
Inlet	77.3	92.8	108.2	123.7	139.2	154.6	170.1	185.5	201.0	216.5	231.9	247.4	262.8
	Air nozz			Air nozzl			Air nozzle			Air nozzle	1		
Purge air	42.0	52.0	61.0	51.0	54.0	68.0	45.0	49.0	54.0	62.0	67.0	71.0	76.0
Outlet	35.3	40.8	47.2	72.7	85.2	86.6	125.1	136.5	147.0	154.5	164.9	176.4	186.8
PDAD-22													
Inlet	131.4	157.7	184.0	210.3	236.6	262.8	289.1	315.4	341.7	368.0	394.3	420.6	446.8
	Air nozz		10,10	Air nozzl		202.0	Air nozzle		3,12.7	Air nozzle	1	12010	11010
Purge air	76.0	89.0	106.0	88.0	97.0	107.0	86.0	96.0	106.0	89.0	96.0	103.0	111.0
Outlet	55.4	68.7	78.0	122.3	139.6	155.8	203.1	219.4	235.7	279.0	298.3	317.6	335.8
PDAD-51					_			1	_	,	_	T	
Inlet	293.8	352.5	411.3	470.0	528.8	587.5	646.3	705.0	763.8	822.5	881.3	940.1	998.8
	Air nozz			Air nozzl			Air nozzle			Air nozzle			
Purge air	166.0	204.0	230.0	165.5	194.5	216.0	165.0	182.5	198.5	160.5	176.0	182.5	201.5
Outlet	127.8	148.5	181.3	304.5	334.3	371.5	481.3	522.5	565.3	662.0	705.3	757.6	797.3
PDAD-73													
Inlet	432.9	519.5	606.1	692.7	779.3	865.8	952.4	1,039.0	1,125.6	1,212.2	1,298.8	1,385.3	1,471.9
	Air nozz	le no. 29		Air nozzl	e no. 24	1	Air nozzle	e no. 17	1	Air nozzle	e no. 15	1	
Purge air	233.0	270.0	311.0	261.0	302.0	339.0	248.0	272.0	295.0	243.0	261.0	282.0	301.0
Outlet	199.9	249.5	295.1	431.7	477.3	526.8	704.4	767.0	830.6	969.2	1,037.8	1,103.3	1,170.9
PDAD-100													
Inlet	579.8	695.8	811.7	927.7	1,043.6	1,159.6	1,275.6	1,391.5	1,507.5	1,623.4	1,739.4	1,855.4	1,971.3
IIIICL		le no. 23	011./	Air nozzl	1 1	1,139.0	Air nozzle		1,507.5	Air nozzle		1,055.4	1,7/1.3
Durgo air	332.0	408.0	460.0	331.0	389.0	432.0	330.0	365.0	397.0	321.0	352.0	365.0	403.0
Purge air Outlet	247.8	287.8	351.7	596.7	654.6		945.6				1,387.4		1,568.3
oullel	247.8	20/.8	221./	590./	054.0	727.6	747.0	1,026.5	1,110.5	1,302.4	1,08/.4	1,490.4	1,508.

Adsorption dryers PDAD Technical data

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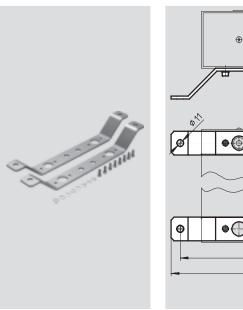
Туре	D1	B1	B1*	H1	H2	Н3
PDAD-09	G3/8	92	-	491	240	445
PDAD-13	G3/8	92	-	550	240	504
PDAD-22	G3/8	92	-	681	240	635
PDAD-51	G3/8	92	-	1 111	240	1 065
PDAD-73	G1/2	92	-	1 506	360	1 460
PDAD-100	G1/2	-	184	1 111	360	1 065

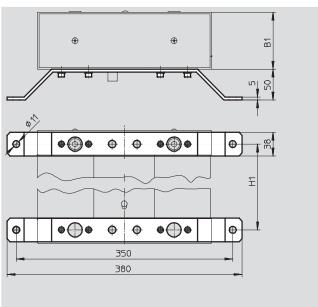
Ordering data			
With prefilter, conr	necting kit, power sup	ply socket	
Pneumatic	Outlet flow rate	Part No.	Туре
connection	under nominal		
	conditions ¹⁾		
	[l/min]		
G3/8	87	552170	PDAD-09-G3/8
	126	552171	PDAD-13-G3/8
	212	552172	PDAD-22-G3/8
	506	552173	PDAD-51-G3/8
G ¹ / ₂	729	552174	PDAD-73-G ¹ / ₂
	994	552175	PDAD-100-G ¹ / ₂

¹⁾ Supply pressure 7 bar, pressure dew point –40 °C, temperature of mediums at inlet 25 °C

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Wall mounting kit ABMW



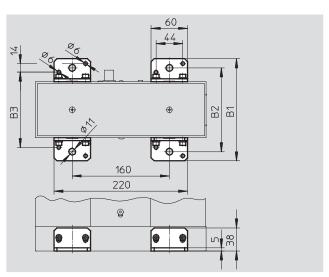


Dimens	Dimensions and ordering data													
PDA	D-09	PDAI	D-13	PDAI)-22	PDA	D-51	PDAI	D-73	PDAD	-100	CRC ¹⁾	Part No.	Туре
B1	H1	B1	H1	B1	H1	B1	H1	B1	H1	B1	H1			
92	401	92	460	92	591	92	1,021	92	1,416	184	1,021	2	553756	ABMW-PDAD

¹⁾ Corrosion resistance class 2 to Festo standard 940 070 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Foot mounting ABMF





Dimensions and ordering data													
PDA	AD-09/13/22/51/	73		PDAD-100		CRC ¹⁾	Part No.	Туре					
B1	B2	В3	B1	B2	В3								
168	138	124	260	230	216	2	553755	ABMF-PDAD					

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents. 1) Corrosion resistance class 2 to Festo standard 940 070

Adsorption dryers PDAD Accessories

FESTO

Service kit PDAD-SP

with 2 drying agent cartridges (4 drying agent cartridges in service kit PDAD-100-SP-...), sealing rings, plastic discs and a reset disc



Operating and environmen	Operating and environmental conditions											
Operating pressure	[bar]	416										
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [1:4:1]										
Note on operating/		Operation with lubricated medium not possible										
pilot medium												
Ambient temperature	[°C]	+5 +50										
Temperature of medium	[°C]	+2 +50										

Ordering data		
For type	Part No.	Туре
PDAD-09	553749	PDAD-09-SP-12000
PDAD-13	553750	PDAD-13-SP-12000
PDAD-22	553751	PDAD-22-SP-12000
PDAD-51	553752	PDAD-51-SP-12000
PDAD-73	553753	PDAD-73-SP-12000
PDAD-100	553754	PDAD-100-SP-12000

Air nozzle ADNA

Set comprising 3 air nozzles for PDAD-09 ... PDAD-73 and 6 air nozzles for PDAD-100 for adjusting the purge air at a supply pressure < 7 bar or > 9 bar



Ordering data							
For type	Air nozzle for supply	Air nozzle for supply pressure p			Туре		
	4 6 bar	10 12 bar	13 16 bar				
PDAD-09	No. 9	No. 6	No. 5	553763	ADNA-PDAD-09		
PDAD-13	No. 10	No. 7	No. 6	553764	ADNA-PDAD-13		
PDAD-22	No. 14	No. 10	No. 9	553765	ADNA-PDAD-22		
PDAD-51	No. 23	No. 14	No. 12	553766	ADNA-PDAD-51		
PDAD-73	No. 29	No. 17	No. 15	553767	ADNA-PDAD-73		
PDAD-100	No. 23 (2x)	No. 14 (2x)	No. 12 (2x)	553768	ADNA-PDAD-100		

Adsorption dryers PDAD Accessories

FESTO

Micro-filter cartridge MS6-LFM-A For prefilter

Grade of filtration: 0.01 μm



Ordering data		
For type	Part No.	Туре
PDAD-09/13/22/51	532909	MS6-LFM-A
PDAD-73/100	552093	MS6-LFM-A-HF

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation Components Complete custom engineered solutions



Custom Control Cabinets Comprehensive engineering support and on-site services



Complete Systems Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



Electromechanical Electromechanical actuators, motors, controllers & drives



Pneumatics Pneumatic linear and rotary actuators, valves, and air supply



PLCs and I/O Devices PLC's, operator interfaces, sensors and I/O devices

Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.



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