



Atlas Copco



Customer Day 2024

Advance Products

WHAT IS ADVANCE PRODUCTS ?



What is Advance Products?

Advance Products is
SOLUTIONS!!

Mengapa? Mengapa? Zašto? 为什么呢?
Por quê? Чаму? 为什么呢?
Poukisa? کیوں؟ Чому?
Tại sao? Miks? Per què?
Waarom? Bakit? Kial? למה?
どうして? פארוואס? Hvers vegna?
Warum? Dlaczego? Pourquoi? Niyə?
ἵνατι? Зашто? چرا? Quid?
Cén fáth? Zergatik? පහේද? Pam?
Kwa nini? Proč? Miért?
De ce? Hoekom? क्यों?
เพราะเหตุใด? Kodėl? Why?
Perché? Miksi? Защо? Why?
لماذا? Prečo? Varför?
Għaliex? Γιατί; Why?
왜? ¿Por qué? Pse?
Kāpēc? Почему? Зашто?
Hvorfor? Neden? 為什麼呢?

WHY

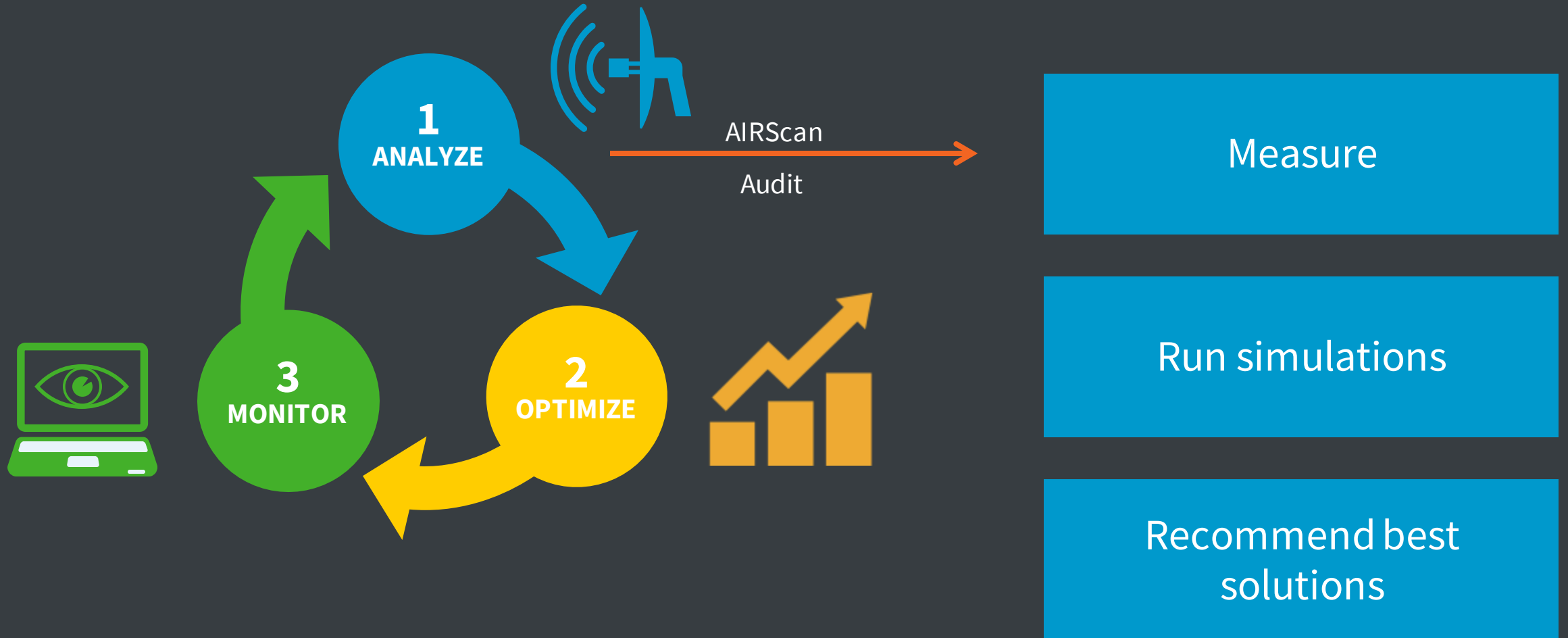
Advance Products ?



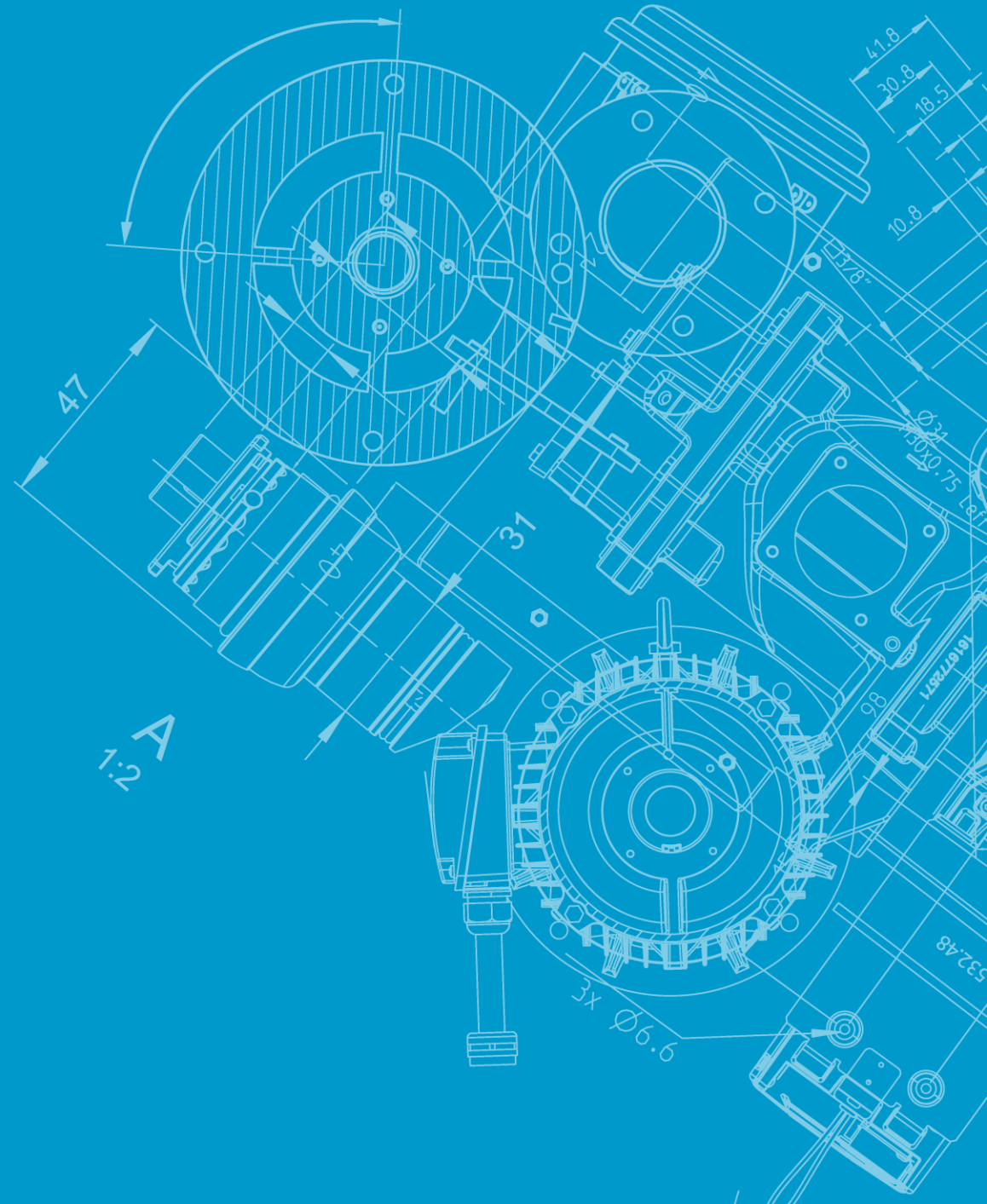
Why Advance Products?

Advance Products focusing to optimize and efficient compressed air system and help them to commit Energy and CO2 reduction

The Compressed air system optimization process



Facts about Compressed Air



Facts about compressed air

ENERGY

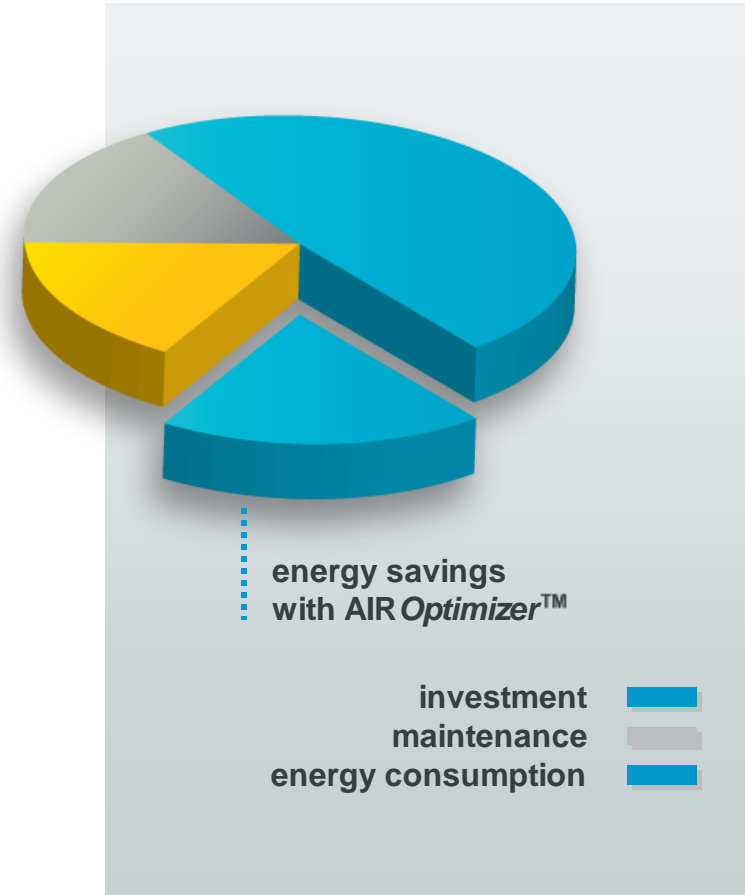
- **Total facility energy consumption**
 - Compressors will typically represent between 2% and 40%



Facts about compressed air

ENERGY

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- **Compressor life cycle cost**
 - 70% of total compressor lifecycle costs are related to energy



Facts about compressed air

ENERGY

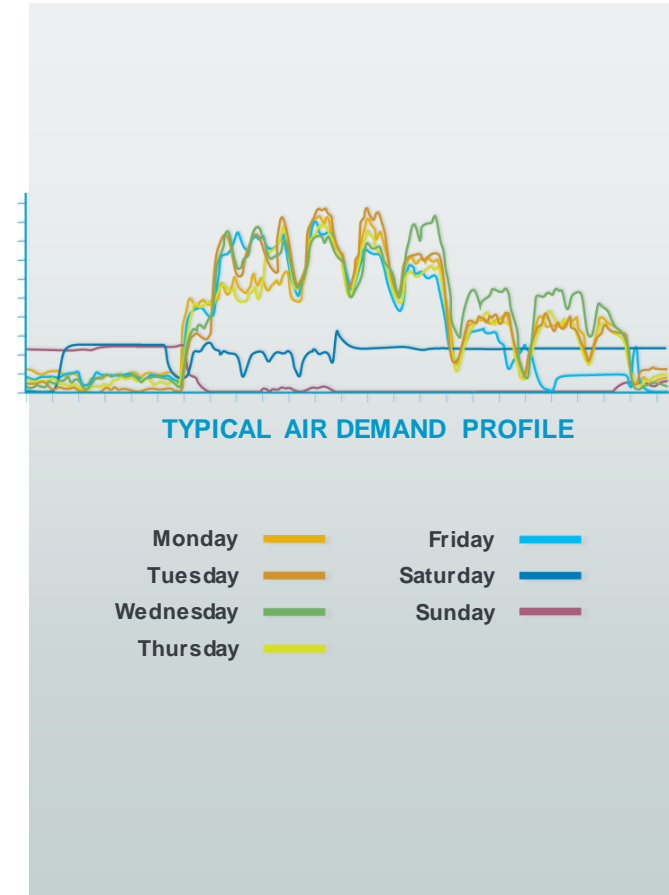
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- **Service**
 - Proper maintenance reduces energy consumption



Facts about compressed air

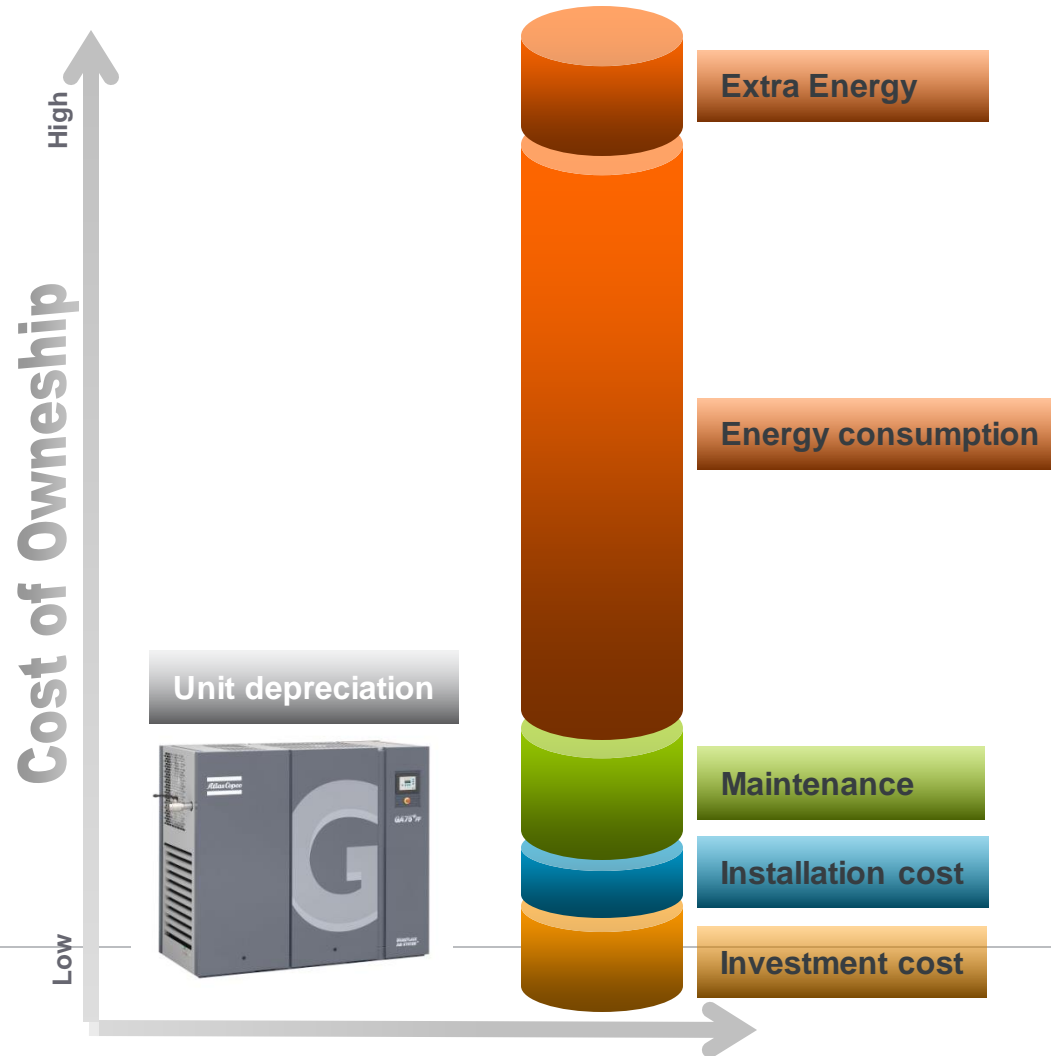
LIFE CYCLE COST (LCC)

10 years cost of ownership

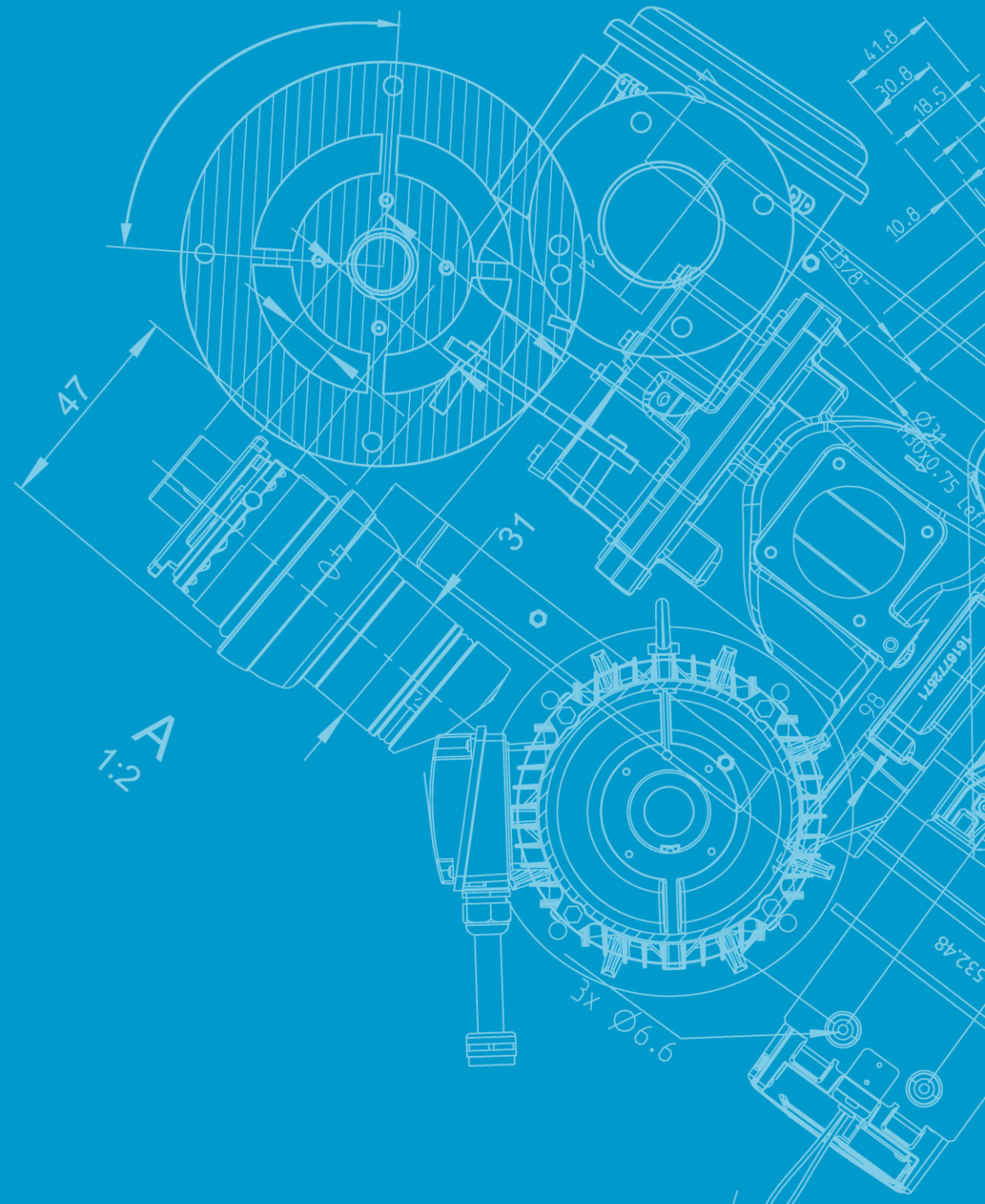
Consider:
All costs occurring in 10 years

A bad service

Increases:
Energy Consumption



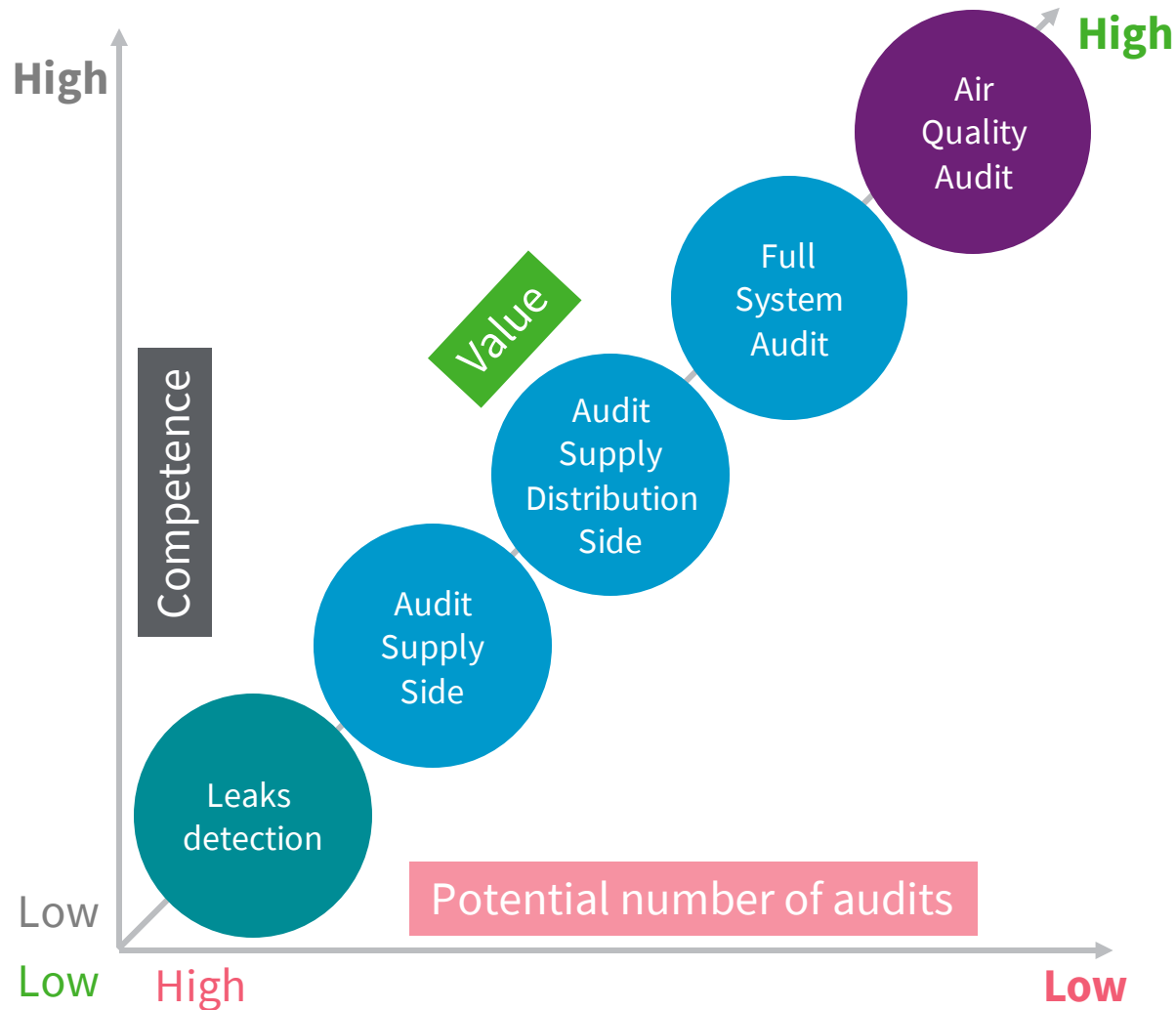
Advance Products Portfolio



AIRSCAN

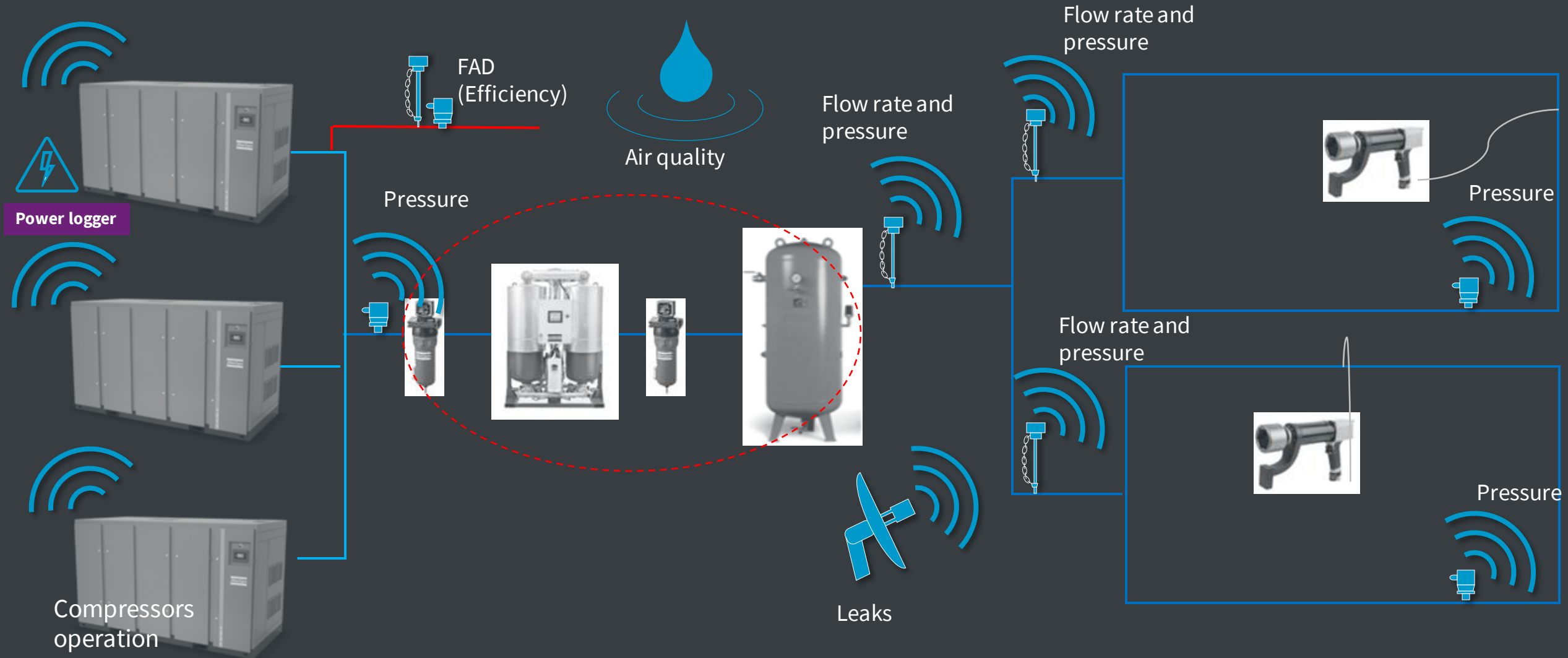


Airscan “ladder”



Airscan level	Resource	Main tools needed	Result for Customer
Leaks detection	Technician trained	Acoustic Camera	Leakage report with priority leaks to fix, estimated cost, potential savings
Supply Side	Energy Consultant or Technician	<ul style="list-style-type: none"> - Current or Power loggers - Pressure measurement 	Report with proposed measures to optimize supply side: <ul style="list-style-type: none"> • Replace/add machines • Central control • Buffer
Supply Distribution Side	Energy Consultant or Technician	<ul style="list-style-type: none"> - Current or Power loggers - Multiple pressure measurement - (Multiple flow measurement) 	Report with proposed measures to optimize supply and distribution side: <ul style="list-style-type: none"> • Replace/add machines • Central control • Energy Recovery • Buffer Central/Local • Exclude waste distribution
Full System	Energy Consultant or Technician	<ul style="list-style-type: none"> - Current or Power loggers - Multiple pressure measurement - Multiple flow measurement 	Report with proposed measures to optimize supply, distribution and demand side: <ul style="list-style-type: none"> • Replace/add machines • Central control • Energy Recovery • Buffer Central/Local • Exclude waste distribution • Analysis of demand
Air Quality Audit	Energy Consultant or Technician	<ul style="list-style-type: none"> - Safe Air or Medic Air Tester With test tubes - Dew point meter - Air Quality analyzer 	Report about air quality, according to applicable standards (e.g. EN12021:2014; European Pharmacopoeia; ISO 8573-1) with proposed measure: <ul style="list-style-type: none"> - Filtration system - Dryers - Air quality monitoring system

What can we Measure?



Why an Airscan?

OPTIMIZATION SOLUTIONS

- 1 35% New VSD compressor
- 2 15% Optimization controller
- 3 10% Leaks repair
- 4 5% Pressure regulation / Upgrades
- 5 3% Airnet volume increasing



2
OPTIMIZE

average values based on AC Italy Airscan

What can you measure?

Measurements overview

- Pressure
- Flow rate
- Current
- Active Power
- Temperature
- Dew Point
- Particles' content
- Oil content
- Leakages

Measurement	Leaks	Pressure	Flow	Current	Power	PDP	Particles	Oil	Temperature	BOV
Airscan Type										
Leaks Detection	✓									
Supply side		✓		✓	✓					○
Supply side+distribution		✓	✓	✓	✓					○
Full Audit	✓	✓	✓	✓	✓					○
Air Quality						✓	✓	✓	✓	

New Acoustic Camera for Air Leak Detection

The human ear doesn't even come close!

- **Most recent technology for acoustic leak detection**
 - Via 124 microphones, noise is transposed in real time on the screen
 - 5" Touch screen with digital zoom, live wasted flow calculation on the display
 - Image with colored overlaid heatmap
- **Benefits**
 - **Ease to use and more comfortable for Technicians**
 - **Compact device** (no parabolic dish, camera, headset...)
 - **Higher accuracy**
 - **+30%** leaks detected compared with old tools
 - **Less time consuming**
 - **75%** time reduction compared with old tools



Air Leaks Detection



CENTRAL CONTROLLER



ES130

Obsolete



ES360

Obsolete



ES16

Obsolete



OPTIMIZER 4.0

Available

2003

Obsolete

ES6 MKIV



Obsolete

ES8 Mk5



Obsolete

ES6 Mk5



Available

EQUALIZER 4.0



2022

Available

EQUALIZER 4.0 PRO



What is a Central controller?



A device that centrally controls multiple machines

in order to meet the demand of compressed air or vacuum

in a more efficient way

than a combination of individual machines

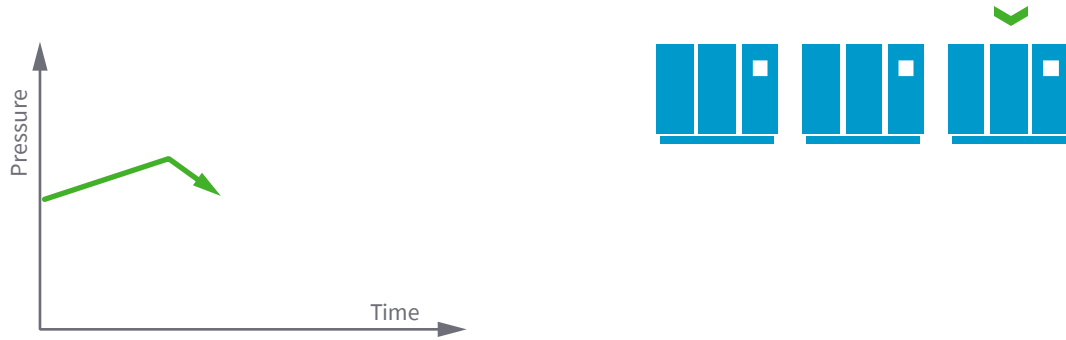
by means of an intelligent control algorithm

and specific design features

Central controller: basics

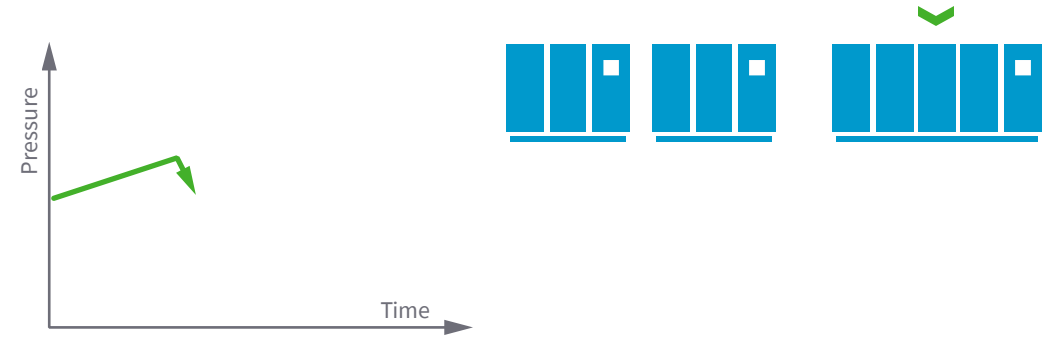
Sequencers/Equalizers

If net pressure drops: next compressor in sequence



Optimizers

If net pressure drops fast: “big” compressor







If net pressure drops slowly: “small” compressor



Optimizer 4.0

Premium central controller for High, Medium and Low pressure



-  **Improved energy efficiency** by selecting the best suited machines for the demand
-  **Monitoring operation** to get insights and define improvement actions
-  **Increased uptime** by minimizing motor starts and unloaded time
-  **Minimized CO₂ emissions** by reducing energy consumption

What are the **benefits for my Customer?**



Energy cost & CO₂ minimization

- ✓ Auto-selection of best mix
- ✓ Optimal use of VSD and Turbo
- ✓ Blow-off prevention
- ✓ Lowest possible pressure
- ✓ Minimization of leaks



Highest reliability

- ✓ Reduced load/unload cycles
- ✓ Reduced start/stop
- ✓ Minimized wear
- ✓ Running hours equalization
- ✓ Pressure stability



High-end Monitoring

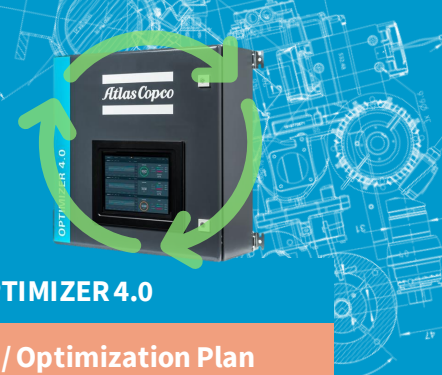
- ✓ Energy savings (ISO50001, DigiScan)
- ✓ Uptime increase (Notifications, Recommendations)
- ✓ Third party cost reduction (plug&play, multiple protocols)
- ✓ Maintenance reduction (less visits)



Protection&Flexibility

- ✓ TR coverage (Optimization Plan)
- ✓ Integration of new units
- ✓ Software upgrade
- ✓ Hardware upgrade
- ✓ OpEx / CapEx

Portfolio



*each machine communicates via mobile connection its own data
**on request

	EQUALIZER 4.0		EQUALIZER 4.0 PRO	OPTIMIZER 4.0
	Equalizer 4.0 2i/4i/6i	Equalizer 4.0 2/4/6	Equalizer 4.0 PRO 4/8	Optimizer 4.0 / Optimization Plan
Type of controller	Sequencer	Sequencer	Advanced Sequencer	Advanced energy optimizer
Installation	Integrated in Mk5(touch)	Wall-mounted	Wall-mounted	Wall-mounted
# air nets	1 air net	1 air net	1 air net	Up to 3 air nets
# compressors	2/4/6 compressors	2/4/6 compressors	4/8 compressors	Up to 30 machines
Machines type	LNL, VSD	LNL, VSD	LNL, VSD	LNL, VSD, Turbo, Blowers
Screen size	4.3''	4.3''	12.1''	12.1''
Monitoring	Compressors	Compressors	Compressors & Dryers	Compressors & Dryers
Atlas Copco Turbo control	No	No	No	Yes
Competitor L/UL, VSD control	Yes	Yes	Yes	Yes
Competitor Turbo control	No	No	No	Yes**
REMOTEVIEW	No	No	Yes	Yes
SMARTVIEW	No	Optional	Optional	Yes
SMARTLINK	No	Optional*	Optional	Optional one-off/ Included in Optimization Plan

Don't forget...

UPGRADES



With every Optimizer quote, propose upgrade of machines' control panels to the most recent generation, to get the most out of central controllers.

COMPETITOR CONTROL

2



Optimizer can control competitor machines through Interfaces.

VSD = CIB (stand-alone box)

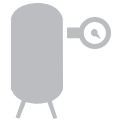
L/UL = CIM (module Installed in the cabinet)

Turbo = CIB-T (stand-alone box)

EXTRA AIR NET/MACHINES

3

EXTRA AIR NET



EXTRA MACHINES



In case Customer wants to add an additional air net or machine to its Optimizer 4.0, you can easily quote it afterwards.

AIRnet presentation



FAST / EASY / RELIABLE

AIRNET
COMPRESSED AIR • VACUUM • NITROGEN

“

AIRnet is a state of the art modular “**air distribution system**”
designed to deliver a **fast, easy and reliable** distribution network

”

Applications

Compressed air

Vacuum

Nitrogen

Inert gases

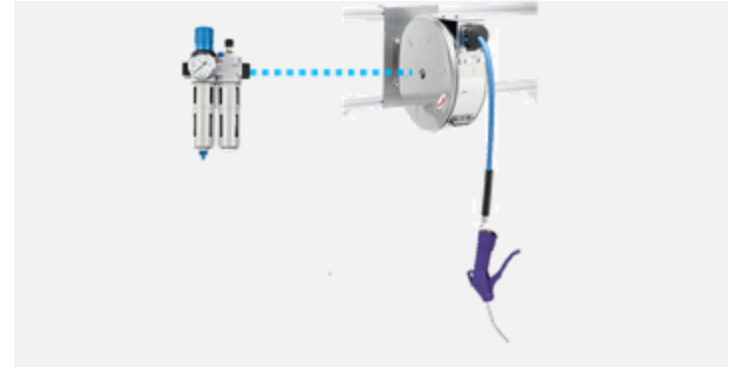
AIRNET ALUMINUM



AIRNET STAINLESS STEEL



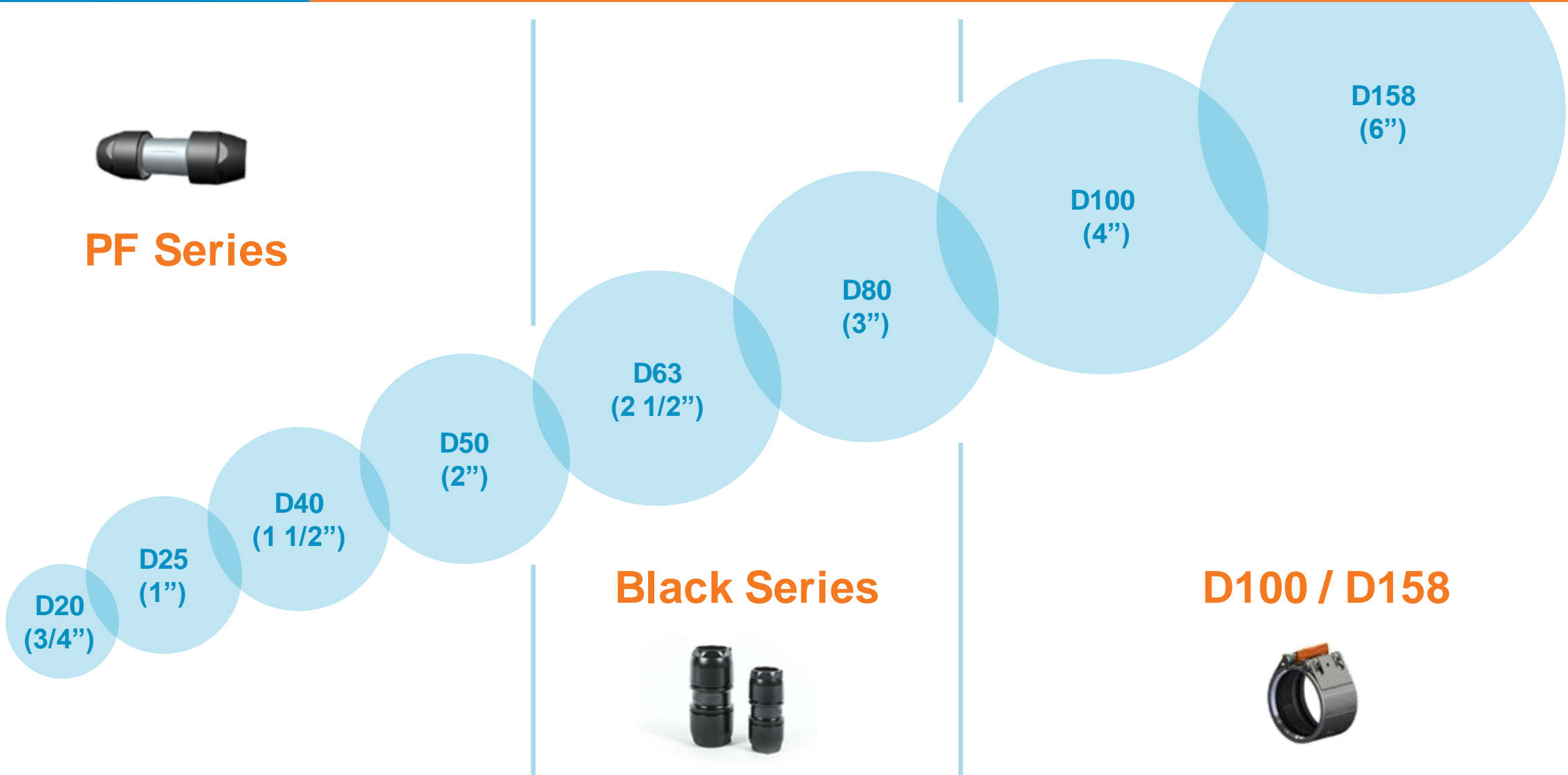
AIRNET POU



AIRnet ALUMINIUM



PF Series



Black Series



D100 / D158





Material Extruded aluminum alloy EN AW-6060 T6



Connection Push to Fit technology (PF)
Material Engineered polymer fiberglass reinforcement



Connection Torque to grip technology
Material Aluminum high pressure die casting



Connection Bolt clamp technology
Material Aluminum permanent mold casting



Connection Bolt clamp technology
Material Aluminum permanent mold casting



Working pressure

Max 16 bar (g) – metric
Max 232 psig – imperial



Working temp

-20 Deg C to 80 Deg C
-4 Deg F to 176 Deg F



Vacuum

13 mbar (a)
0.189 psia (29.5 HgV)

Conventional piping system

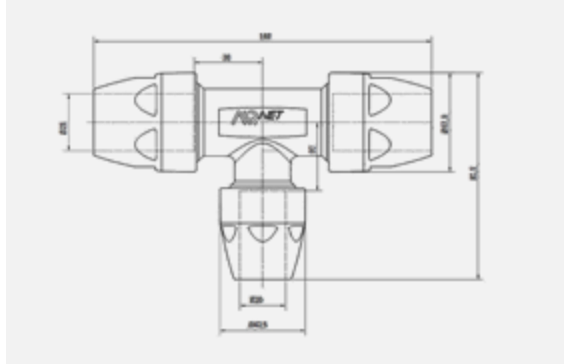
- Rust
- Internal contamination
- Product spoilage
- Thickness reduction
- Leakages
- Higher friction factor
- ΔP Increase
- Modifications cost is very high which increases overall maintenance cost
- No guarantee



AIRnet

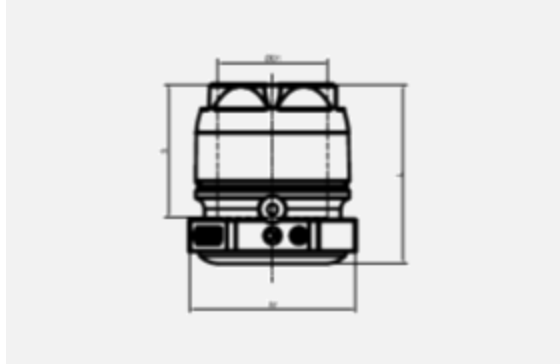
- + Polyester powder paint (Qualicoat certified) ensures 100% rust proof system
- + Smooth internal surface with chrome free conversion treatment
- + Clean air due to non-corrosive properties
- + Due to the non-corrosive properties, there is no impact on the thickness
- + Special seal fittings ensure leak tight system
- + Internally treated to minimize the frictional losses
- + The fittings are designed with pipe inlet guide to ensure the smooth flow on the bends which ensures minimum ΔP across the system
- + Modular system, light weight & 100% reusable; very low Total Cost of Ownership
- + Comes with a standard 10 years guarantee



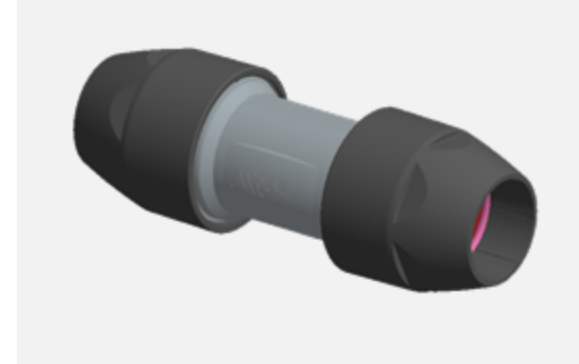


CAD library

Library of all AIRnet components



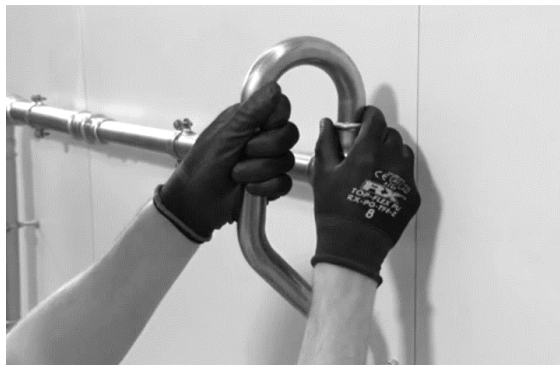
Dimensional drawing file



3D Stp files



Installation manual



Installation videos

- Test report En10204
- ISO 8573-1 certificate for particle & moisture content
- Silicone free statement
- Declaration of conformity
- Conductivity certificate
- Qualicoat
- Class 0



Class	Solid Particle Maximum number of particles per m ³			Water Pressure Dew point (°C)	Oil (incl. Vapor mg/m ³)
	0.1-0.5 micron	0.5-1.0 micron	1.0-5-micron		
0					
1	20 000	400	10	-70	≤0.01
2	400,000	6,000	100	-40	≤0.1
3	Not Specified	90,000	1,000	-20	≤1
4	Not Specified	Not Specified	10,000	3	≤5
5	Not Specified	Not Specified	100,000	7	Not Specified
6	Not Specified	Not Specified	Not Specified	10	Not Specified



- Class 1 : For solid particle content
- Class 2 : For dew point
- Class 0 : For oil vapors & aerosols



The intake air should fulfill class 1 requirements

The intake air should fulfill class 0 requirements

ISO 8573-1 Class 0 certificate

<p>Industrial Service Energy and Environment</p> <p>TÜV Rheinland Energy GmbH 51101 Köln</p> <p>International Compressor Distribution n.v. Boomssteenweg 957 B-2610 Wilrijk Belgium</p>	<p>TÜVRheinland® Precisely Right.</p>
<p>931 / 21236785 / 01 Norbert Horlemann Tel. +49 221 806-1890 Fax +49 221 806-1461 Mail horfema@de.tuv.com 21 March 2017</p>	<p>354769_2017_031_21236785_01.docx</p>

Test certificate
Validation according ISO 8573-1:2010 Part 1:
Contaminants and purity classes, AIRnet Piping

Tests regarding the contribution of the AIRnet piping to the vapor content in compressed air according to ISO 12500-2 were witnessed.

Witnessed tests have shown that the quality of the compressed air after a set-up made out of the complete range of Airnet components can be considered as

Class 0 according to ISO 8573-1:2010

measured according to ISO 8573-5:2001 if the intake air fulfills these requirements as well.

This certificate is only valid for the single components which are specified in annex 1

<p>i. V.</p> <p>Dr. rer. nat. Walter Dormagen</p>	<p>i. A.</p> <p>Dr. rer. nat. Norbert Horlemann</p>
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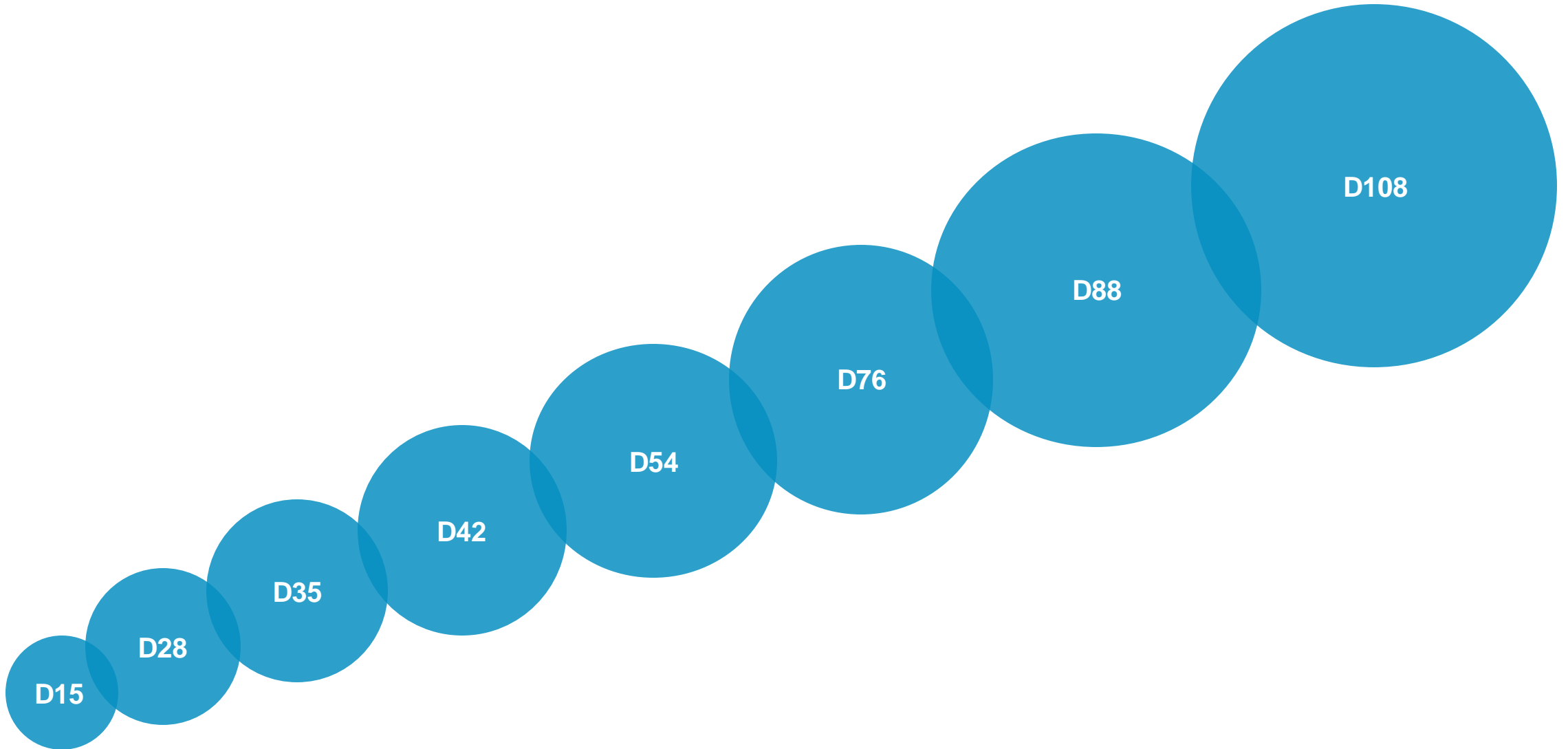
TÜV Rheinland Energy GmbH
Am Grauen Stein
D-51105 Cologne
Phone +49 221 806-0200
Fax +49 221 806-1349
Mail energy@de.tuv.com
Web www.umwelt.tuv.de
www.iso-tuv.com

Management board and Head office:
Managing Director: Dirk Fenske
Head office: Cologne
Register court: Local Court, under registry number: Cologne, HRB 56171
VAT ID: DE 814653689

ISO 8573-1, 1:2 certificate

<p>Certificate of compliance to ISO 8573-1</p>
<p>We the undersigned, AIRnet representative and SGS, confirm that the equipment, as described in the report of AIRnet nr. 9845058100, Ed.04 of 8/7/2016, respect ISO 8573-1:2010 under the testing conditions as described in the same report.</p> <p>Based on testing, witnessed by SGS, respecting the ISO 8573 requirements regarding particle and vapour pressure dewpoint measurements, we confirm the following (for the details we refer to the report, mentioned above):</p> <ul style="list-style-type: none"> - Solid particle content: AIRnet piping respects ISO 8573-1: 2010 class I with the condition that a purge is performed with compressed air after installation. - Vapour pressure dewpoint: AIRnet piping respects ISO 8573-1: 2010 class II depending on the relative humidity and temperature of the environment and the dryer selection. <p>AIRnet part numbers: all numbers listed in the catalogue.</p>
<div style="width: 45%;"> <p>AIRnet representative</p> <p>David Pauwels Vice President Engineering and Technical Support Wilrijk, September 12th 2016 AIRnet</p> </div> <div style="width: 45%;"> <p>Representative SGS</p> <p>Dirk Peeters Melsele, September 12th 2016 SGS Belgium N.V.</p> </div>
<p>SGS Belgium NV Environment Health and Safety Koolberglaan 4 Haven 1061 B-9120 Melsede t +32 (0)3 575 61 10 f +32 (0)3 575 61 21 e be.enr.air@sgs.com www.sgs.be Member of the SGS Group (Swiss Confederation of Switzerland)</p> <p style="font-size: xx-small;">Registered office: Luxembourg 17 B-2588 Aderques U.S. Antwerpen 101310 9716 WE 40482 750 Italia 100-500000 00 All orders are executed only in accordance with our General Conditions, deposited with the Agency Chamber of Commerce and Industry.</p>

AIRnet STAINLESS STEEL





Working pressure

Max 16 bar (g) – metric
Max 232 psig – imperial



Working temp

-20 Deg C to 80 Deg C
-4 Deg F to 176 Deg F



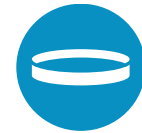
Vacuum

13 mbar (a)
0.189 psia (29.5 HgV)



Press fit system

Max 16 bar (g) – metric
Max 232 psig – imperial



Sealing rings

FKM (FDA approved)



Pipe material

SS 304L: Full range
SS 316L: D15/28/42



Fittings

SS 316L

- + No welding, no threading just “**push & press**”
- + No need for skilled & certified labor
- + 65% faster & cheaper to install compared to a welded system
- + Silicone free & Teflon free system
- + FKM sealing rings (approved by all international regulating bodies)
- + Stringent quality tests
- + ISO 8573-1 certified

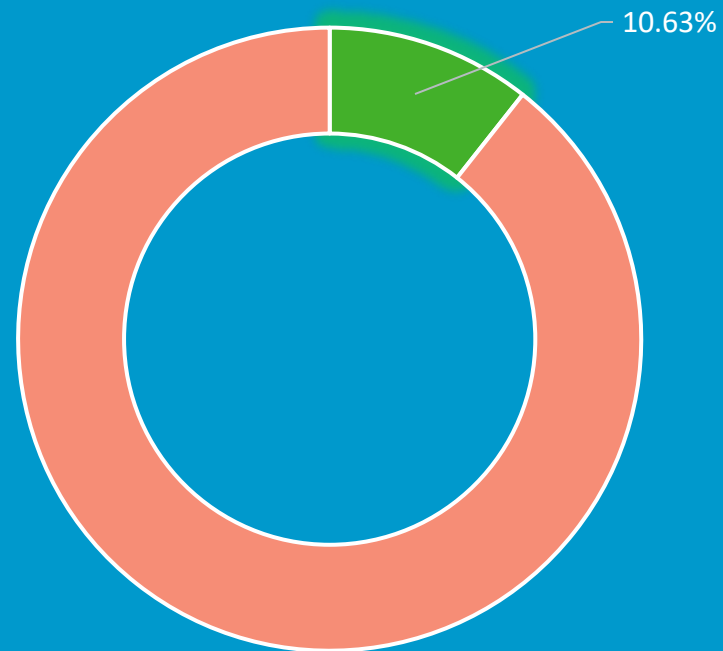


DIGISCAN

Summary : Energy Saving proposals

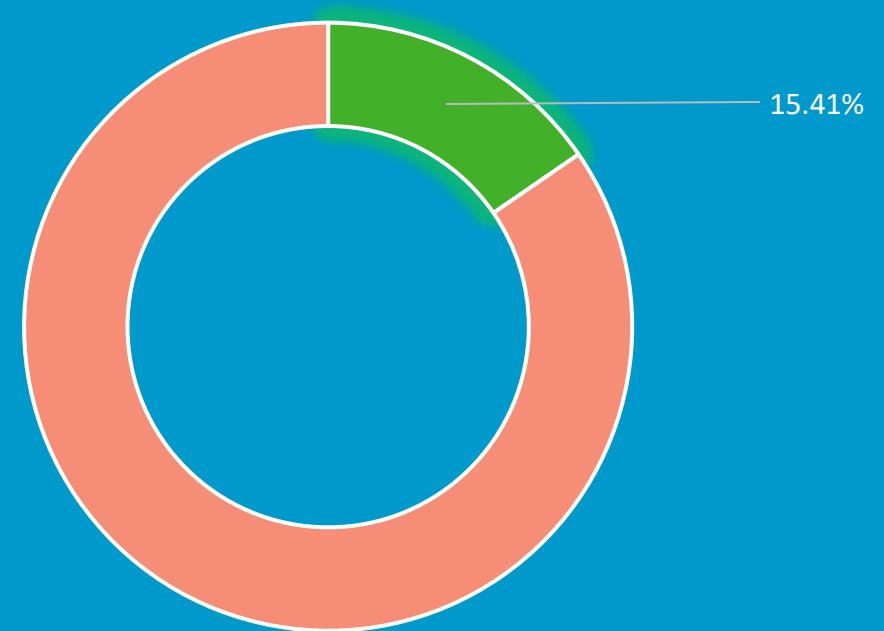
Central Compressor room (By combining section 6,7,8 & 9)

Optimizer with 15m3 receiver



- Energy savings 202.88 MWh/Annum
- Cost savings 281,337,753.6 IDR/Annum

Optimizer with 15m3 receiver with different setpoint






- Energy savings 294.01 MWh/Annum
- Cost savings 407,709,547.2 IDR/Annum



Proposal 1 : Optimizer with 15m3 receiver

Proposal of Optimizer with existing receivers of 15m3 in the existing installation. Optimizer will help in reducing unload power & maintain constant pressure.

	Weekly	Annually
 Energy savings(IDR)	5,410,341.41	281,337,753.6
 Energy units reduction	3.90 MWh	202.88 MWh
 Co2 reduction	3.52 tons	183.2 tons

Figures based on simulated results of week measurement.

Science-based targets for 2030



**Atlas Copco must reduce
CO2 emissions by**

28%

(baseline: 2019)

**Target by 2030
to keep global temperature rise
well below 2°C**

Many of our Customers must do the same



We have the solution!





WANT TO KNOW MORE?
SCAN HERE!





Atlas Copco

If you can't measure it, you can't improve it.

Thank you

