

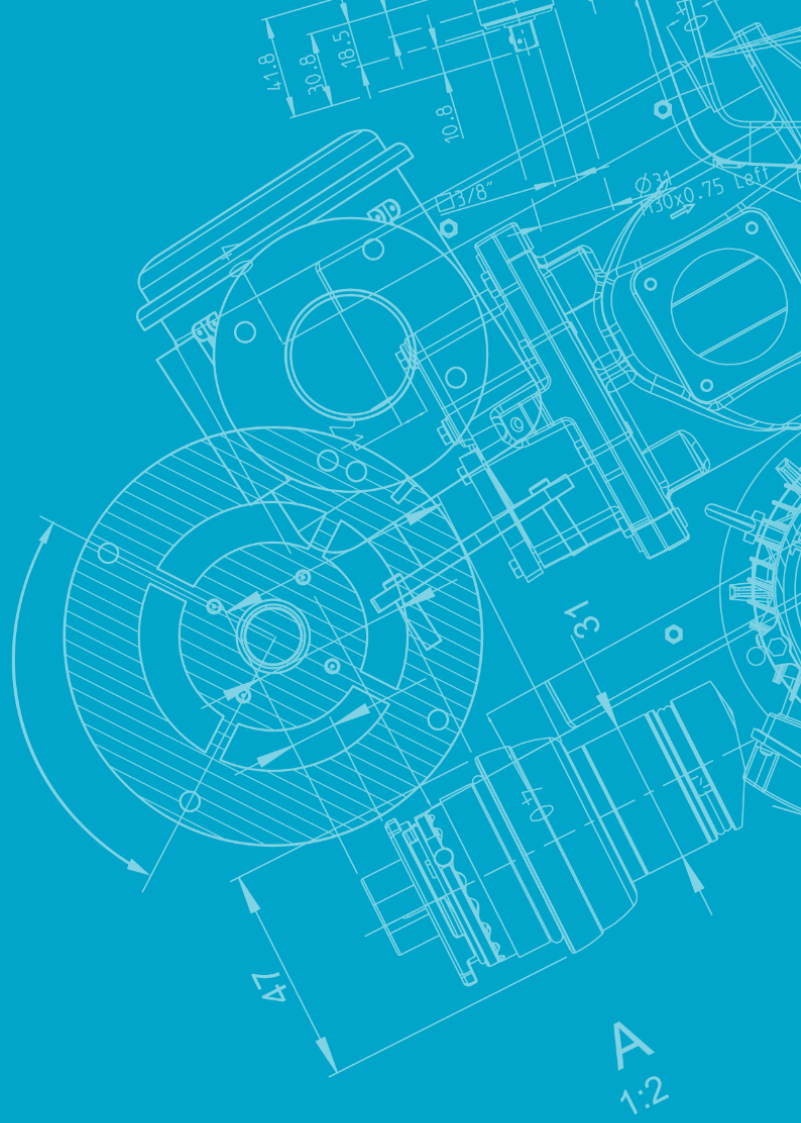


Atlas Copco



# Central Controllers

Optimizer 4.0 & Equalizer 4.0 PRO



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# It's all about efficiency, reliability and connectivity

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To make sure that your production facility is fully ready to enter the digital and sustainable future, your compressed air network should be managed in the smartest way. Our advanced Optimizer 4.0 and the flexible Equalizer 4.0 PRO are the perfect solution. Both central controllers allow you to optimize savings and maximize machine life expectancy, while the embedded connectivity gives you a wealth of operational insights.





### Smart factory

Factories are continuously evolving to assure a more efficient and reliable production. A central controller prevents downtime and reduces energy cost. Our smart algorithms monitor data from compressors, blowers, dryers and filters to run in the most optimal way. All these datapoints are sent over a secure network to your SCADA or DCS system via embedded connectivity. Get ready for Industry 4.0!



### Efficiency & carbon reduction

Even the most efficient machines need to work together in harmony to achieve the lowest energy usage. Our central controllers are specifically designed for this. Smart algorithms regulate compressors, blowers and dryers to run in their sweet spot to reduce energy consumption and prevent excess air being spilled. A central controller is the key to a low carbon utility room.



### Reliability & increased uptime

Stable outcome of your production is crucial to being a reliable business partner. The reliable Atlas Copco machines become even more reliable if they're centrally managed in an advanced way. The smart algorithms in the Optimizer 4.0 and Equalizer 4.0 PRO reduce running hours and maintenance to extend the lifetime of your installation. Central controllers help you achieve the highest possible uptime.



# Smarten your application

All different industries are emerging towards smarter, highly efficient, and more reliable factories. This optimization is possible in all different segments.



Food & beverage <sup>1</sup>



Electronics <sup>2</sup>



Pharma <sup>3</sup>



Automotive <sup>4</sup>



Wastewater treatment <sup>5</sup>

<sup>1</sup> The food & beverage industry has one of the most stringent quality air requirements, in which the air is used for packaging, conveying, fermentation and clean-in-process.

<sup>2</sup> Most electronics companies have an integrated monitoring system to provide data analysis to assure the highest uptime of their production.

<sup>3</sup> In the medical and pharma industry the quality of the air is highly important and often needs to be compliant with specific ISO norms, such as ISO 8573-1 CLASS 0.

<sup>4</sup> Engine & vehicle assembly, stamping, painting, and other pneumatic processes are just some examples in which the automotive industry consumes compressed air.

<sup>5</sup> It is crucial to manage the Dissolved Oxygen (DO) level in a wastewater treatment plant at an accurate level, meaning that blowers need to work together in harmony.

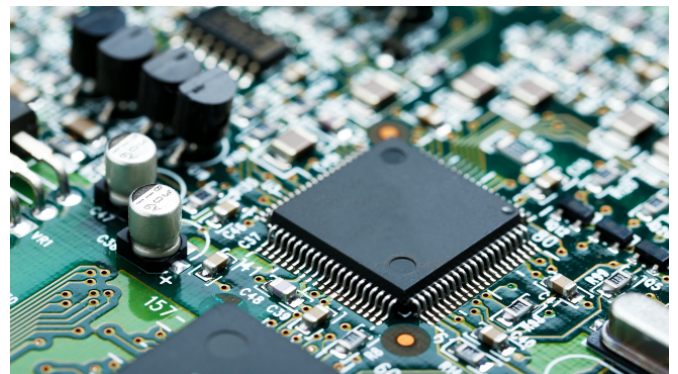


## Food & beverage

- An Optimizer 4.0 helps to monitor and manage all critical parameters like dewpoint, compressed air temperature and other important elements. Also, your process measurements such as flow meters, can be visualized and communicated to your DCS/SCADA system.
- The air demand in food & beverage usually varies depending on the products produced and time of the day. With multiple LnL and VSD compressors, the Optimizer 4.0 will select the most efficient combination for a specific flow. Finally, this results in a lower Total Cost of Ownership.

## Electronics

- Different applications in electronics require compressed air from multiple centrifugal compressors. The Optimizer 4.0 regulates the complete room via smart controls preventing blow-off and sharing the load in an efficient and stable way.
- The applications in electronics consume high volumes of compressed dry air. The smart algorithms in the Atlas Copco central controllers lower down the power consumption significantly.



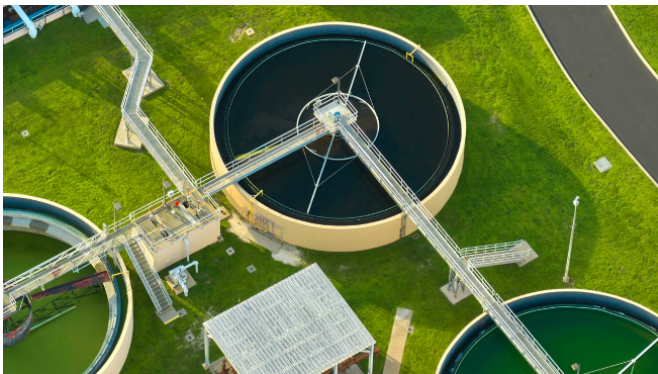


## Pharma

- High-end products are best produced with efficient and smart compressed air to guarantee the quality of the end result.
- Process driven production facilities, such as the pharma industry, require reliable production output. The global pandemic has proven that a smart and efficient approach is highly important. With the Optimizer 4.0 and Equalizer 4.0 PRO the uptime and life expectancy of the overall installation is maximized.

## Automotive

- Atlas Copco central controllers assure that compressed air is produced in an efficient way resulting in the lower Total Cost of Ownership. The electrification of the car fleet needs to happen in an efficient way.
- The Optimizer 4.0 can manage the whole compressed air system and adapt to the demand of the automotive industry.



## Wastewater treatment

- Plug & Play: the Optimizer 4.0 allows easy integration of blowers and variable flow setpoints.
- Flow split is based on the energy efficiency of the blower for optimum performance.
- Improved TCO means reduced maintenance costs and higher energy savings. No expensive, simplified and slow custom PLC programs are needed to control the blowers. The Optimizer 4.0 converts your blower room into a smart WWT plant.

# Save energy through smart controls

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In an optimal compressed air and blower installation, the machines are managed in centralized way, resulting in the highest overall efficiency.





## 1. Energy Management System

Both the Optimizer 4.0 and the Equalizer 4.0 PRO are ISO50001 compliant as a central energy and maintenance management system. Smart central controllers can efficiently regulate all connected machines, to reduce the energy consumption as much as possible.

- The Optimizer 4.0 and Equalizer 4.0 PRO are connected via a communication system with all the different machines, exactly knowing all their operating points in real-time.
- The VSD machines operate in their sweet spots and fixed speed machines reduce their unload time as much as possible, resulting in the highest possible efficiency for the overall installation.
- With a central controller, a much smaller pressure band can be achieved, resulting in much higher energy savings.

An ISO50001 compliant Energy Management System will lower your production cost significantly and achieve the lowest Total Cost of Ownership!

## 2. Setpoint control

Applications controlled by a pressure or flow setpoint can easily be integrated in the Optimizer 4.0. As the Equalizer 4.0 PRO is a sequencer, it is equipped with pressure control.





## Pressure control

Compared to local control, where the individual pressure setpoints are set to assure cascading, the use of a central controller allows for a much smaller pressure band. Having a central controller results in lower pressure fluctuations and a much more stable output pressure to your application.

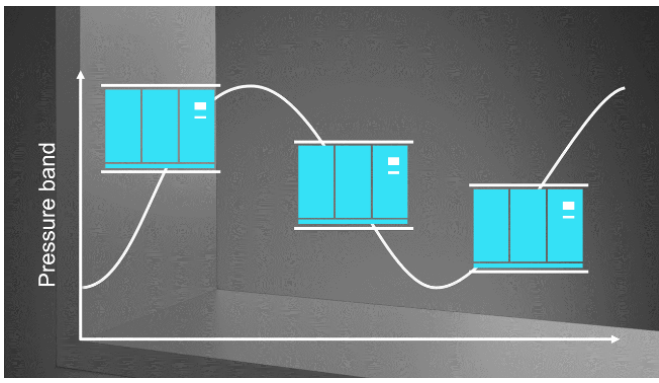
A more narrow and combined pressure band also results in a lower operating pressure for the individual machines:

- By reducing the pressure by 1 bar(g) (or 14.5 psi), your energy usage lowers by 7%.
- By reducing the pressure by 1 bar(g) (or 14.5 psi), air leakages are decreased by 13%.
- Easily switchable pre-programmed pressure bands.

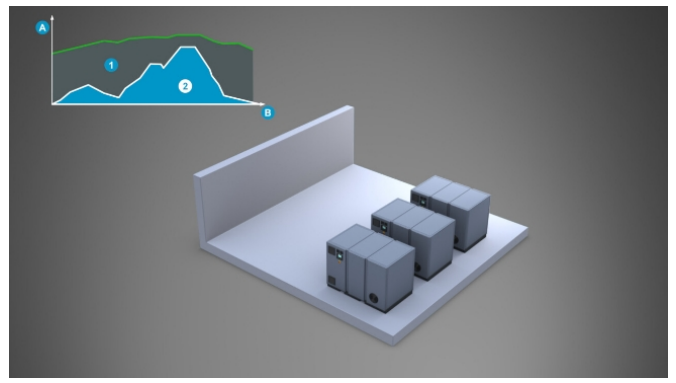
## Flow control

Often applications also require a variable flow setpoint, such as aeration, fermentation, ... The Optimizer 4.0 is capable of handling multiple compressors and blowers in variable and constant flow control.

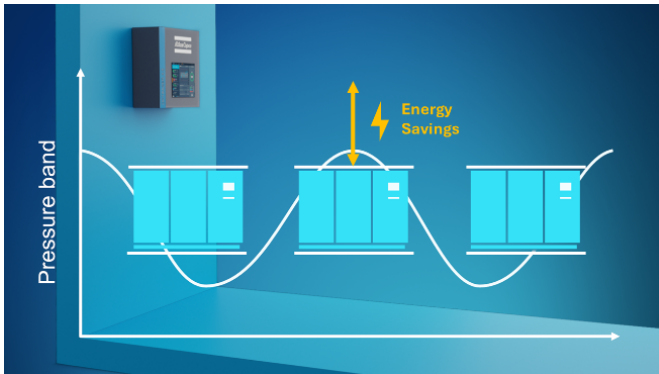
- Embedded flow bands ensure that the flow is always within the demand, reducing the energy cost related to excess air flow.
- The fluctuation of the air flow is minimized as much as possible, even during a sudden change in demand.
- The usage of your VSD or centrifugal compressors or blowers is optimized.



Before



Before



After



After

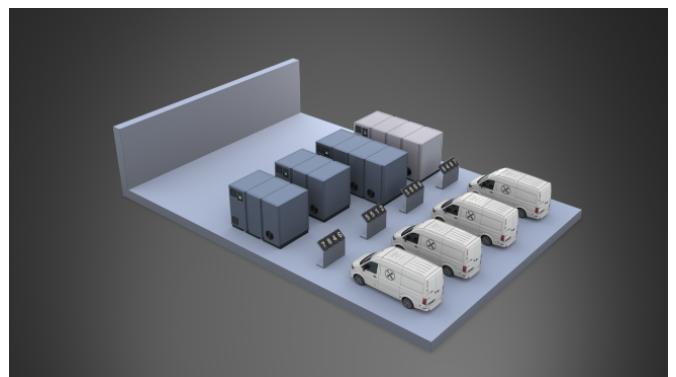
### 3. Control modes

Depending on the desired regulation, the Optimizer 4.0 can be configured with different control modes. These modes can also be combined into a group of compressors & blowers, which is called group management.

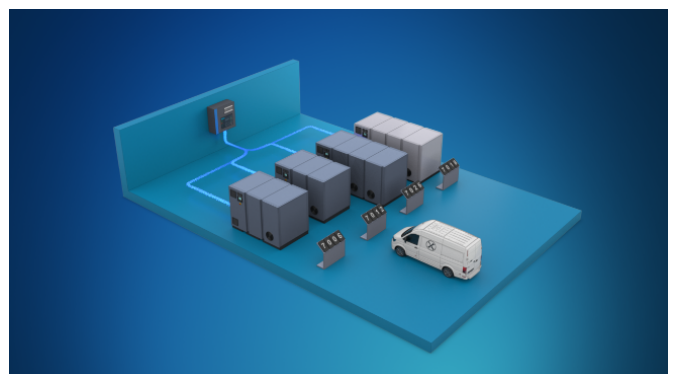
#### Equal wear mode

This mode equalizes the running hours over the machines according to your requirements. The compressors and blowers will equally wear over-time.

- Reduces maintenance interventions to one single visit for all your machines.
- Planning & administration are more manageable.



Without controller

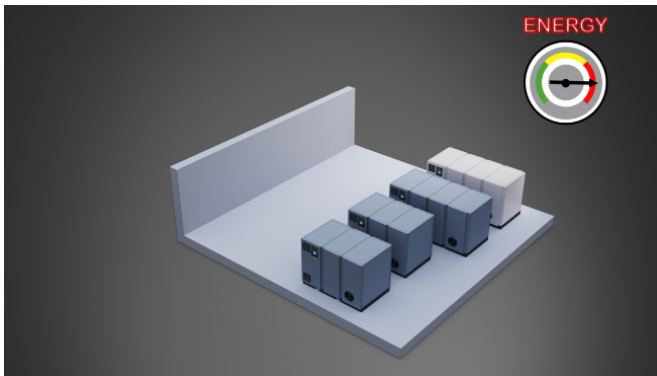


With controller

## Energy Savings mode

In the Energy Savings mode reaching the highest potential energy savings is the main focus, this while assuring a stable pressure output.

- The Load – Unload machines are operated in such a way that the unload time is reduced as much as possible.
- VSD machines will be regulated to operate in the sweet spot of their performance curves.
- Centrifugal machines will work in harmony with the other technologies, avoiding blow-off excess air as much as possible.

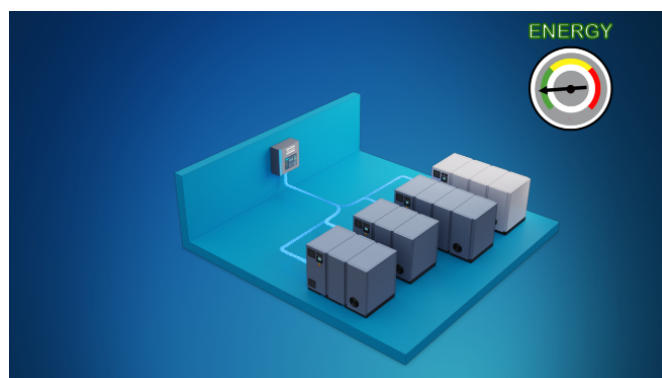
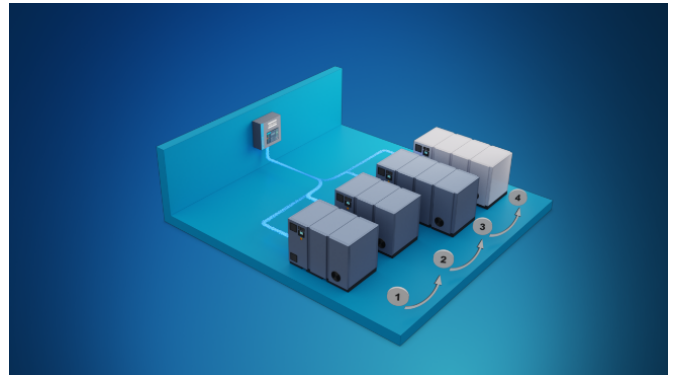


Before

## Forced sequence mode

Forced Sequence mode gives the full flexibility to select the order in which the compressors or blowers need to be enabled and controlled.

- Easily select the sequencing order.
- Have the full flexibility on how the machines are controlled.



After

## 4. There is even much more

Our ISO50001 central controllers have much more capabilities ensuring that your compressed air network is operating according to your requirements: Highest efficiency, improved uptime and an impressive stable pressure output. Maximize your energy saving potential even with non-Atlas Copco machines.

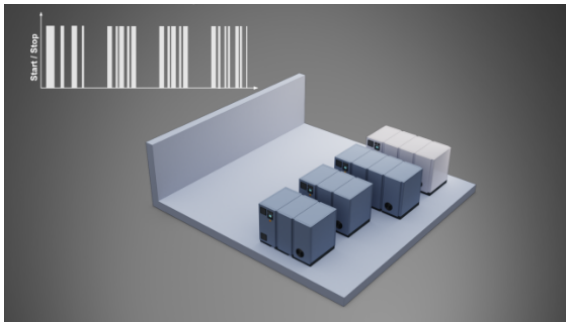


# Improved production uptime

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Central controllers increase the lifetime of your machines and the uptime of your production. Their design allows quite some flexibility to assure the regulation meets your requirements.



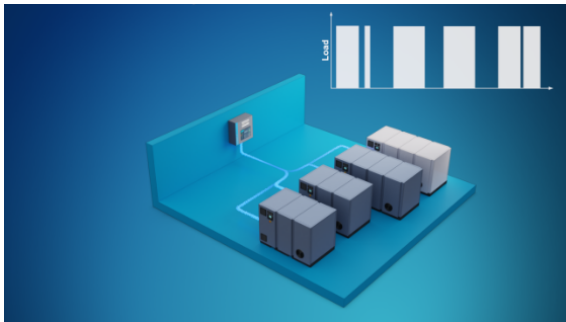


Before

## 1. Maximized reliability

As reliability is the base of smart controls, Optimizer 4.0 and Equalizer 4.0 PRO represent reliable controls as no other.

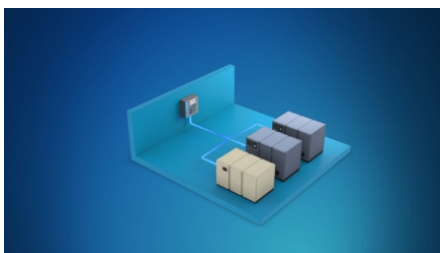
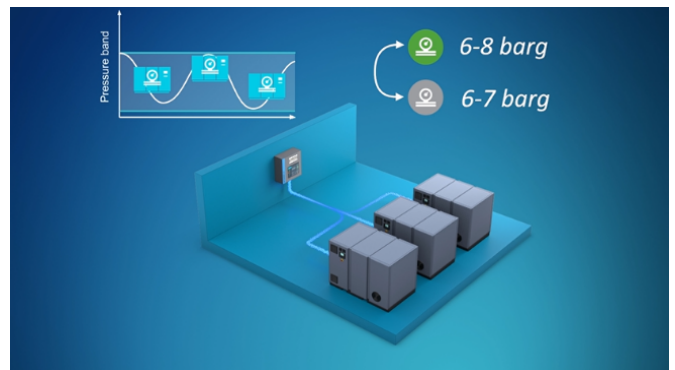
- Central controllers reduce the load/unload and start/stop cycles as much as possible, resulting in a long-lasting and reliable machine.
- The overall running hours of the compressors, blowers and dryers are reduced as much as possible. This eventually results in a lower maintenance cost and optimal Total Cost of Ownership.
- The equalization of the running hours allows the machines to age together and share the load, while the service can be executed simultaneously.



After

When it comes to upscaling the reliability on the overall compressed air network, Atlas Copco central controllers can definitely make the difference.

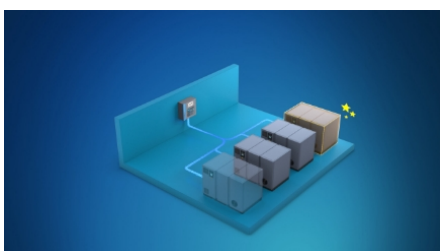
- The Optimizer 4.0 and Equalizer 4.0 PRO allow to configure Multiple Pressure bands, so the Air supply is tailored to meet the production requirements. This also has a positive impact on the Energy consumption!
- Within Smart Controls there are different protections watching over the reliability of the overall Compressed Air Network.



## 2. Extended flexibility

Each production facility or process is different and has its own specifications. With the use of a central controller, you easily set the regulation according to your requirements and tailor it as much as possible to reach your goals.

- Easily integrate or isolate existing compressors and blowers or add new machines to your compressed air network.
- Switch with one click between different pressure bands or set specific timers to tailor the output according to your actual demand.
- The Optimizer 4.0 comes with an embedded PLC function allowing you to program simplified logics via the onboard digital in- and output and analogue inputs.
- The Optimizer 4.0 and Equalizer 4.0 PRO are capable of controlling non-Atlas Copco machines.



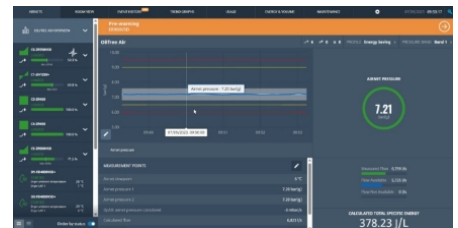
# Smart insights into your installation

The compressors, blowers, dryers and other machines in a smart compressed air network have a real-time connection with the Atlas Copco central controllers, ensuring continuous data visualization and monitoring.

## Airnets & event history

This section gives the overview of your installation. Via this screen you can find all the relevant data about your compressed air network or process.

- You can immediately find the flow and pressure values for your airnets and connected machines.
- Easily integrate or isolate machines from the Optimizer 4.0 or Equalizer 4.0 PRO.



## Room view

This SCADA view clearly shows you which machines are operating, what their operational parameters are and gives you insights into the consumption.

- An intuitive and complete overview of your installation.
- Flexibility to monitor different measurements and calculated values. You can even visualize the data from your own measurement devices.

## Trend graphs & maintenance

Simply create custom trend graphs for the parameters which are important for your production plant.

- Easily create graphs from machine and airnet datapoints. You can even connect your own measurement devices, such as flow meters, via the analogue input and trend those datapoints.
- Export all the measured and calculated data for a detailed analysis.



As different components in the Compressed Air Network require specific maintenance, a clear and user-friendly maintenance management overview can be found on the central controllers.

- Easily follow up on the required service, the overview is clearly indicating which is the next type of service and within how many running hours that is required.



## Energy & Usage insights

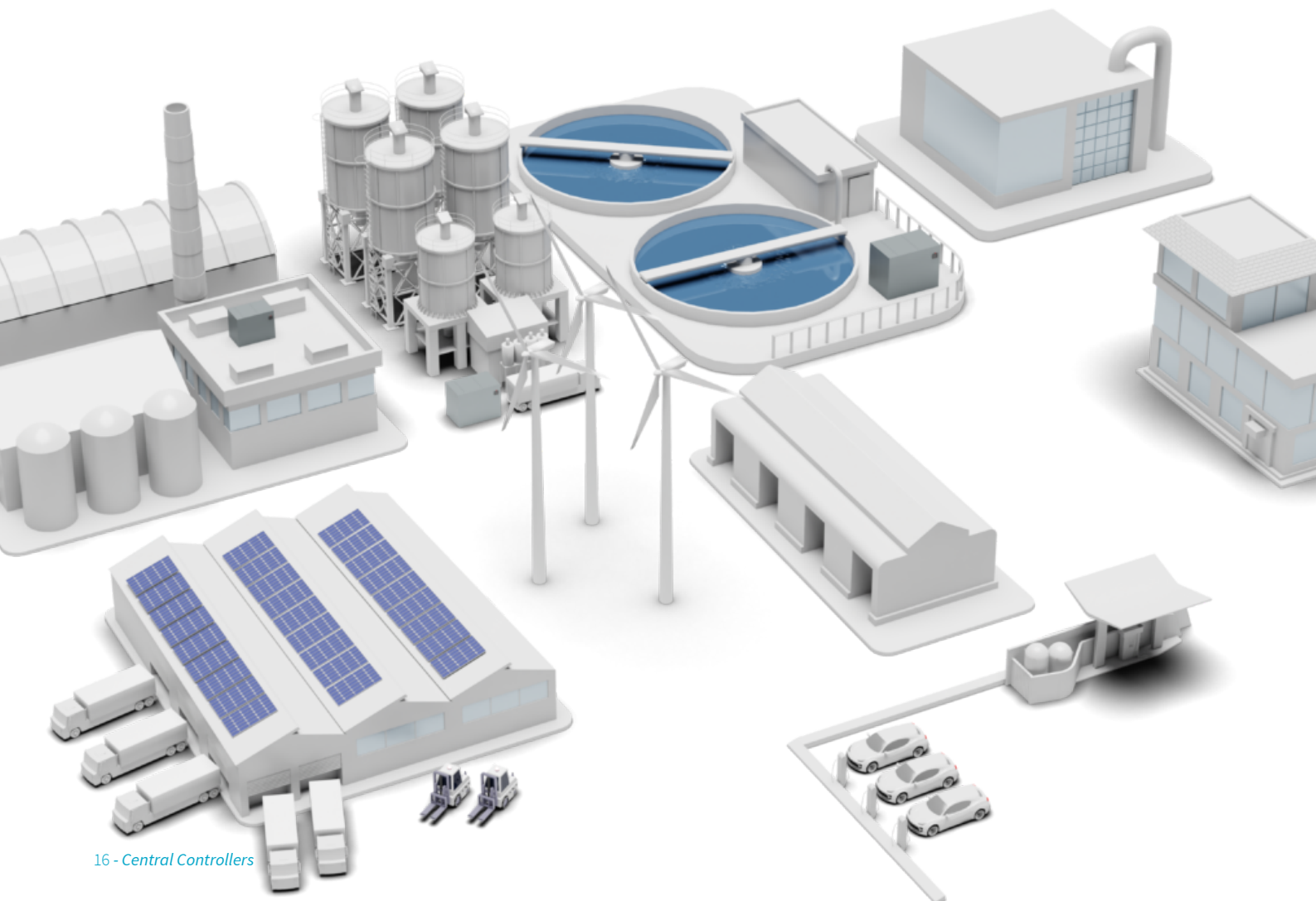
This view shows you all the energy and usage insights for machine parameters, compressed air & flow demand, power consumption and other notifications that can be viewed remotely via Local Area Network.

- Clear insights on the power consumption, usage and CO<sub>2</sub> of your installation.
- Energy Report: Easily export a very detailed report for a specific period in your production calendar.
- Data logging of minimum 30 days of measured and calculated data. Energy data is stored up to two years, compliant with ISO50001.

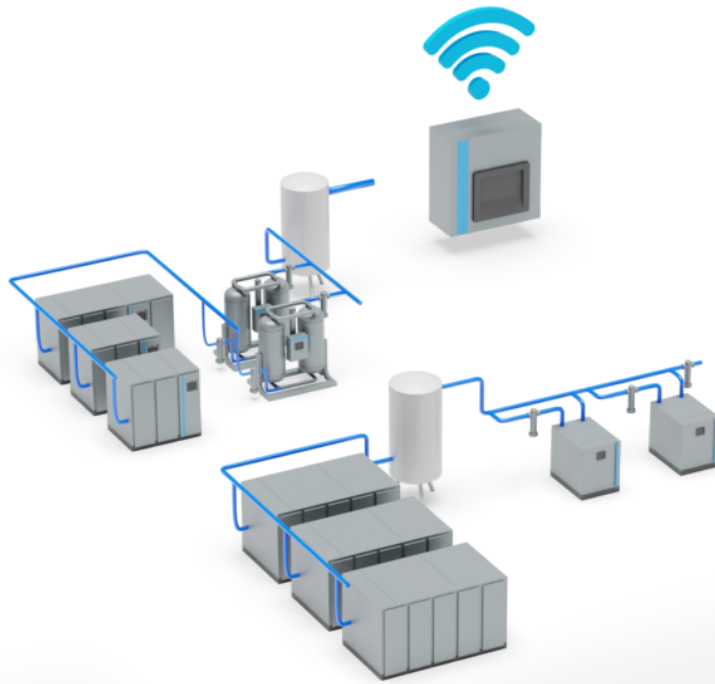
# Get connected for the future

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With your equipment ready for Internet of Things (IoT), machines in the compressed air & blower system can gather and send data to your facilities management for faster and tailored analysis. All machines and equipment are interconnected and continuously sending their data to a centralized SCADA, DCS or Cloud platform via a secure LAN network.







## 1 Remoteview

Monitoring is not only restricted to the compressor or blower room anymore. REMOTEVIEW mirrors the Optimizer 4.0 and Equalizer 4.0 PRO user interface to any monitoring device through a Local Area Network (LAN). Remote control of the central controller itself is also possible. You are able to change pressure/flow setpoints, integrate & isolate units and select the optimization profile that can be done with sufficient access rights.



## 3 Embedded Gateway

Both the Optimizer 4.0 and Equalizer 4.0 PRO are communication gateways. Via the SMART2SCADA functionality you can easily set up different communication protocols among the central controller and your SCADA/DCS platforms.

- Easily get all the machine and Airnet data from your installation.
- Broad range of embedded Communication Protocols.
- Get and process all the data in your own systems.



## 2 Smartlink

Get insights and access to compressed air & blower equipment, anytime of the day or anywhere you are through Atlas Copco's cloud-based monitoring system, SMARTLINK. A customized report on energy efficiency is always ready to be downloaded. Early warning notifications to replace maintenance parts on time avoid unnecessary breakdown and production loss. Besides customer access, SMARTLINK is monitored in key strategic areas around the globe by a dedicated Atlas Copco specialists.



# Technical specifications Optimizer 4.0

## Capabilities

	Optimizer 4.0
<b>Maximum number of connected machines:</b>	
<i>Load-unload &amp; VSD compressors</i>	30 compressors
<i>Turbo compressors</i>	
<i>Screw &amp; turbo blowers</i>	
<i>Other machines (Dryers,...)</i>	
<b>Setpoint control</b>	Pressure/Flow
<b>Limit installed power single machine</b>	No limit
<b>Maximum number of Airnets / processes</b>	3
<b>Control modes<sup>1</sup></b>	Forced sequence
	Equal Wear
	Energy savings <sup>2</sup>
<b>PLC functionality</b>	Advanced
<b>Non-Atlas Copco machines</b>	Yes

## Monitoring & connectivity

	Optimizer 4.0
<b>Data logging</b>	Energy data stored for two years <sup>3</sup>
<b>REMOTEVIEW</b>	Yes
<i>Airnets</i>	
<i>Event history</i>	
<i>Trend graphs</i>	
<i>Maintenance</i>	
<b>SMARTVIEW</b>	Yes
<i>Room view</i>	
<i>Usage</i>	
<i>Energy &amp; volume</i>	
<i>Energy report function</i>	
<b>SMART2SCADA</b>	Optional
<i>Modbus TCP/IP</i>	
<i>Ethernet IP</i>	
<i>Profinet</i>	
<i>OPC-UA</i>	
<b>GATEWAY 4.0</b>	Optional
<i>Modbus RTU</i>	
<i>Profibus DP</i>	
<b>SMARTLINK</b>	Optional

## Hardware

	Optimizer 4.0
<b>Touchscreen</b>	12" capacitive screen
<b>Digital inputs<sup>4</sup></b>	4
<b>Analogue inputs<sup>4</sup></b>	8
<b>Digital outputs<sup>4</sup></b>	4
<b>Cubicle protection</b>	IP54
<b>Ethernet ports</b>	4
<b>Certifications</b>	CE, cULus
<b>Electrical connection</b>	110-240 VAC, 50/60 Hz
<b>Dimensions (L x W x H)</b>	600 x 600 x 210 mm (24 x 24 x 8 inch)
<b>Weight</b>	32 kg (70 lbs)

<sup>1</sup> Can be combined into Group Management.

<sup>2</sup> One of the smartest and most advanced central control algorithms in the compressed air market.

<sup>3</sup> Other measurement and calculated data at least 1 month.

<sup>4</sup> Can be expanded.

# Technical specifications Equalizer 4.0 PRO

## Capabilities

	Equalizer 4.0 PRO
<b>Maximum number of connected machines:</b>	
<i>Load-unload &amp; VSD compressors</i>	8 compressors
<i>Other machines (Dryers,...)</i>	30 machines
<b>Setpoint control</b>	Pressure
<b>Limit installed power single machine</b>	315 kW
<b>Maximum number of Airnets / processes</b>	1
<b>Control modes<sup>1</sup></b>	Manual sequence
	Equal Wear
	Equal Wear+
<b>PLC functionality</b>	Basic
<b>Non-Atlas Copco machines</b>	Yes

## Monitoring & connectivity

	Equalizer 4.0 PRO
<b>Data logging</b>	Energy data stored for two years <sup>3</sup>
<b>REMOTEVIEW</b>	Yes
<i>Airnets</i>	
<i>Event history</i>	
<i>Trend graphs</i>	
<i>Maintenance</i>	
<b>SMARTVIEW</b>	Optional
<i>Room view</i>	
<i>Usage</i>	
<i>Energy &amp; volume</i>	
<i>Energy report function</i>	
<b>SMART2SCADA</b>	Optional
<i>Modbus TCP/IP</i>	
<i>Ethernet IP</i>	
<i>Profinet</i>	
<i>OPC-UA</i>	
<b>GATEWAY 4.0</b>	Optional
<i>Modbus RTU</i>	
<i>Profibus DP</i>	
<b>SMARTLINK</b>	Optional

## Hardware

	Equalizer 4.0 PRO
<b>Touchscreen</b>	12" capacitive screen
<b>Digital inputs<sup>4</sup></b>	4
<b>Analogue inputs<sup>4</sup></b>	8
<b>Digital outputs<sup>4</sup></b>	4
<b>Cubicle protection</b>	IP54
<b>Ethernet ports</b>	4
<b>Certifications</b>	CE, cULus
<b>Electrical connection</b>	110-240 VAC, 50/60 Hz
<b>Dimensions (L x W x H)</b>	600 x 600 x 210 mm (24 x 24 x 8 inch)
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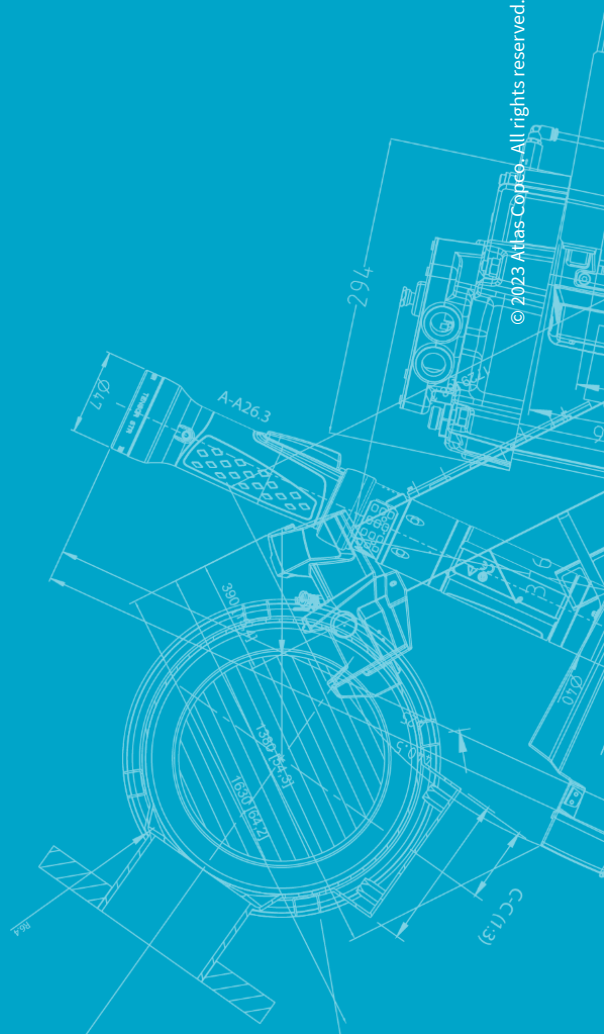
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