

City of Puyallup Development & Permitting Services ISSUED PERMIT	
Building	Planning
Engineering	Public Works
Fire	Traffic

THE APPROVED CONSTRUCTION PLANS, DOCUMENTS AND ALL ENGINEERING MUST BE POSTED ON THE JOB AT ALL INSPECTIONS IN A VISIBLE AND READILY ACCESSIBLE LOCATION.

PRCTI20230447

Quote
Quote number: 3543267
Date: 08/31/2022
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FULL SIZED LEDGIBLE COLOR PLANS ARE REQUIRED TO BE PROVIDED BY THE PERMITEE ON SITE FOR INSPECTION

GA 37/45 FF PRODUCT DESCRIPTION

THE ULTIMATE SMART SOLUTION, DRIVEN BY EFFICIENCY

Atlas Copco's GA37/45 Full Feature compressors with integrated refrigerated air dryers bring you outstanding sustainability, reliability and performance, while minimizing the total cost of ownership. Built to perform even in the harshest environments, these compressors keep your production running efficiently.

Full Feature (FF) means that this model includes an integral refrigerated air dryer minimizing the footprint of your compressed air installation.

GA PREMIUM COMPRESSOR

- High performance Free Air Delivery.
- Premium quality at the lowest initial investment
- Elektronikon® Touch compressor controller with integrated SMARTLink connectivity

Full Feature units include:

- Integrated refrigerated air dryer
 - Dryer SAVER cycle – energy saving dewpoint mode
 - Dewpoint monitoring and indication on the Elektronikon® display
- Heavy-duty, 4,000 hour, two-stage inlet filter, SAE fine efficiency rating
- Inlet filter differential pressure indicator
- High efficiency and 100% maintenance-free gear-drive system
- High efficiency, EPA compliant Nema Premium Efficiency TEFC drive motor
- ASME coded air/oil separator tank
- High efficiency, three stage air/oil separation with 8000-hour separator element
- 8000-hour, spin-on type oil filter
- Factory filled with synthetic oil
- CSA/UL approved control cubicle
- Wye-delta motor starter, mounted and pre-wired
- Full acoustical sound attenuating enclosure
- Designed for 115°F maximum ambient operating temperature
- Air-cooled versions are equipped with:
 - Aluminum block aftercooler with integrated moisture separator
 - Low noise radial type cooling fan

AVAILABLE OPTIONS:

- Mounted DD+ or UD+ filters
- Integrated master system controller (EQ4i or EQ6i)
- High ambient version (131°F maximum)
- Power Duct Fan
- Energy Recovery
- Tropical Thermostat
- Certified drawings



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GA MK5s ELEKTRONIKON TOUCH

The Mk5s ELEKTRONIKON TOUCH® control system provides energy efficient load/no load control. The graphic based controller has a 4.3" HD color display and uses icons for touch and swipe navigation. The unit can be programmed in a choice of 32 languages. The Elektronikon™ controller has following functions: Controlling the compressor, Protecting the compressor, Monitoring components subject to service and Automatic restart after voltage failure (ARAVF) to provide efficient operation of the compressor. Standard features include SMARTLINK 3G connectivity, built-in phase sequence relay. A partial description for the module's capabilities include*:

Compressor Status indication

- Automatic operation
- Voltage on
- General alarm/shutdown

Graphic Display & I/O Connections

- 1 Ethernet & 2 CAN connections
- Remote control and connectivity
- 10 digital inputs
- 5 temperature and 2 pressure analog inputs
- 9 digital outputs
- RS485 connection
- IO expansion connection

Available Data

- Element outlet temperature
- Delivery air pressure
- Running hours and hours to next service
- Loaded hours
- Elektronikon® regulator hours
- Motor overload status
- Oil separator differential pressure

Full Feature Only

- Outlet dew point
- Dryer monitoring
- Dryer inlet pressure
- Vessel Pressure

Algorithms & Features

- Delayed second stop
- Continuous pressure follow up
- Dryer Saver cycle
- Fan Saver cycle
- Numerous advanced timers

Service Indicators

- Air filter
- Oil filter
- Oil separator
- Oil lifetime

Configuration Parameters

- Time
- Date
- Format of date
- Multiple language display
- Units for pressure
- Units for temperature
- Auto restart after power failure (factory disabled)
- Motor start mode
- Extra digital input
- Pressure band

Shutdown and/or Warning Indications

- High element outlet temperature
- Drive motor overload
- Dew point (full feature units only)



*More detailed information is available upon request



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GA37 125 AFF - 460V

Inlet reference conditions

1. Barometric pressure	14.5	psi(g)
2. Ambient air temperature	68	°F
3. Relative humidity	0	%
4. Setpoint thermostatic valve	100	°F

Performance ⁽¹⁾

1. Operating pressure	125	psi(g)
2. Free Air Delivery	227.6	cfm
3. Total Electrical Power at reference conditions	46	kW
4. Total Specific Energy Requirement	20.2	kW / 100 scfm
5. Total Electrical power input at unload	12.6	kW
6. Mean Sound pressure level with tolerance ⁽²⁾	67 / 3	dB(A)

Limitations

1. Minimum ambient temperature	32	°F
2. Maximum ambient temperature	115	°F
3. Minimum effective working pressure	58	°F
4. Maximum effective working pressure	128	°F
5. Maximum altitude	3281	ft

Cooling data

1. Cooling air flow (<i>Compressor</i>)	3920	cfm
2. Discharge air temperature (ambient + °F)	13	°F
3. Cooling air flow (<i>Dryer</i>)	609	cfm

Electrical Data

1. Voltage/Phase/Frequency	460 / 3 / 60	
2. FLA	71.4	A
3. Max Fuse (RK5 (UL))	80	A

Design data

1. Motor (Nominal)	50	hp
2. Motor Efficiency at Full Load (No Load)	93 (89.1)	%
3. Typical oil content of compressed air	< 3	ppm
4. Typical oil consumption at ref conditions	8.8	oz/100h

Physical data

1. Dimensions (L x W x H)	71.3 x 35 x 70.5	inches
2. Shipping Dimensions (L x W x H)	84.6 x 42.9 x 79.3	inches
3. Weight (Shipping)	1914 (2245)	Lbs.
4. Air discharge size	1 1/2	in NPT
5. Condensate drain size (OD)	6	mm.
6. Oil sump capacity	4.7	gallons

1. Performance (free air delivery) measured according to ISO1217.

2. Operating Sound Level: Operating sound levels for machines equipped with recommended standard motors and enclosures are guaranteed ±3 dB(A) when measured in free field conditions at a distance of 1 meter according to CAGI PNEUROP Test Code.

3. Maximum altitude at which the data sheet performance remains valid. Above this elevation there may be limitations on performance

4. Consult factory for performance data if HAV option is included on unit

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Product Description: Filters UD+, DD+, DDp+, PD+, PDp+, QD+

General Description

Untreated compressed air can be contaminated by dust, water, and oil. In almost all applications, contamination of the air supply can cause serious performance decline and increase maintenance costs in terms of actual repairs and lost productivity. Therefore, filtration is a crucial component

of your air system. Atlas Copco has developed filtration solutions that protect your air-powered tools, your processes, and your final products. Our extensive offer includes different filter types and a range of purity grades to meet your specific requirements. We design filtration solutions to provide compressed air purity that meets or exceeds levels set forth by the International Standard Organization. (ISO). Filters are tested in accordance with these standards:

- ISO 8573-1: 2010 Filtration Qualification
- ISO 8573-2 sampling and measuring OCO
- ISO 12500-1: inlet conditions for Oil Aerosol
- ISO 12500-3: inlet conditions for Dust



Among its filter ranges, Atlas Copco offers more than 200 filters that span from coalescing filters for general purpose protection to active carbon filters used for removal of oil vapor and hydrocarbon odors:

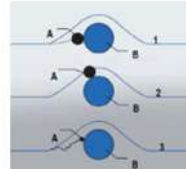
- UD+, a high-efficient coalescing filter type, combining DD+ and PD+ in one. Its unique low density provides a 40% pressure drop reduction. The maximum oil carry-over of this unique filter is 0,0009 mg/m³.
- DD+, a coalescing filter type, removes contaminants such as liquid water, oil aerosol up to 0.1ppm and particle size down to 1 micron.
- PD+, a coalescing filter type, removes contaminants such as liquid water, oil aerosol up to 0.01ppm and particle size down to 0.01 micron.
- DDp+ particulate filter type, dust protection, particle size down to 1 micron.
- PDp+ particulate filter type, dust protection, particle size down to 0.01 micron.
- QD+, activated carbon filter type, removes oil vapor, hydrocarbon odor contaminants.

Regardless of your quality air and filtration needs, Atlas Copco undoubtedly offers a filter that is perfect for your application.

Working Principle

Particles in the air stream that pass through a filter can be removed in several different ways. If the particles are larger than the openings between the filter material, they are separated mechanically ("sieving"). This usually applies for the particles larger than 1mm. The filter efficiency in this regard increases with the tighter filter material, consisting of fine fibers. Particles smaller than 1mm are collected on the fiber material by three physical mechanisms:

1. inertial impaction
2. interception
3. diffusion



Impaction occurs for relatively large particles and for high gas velocities. Due to a large inertia of a heavy particle, it does not follow the streamlines but instead travels straight ahead and collides with fiber. Interception occurs when a particle does follow the streamline, but the radius of the particle is larger than the distance between the streamline and the fiber perimeter. Particle deposition due to diffusion occurs when a very small particle does not follow the streamlines but moves randomly across the flow due to Brownian motion. It becomes increasingly important with smaller particle size and lower the velocity. Oil and water in aerosol form behave like the other particles and can be separated using a coalescing filter. In the filter, these liquid aerosols coalesce to larger droplets that sink to the bottom due to gravity.

Depending on the purpose of the filter, we have designed different type of filter element:

1. Wrapped for wet particles: Wrapped media offer durability in wet and oil contaminated environments. The patented Nautilus technology combines multiple wrapped layers to ensure constant air quality in the harshest conditions.
2. Pleated for solid particles: Pleated technology is the preferred method to capture dry particulate in compressed air. Over time, particles will clog the filter media. Pleated surfaces have a larger surface area and therefore give you a longer filter service lifetime as well as a lower pressure drop.
3. Macro-structured activated carbon: Macro-structured activated carbon has a larger surface compared to the typical carbon dust filter media. Thanks to its supreme adsorption capacity, it delivers a steady performance over a longer period.

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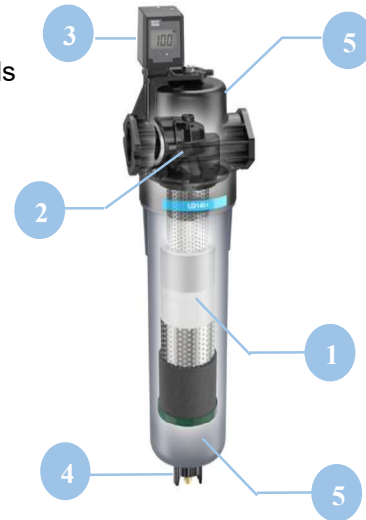
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Scope of Supply

1. Filter Cartridge:
 - Wrapped for wet particles
 - Pleated for solid particles
 - Macro-structured activated carbon for oil aerosols
2. ~~InPASS bypass (only for inPASS filter range)~~
 - ~~Build-in by-pass system~~
3. Differential pressure gauge
 - Manual gauge (standard)
 - ~~Smart indicator (optional upgrade)~~
4. Non-stick float drain
 - Automatic water removal
5. Housing
 - Aluminum die casted head and bowl

**Features & Benefits****Energy Savings**

- Large flow capacity
 - Low resistance to the air flow
 - Considerable reduction of air turbulence and pressure drop

Reliable operation

- Proven durable design
 - Dedicated filter element technology based on purpose
 - High-performance stainless-steel filter cores
 - Internal ribs to protect the element from damage and route oil droplets
 - High performance automatic drain
 - Anti-corrosive coating
 - Patented drainage technology

Easy set-up and use

- Operational ease
 - Easy monitoring via differential gauge or optional smart indicator
 - Ribbed housing for easy removal of the bowl during maintenance
 - Push on element
 - Anti-re-entrainment barrier is color coded to easily indicate filter grade
 - Bypass for the INpass range: internal bypass in the filter housing for easy maintenance

QDT Activated Carbon Tower



In applications such as pharmaceutical, food and beverage and electronics, where air purity is critical, there is often a requirement to remove residual oil vapors and odors from the compressed air supply. Atlas Copco has developed a filter which can provide this level of clean air, known as the QDT.

This activated carbon filter is able to remove both vapors and odors down to 0.003 ppm, which is class 1 clean air according to ISO 8573-1.

Range

The QDT activated carbon towers are available for flow rates of 45 to 655 scfm, based on standard operating conditions.

Working Principle

Using two kinds of activated carbon the QDT removes oil vapour and odors through a process of adsorption. Unlike coalescing filters, which do not collect vapors, the QDT maintains a steady pressure drop of 5psi or less throughout its lifetime.

Maintenance Cost

As a direct result of being sized for real site conditions, the life of the QDT elements will be at least 4,000 hours and up to 6,000 hours. Ultimately this means not only better performance, but much cheaper maintenance costs too.

Ultimate Performance

Unlike other carbon based filters, the QDT is sized for real life. There are many look alike products which have a similar performance rating but for inlet temperatures of just 68°F. The QDT is designed and sized for an inlet temperatures of 95°F, meaning it will actually deliver the performance expected continuously, all year round.

Easy to use

The QDT filters can be either floor or wall mounted and can be banked together to accommodate larger flows. Additionally, the units can be fitted with a maintenance indicator, ensuring the consumables are changed before they become saturated and downstream processes contaminated.

NGP+ N2 Generator (8-100)

PSA Nitrogen Generator



Product Description

On-site industrial gas generators offer a more sustainable and cost-efficient solution than gas delivered in cylinders or bulk liquid supply, which require transport, handling and resulting administration. The NGP+ nitrogen generator simply plugs into an existing compressed air installation and offers an independent, reliable and flexible supply of nitrogen.

The new NGP+ sets new standards in efficiency with Air-to-Nitrogen ratios from:

- 1,8 (95% N₂)
- 5,5 (99,999% N₂)

On-site vs. liquid or bottled

- Your own independent supply of industrial gas
- Non-stop availability: 24 hours a day, 7 days a week
- Significant economies of scale and lower operational costs: no rental charges, transport expenses and bulk user evaporation losses
- No safety hazards when handling high-pressure cylinders
- Easy integration within existing compressed air installations

The ultimate energy Saver

In addition to a standby mode which stops the generator when there is no demand, the NGP+ utilizes a unique purge control algorithm that can extend cycle times at low nitrogen demand. This reduces air consumption at low nitrogen flow rates and cooler inlet temperatures resulting

Exceptional Convenience

- Low installation and running cost – highly efficient technology.
- No additional costs such as order processing, refills and delivery charges.
- Virtually service free.
- Quick pay back – often less than a year compared to bulk N₂.

Ready to use

- Plug-and-play
- No specialist installation
- Fully automated and monitored including oxygen sensor and flow meter as standard

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High Flow capacity

The wide product range and nitrogen flows up to 6050 cfm makes the NGP series ideal for applications such as food processing, pharmaceutical, metal industry, oil & gas, marine, packaging and many more.

Self Regulating

System includes a minimum pressure valve with by-pass nozzle for fast start-up and when running automatically regulates to the requested nitrogen pressure and purity. This simplifies the process and makes it extremely easy to change purity. It also allows for off-spec nitrogen flushing

Highest Quality CMS



The Carbon molecular sieve used in the NGP+ has been selected for maximum performance. It has been packed to a high density and kept compact by spring loading.

Controls



By properly monitoring your nitrogen/oxygen system you can not only decrease downtime but also save energy and reduce maintenance. With an extensive array of sensors including inlet air monitoring the NGP+ is able to provide complete control and system optimization.

Extensive list standard sensors and components

- Inlet temperature
- Inlet pressure
- Inlet dewpoint
- Digital display
- Thermal mass flow meter
- Zirconium Oxygen sensor
- Outlet pressure regulator
- SmartLink remote monitoring



Remote control and connectivity functions

The controller can be started and stopped locally, via a wired remote switch. With the SmartLink Smart boxes that are supplied standard with every unit, systems can be monitored online and are available to receive alarm messages through mobile phones. Generator data through Modbus, Profibus is also optional.



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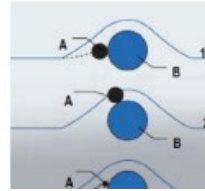
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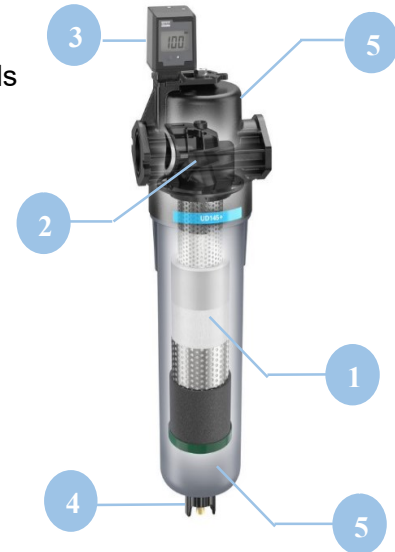
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Scope of Supply

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2. ~~InPASS bypass (only for inPASS filter range)~~
 - ~~Build-in by-pass system~~
3. Differential pressure gauge
 - Manual gauge (standard)
 - ~~Smart indicator (optional upgrade)~~
4. Non-stick float drain
 - Automatic water removal
5. Housing
 - Aluminum die casted head and bowl

**Features & Benefits****Energy Savings**

- Large flow capacity
 - Low resistance to the air flow
 - Considerable reduction of air turbulence and pressure drop

Reliable operation

- Proven durable design
 - Dedicated filter element technology based on purpose
 - High-performance stainless-steel filter cores
 - Internal ribs to protect the element from damage and route oil droplets
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 - Anti-corrosive coating
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Easy set-up and use

- Operational ease
 - Easy monitoring via differential gauge or optional smart indicator
 - Ribbed housing for easy removal of the bowl during maintenance
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 - Bypass for the INpass range: internal bypass in the filter housing for easy maintenance



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Product Description: OGP+ 3-30

General Description

The OGP+ is a premium Atlas Copco oxygen generator, based on pressure swing adsorption technology, for producing oxygen at point of use with purity between 90 and 95%.

The oxygen generator is built according to proven design standards and is suitable for use in a normal industrial environment. The design, materials and workmanship ensure of the best available quality and performance.

The OGP+ is a self-contained unit including all necessary controls, piping and fittings needed for proper operation.



This oxygen generator is available in 8 models with a flow capacity ranging from 2-37 Nm³/h. Along with the range of gas purities this makes a great match for a wide range of industries such as aquaculture, bioenergy, metallurgy, pharmaceutical production and many more.

Operating Principle

The oxygen generator makes use of Pressure Swing Adsorption (PSA) technology to produce oxygen by passing pre-treated compressed air through an adsorber containing an adsorbent called zeolite molecular sieves (ZMS). The ZMS has the property to adsorb preferentially nitrogen molecules when pressurized, and to release them when de-pressurized. Because of this, the process is inherently a batch process. In order to secure steady flow, the oxygen generator PSA systems contain two adsorbers to provide operational continuity. One adsorber is active while the other one is inactive. At the end of each cycle they switch roles.

The active vessel is pressurized and pre-treated compressed air enters the active adsorber and follows up through the ZMS. Nitrogen molecules are being adsorbed while the oxygen molecules pass through.

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When the adsorbing vessel approaches saturation, the regenerated adsorber is partly re-pressurized with the compressed gas from the active adsorber. This is called the equalization step and is intended to save compressed air.

When pressure from the saturated adsorber is released, the regeneration process starts. At the same time the regenerated adsorber is being pressurized up to working pressure with the compressed air from the inlet at the bottom and oxygen from the product tank at the top. The cycle starts over again.

Note that all components that come into contact with the oxygen have been carefully selected for compatibility and cleaned for oxygen service.

Scope of Supply

- **Inlet air circuit**

The inlet air quality is constantly monitored to make sure the inlet requirement is always met. By doing this, the ZMS is protected and the protection of the oxygen generator guaranteed.

- Inlet PDP sensor
- Inlet temperature sensor
- Inlet pressure sensor
- Inlet pressure indicator
- Inlet air flushing valve: to flush the inlet air when the moisture content is too high
- Pilot air connection: pilot air circuit consists of:
 - o Pressure regulator and indicator
 - o Pilot solenoid valve block

- **The PSA process**

The PSA process of a nitrogen generator consists mainly of two assemblies:

- The adsorbers
 - o Aluminium extruded profiles filled with Zeolite Molecular Sieves (ZMS), which adsorb the nitrogen from the incoming compressed air. The ZMS is densely packed and spring-loaded to prevent fluidisation.
- The valve system controlling the PSA process: pneumatic actuated angle seat valves
 - o Inlet transfer valves to guide the compressed air into the adsorbers
 - o Equalisation valves to allow an equalisation of the adsorbers in order to save compressed air
 - o Blow-off valves to vent the adsorbers to atmospheric pressure in order to release the nitrogen enriched air from the ZMS.
 - o Outlet transfer valves to guide the oxygen from the adsorbers to the product tank and to allow a back-flow from the product tank to the adsorbers during pressurization
 - o A purge orifice to help escape the nitrogen enriched air from the regenerating adsorber.
- **Minimum pressure valve**

The minimum pressure valve allows automatic start-up. The minimum pressure valve also protects the adsorbers from over-flow thus guarantees a long lifetime of the ZMS.
- **Outlet gas instrumentation**

To guarantee the quality of the outlet gas, the outlet gas parameters are constantly monitored:

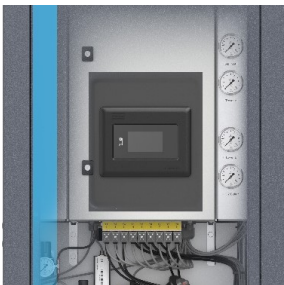
- Outlet pressure sensor
- Outlet pressure indicator
- Outlet PDP sensor (optional)
- Outlet flow meter
- Outlet gas purity sensor (zirconia long life oxygen sensor)
- Outlet flushing valve: to prevent the gas from flowing to the application when the purity is lower than requested.

- Outlet circuit

After the product tank, in the return line, two valves are foreseen to control the flow of the oxygen

- Consumer valve: opens when the requested purity of the oxygen is available in the product tank.
- Flushing valve: opens when the requested purity of the oxygen is not reached. This way, bad purity oxygen is flushed to atmosphere through the silencer
- Pressure regulator: to reduce the oxygen pressure to the requested pressure

ELEKTRONIKON®



OGP+ oxygen generators are controlled by the Atlas Copco Mk5 touch controller. This controller controls the PSA cycle of the generator, the regulation of the oxygen purity and the protection of the ZMS bed:

- PSA cycle control:
 - Manual mode: The PSA cycle will operate independent from the consumed oxygen flow.
 - Automatic mode: Variable Cycle Saver (VCS): the cycle time will be altered depending on the level of consumed oxygen. This way, less compressed air is needed to feed the generator and energy is saved when the generator is not running at full load. This algorithm also compensates for altering ambient conditions (thus the generator uses less compressed air at lower temperatures) and altering purity settings (the generator will use less compressed air at lower purity settings). When no oxygen is consumed, the generator will enter stand-by mode and not use any compressed air at all.
- Automatic start-up after a long shutdown:

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- Automatic start-up enables the user to start the generator with the push of a button. The generator will fill the product tank with a specific flow which will result in the fastest start-up procedure possible.
- Guaranteed purity:
 - When the oxygen purity is less than requested, the flushing mode will shut off the oxygen flow to the user and direct it over the flushing nozzle. This way, the purity will be recovered as fast as possible and no bad gas purity can flow to the oxygen application

The following diagnostics are foreseen:

- Indications:
 - Operation mode indication
 - Running state
 - Running time
 - Inputs:
 - Oxygen purity level
 - Outlet flow
 - Inlet pressure
 - Inlet temperature
 - Inlet PDP
 - Pressure inside adsorber A
 - Pressure inside adsorber B
 - Outlet temperature
 - Outlet PDP (optional)
 - Running time
- Alarms:
 - Low purity alarm
 - Failed to blow off vessel A
 - Failed to blow off vessel B
 - Failed to pressurize
 - High inlet pressure
 - High inlet temperature
 - High inlet dewpoint
 - High outlet flow
- Retransmitting signals (4-20mA):
 - Inlet PDP
 - Oxygen purity level
 - Outlet flow
 - Outlet PDP (optional)
- Other:
 - Service indication
 - Password protected administrator settings
 - Changeable settings for alarm levels