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Oil content and dew point measurements

OilControl measurements recognize according to
ISO 8573-2 (aerosols + droplets) and
ISO 8573-5 vapor (gaseous)

for the Medium

Compressed Air	CO_2	Nitrogen	Oxygen	Helium	Argon	Atmospheric Applications
✓	✓	✓	✓	✓	✓	✓

SUITABLE FOR CLASSIFICATION OF
COMPRESSED AIR ACCORDING TO ISO 8573.1

compressed air
OilDewControl

Compressed air and Gases
Oil content and dew point measurement

compressed air
OilControl

Compressed air and Gases
Oil content measurement

Compressed air and gases quality assurance

Cause of damage No. 1

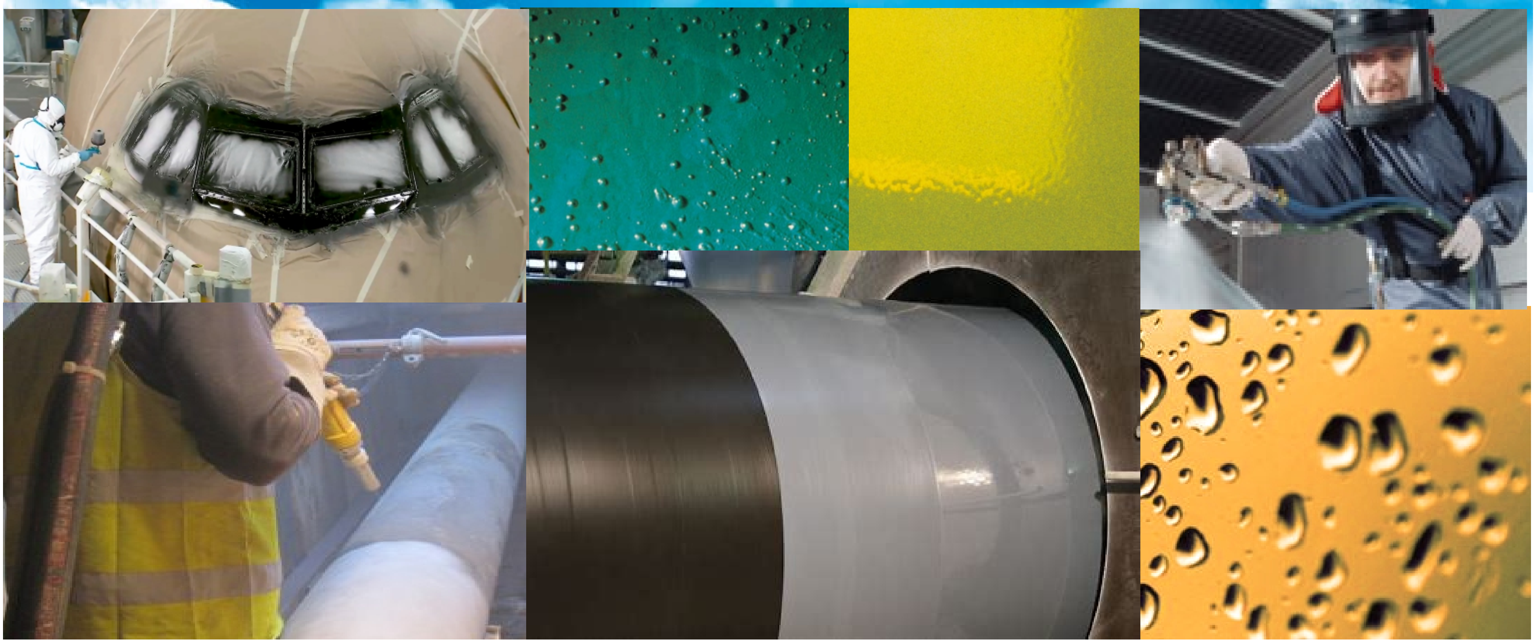
Oil and moisture

in the highly sensitive production medium "compressed air"

At any point after the compressed air treatment, there can be a Contamination with oil or oily substances !
Thus, the risk in sensitive production areas of food, pharmaceutical, chemical and beverage manufacturing industry, in medical technology as well as in surface technology are not to underestimate!

Influencing factors for the residual oil content in the compressed air

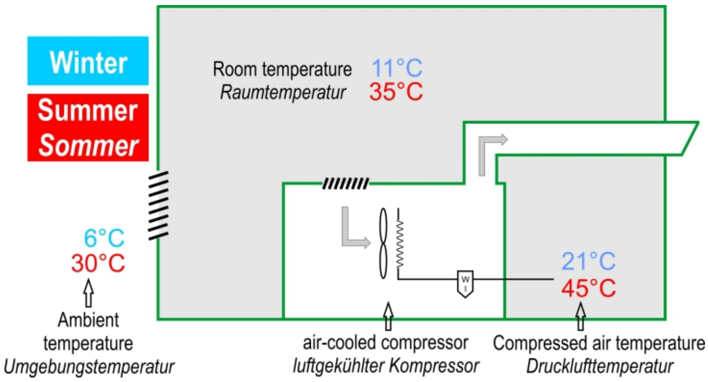
That is why today in almost all manufacturing and processing branches a high quality, oil-free compressed air is required. It focuses on that Problem mainly on remaining oil aerosols and vapors.
Among other things, you can find sensitive tool parts at the point of acceptance affect, wash out basic lubrication on components or even Contaminate end products.The oil components contained in the compressed air are used in tools and machines relax and escape with negative consequences in the Ambient air. For example, they deposit on surfaces and produce a disruptive oil film, which in turn reduces the adhesion of paintwork impaired or difficult to bond.



Oil in the compressed air

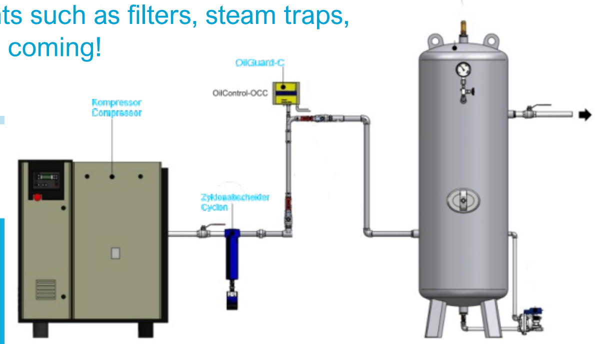
A chemical cocktail of the environment always gets into the compressor with the sucked-in air. The three main contaminants in compressed air are dust, water and oil (hydrocarbons).
These influence each other, e.g. Dust particles clump in the presence from oil or water to larger particles together, emulsify oil and water.
They are deposited or condense in the pipes.

Additionally, on the way through the compressor and its piping other solid particles (abrasion, rust, etc.) are added to the intake air.
The contaminants settle in the pipe walls and form over the years Incrustations. Peak concentrations occur under start-up conditions or when the pipes were subjected to mechanical vibration. That burdens them Filters up to overuse, when they burst, nobody notices it at first!
Extensive cleaning work is then required.



Operating conditions compressors

Stay at moderate outside temperatures the operating conditions in the stable range. But as soon as the outside temperatures and hence the intake conditions of the Change compressors, it can inevitably to overuse the processing components such as filters, steam traps, Dryers are coming!



Monitoring of compressors ... why?

How oil separators work in the compressor and their dependence on the compression process:

1. The separator is from the outside to the outside flowed through inside, the coagulates fine oil mist when passing through the microfine glass fiber due to the Impact separation and electrostatic acting forces and runs as a liquid downwards.

2. The second filter layer may catch through larger currents swept along by the current Drops of oil due to the Gravity quickly sink down. The constructive one Flow guidance is intended to entrain the Prevent oil.

3. Depending on the type of installation, the oil collects at the bottom of the element, there by the aspirated or running small suction line with horizontal installation below from the Element and becomes the oil cycle again of the compressor.

4. The service life of the separators is only from the solid contaminants depending on the the fine filter material clog and increase the pressure loss to let. Due to the large hollow volume long service lives can be achieved. However, there is good filtering for that Intake air and the oil circuit indispensable requirement.

5. Hairline cracks in the filter are only in the laboratory detectable. They create one higher residual oil content after the Deposition and a high Oil consumption. This then strikes in the subsequent pipelines low. Better install an OilGuard, as an oil-saturated piping system need to clean.

OilGuard-C

Make quality recognized

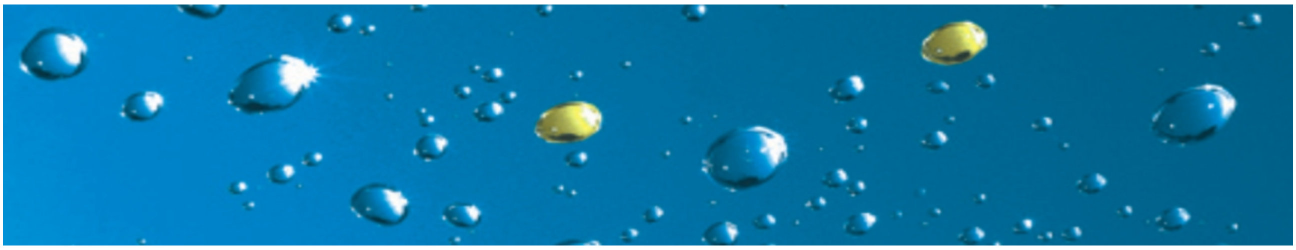
You can see the quality of compressed air - by measuring it. So you can get the measured
Understand values easily and in real time and take action immediately if necessary.
The monitoring system from Andjana Instruments controls the flowing compressed air
permanently - in real time - on the oil content in mg / m³ or in combination the moisture content as
pressure dew point ° Ctp u. if necessary also the number of particles in the system.
The OilControl / OilDewControl supports you optimally in the analysis and control of the compressed air quality.

In order to enable a classification and limitation of the risks, there are recommended quality classes
for the compressed air. They are defined in ISO 8573.1.

Quality classes according to ISO8573-1

Impurities and cleanliness classes

class	solid impurities				humidity (vaporous)		total oil content (liquid & gaseous)
	≤0,1 µ	0,1µ<d≤0,5µ	0,5µ<d≤1,0µ	1,0µ<d≤5,0µ	DTP	residual moisture	
0	better than 1 and to be agreed separately						
1	n.V.	100	1	0	≤ -70°C	≤ 0,003 g/m³	≤ 0,01 mg/m³
2		100000	1000	10	≤ -40°C	≤ 0,11 g/m³	≤ 0,1 mg/m³
3			10000	500	≤ -20°C	≤ 0,88 g/m³	≤ 1 mg/ m³
4				1000	≤ +3°C	≤ 6 g/m³	≤ 5 mg/m³
5				20000	≤ +7°C	≤ 7,8 g/m³	
6					≤ +10°C	≤ 9,4 g/m³	
7							
	Maximum number of particles per m³ of given sizes measured in µm according ISO8573-4				Maximum pressure dew point measured according to ISO8573-3		Maximum total oil content measured according to ISO8573-2 and ISO8573-5
	Subscription conditions 1 bar absolutely, 20°C, 0% r.h.				**Subscription conditions 7 bar operating pressure, 20°C**		**Subscription conditions 1 bar absolutely, 20°C, 0% r.h.**



ISO8573 is the name of a group of international standards related to quality
(or purity) of compressed air. The standard consists of nine parts.
Part 1 defines the quality requirements for compressed air and parts 2 - 9 define the test methods for a range of contaminants.

Explanation of the functionality according to ISO 8573.1 Part 2 (aerosols) + Part 5 (vapor / gaseous)

The most common cause of misinterpretation is the definition of the term "oil" in ISO 8573-1.
ISO 8573-1 defines the oil content in the compressed air as liquid and vaporous oil components only together, the so-called total oil content, for hydrocarbons from C6 to C50.
Contains petrol and alcohol (volatile - quickly gaseous)
Hydrocarbons from C5 to C11, primarily C6 to C10.

Compressor lubricating oils contain hydrocarbons from C15 to C40, primarily C20 to C30.
The definition of oil in ISO 8573-1 refers to all condensable hydrocarbons from C6 and higher to C50 and not just the gaseous portion (oil vapor C6 -C11),

ISO8573 - the standard for compressed air quality classes

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In the case of continuous measurement for compressed air qualification according to ISO8573.1, it must be ensured in any case that not only the gaseous (oil vapor) components can be measured, but above all also the aerosol components, which can generate many times more steam when the temperature rises!
Most of the oils used in compressors today are synthetic and therefore produce fewer vapor phases. It is therefore important to be able to recognize nano and micro aerosols in particular, since the flow speeds in a compressed air system are subject to high consumption-dependent dynamics and at times ensure atomization in the pipe system.
UV light sensors (PID) do not recognize aerosols because they are protected against aerosols and the like with a membrane in front of the measuring window (glass). Occupancy are protected and thus can never recognize aerosols!

If no oils are recognized in droplet - aerosol - or liquid form, this is neither standardized nor helpful, because a classification according to ISO 8573.1 is not possible!

If you want to compare systems, have a written confirmation that the "residual oil sensor" also detects oil substances in liquid and aerosol form. Only then can it be compared with the OilControl sensors.
The application of the purity class for oil is only possible if both the liquid oil content (aerosol) and the oil vapor content (gaseous - VOC) have been recognized and approved. is measured!

VOC: Volatile organic compounds (abbreviation: VOC or VOCs volatile organic compound [s]) is the collective name for organic, i.e. carbon-containing substances that evaporate easily (are volatile) or even at low temperatures (e.g. room temperature) present as gas (PID detection up to C11).

Measure compressed air quality - time lag is a risk factor

In principle, it is possible to determine the static value at the time of sampling, as the residual oil content of the compressed air, using laboratory tests. But the results are usually only available after days or weeks. Far too late to react quickly and effectively to any quality problems caused by oil-contaminated compressed air. In the worst - and quite common - case, obvious damage to the product or problems in production have long since shown up. With expensive consequences due to production interruptions, increased reject rates or even product recalls.

Every year in manufacturing and processing plants around the world, damage amounting to several million euros is caused by contaminated compressed air. The main cause is an ingress of oil into the compressed air system, which is registered too late, and its uncontrolled penetration to the point of consumption.
The problem is primarily focused on remaining oil aerosols and oil vapors. The oil components contained in the compressed air are relaxed in tools and machines and escape into the ambient air with negative consequences.
For example, they are deposited on surfaces and create a disruptive oil film which, in the worst case, contaminates the product. Machine grease in built-in filters, fittings, seals and outgassing hoses of the pneumatics contribute to this to a considerable extent not to achieve the defined compressed air class at the point of use.

The permanent oil content measurement in flowing compressed air is the most adequate means to ensure that the residual oil content in the compressed air does not go higher than required. The OilControl measuring device was developed to measure oil aerosols and the like. Oil vapor according to the requirement for classification ISO8573.1 to recognize Part 2 (liquid and aerosol form) + Part 5 (gaseous).

The OilControl recognizes the total of the oil substances in order to be able to qualify and classify in accordance with ISO 8573.1.

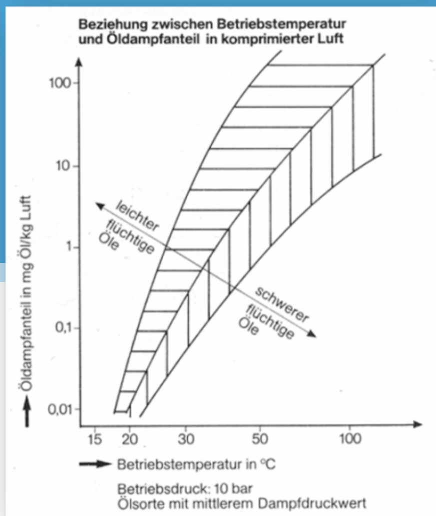
Solutions - weaknesses

The specific weaknesses of the individual components are also retained in combined operation.
For example, oil-free compressors offer no real guarantee under most operating conditions.
Although they theoretically produce a compressed air quality that is identical to that of the intake air, it is precisely this that is usually already negatively influenced. Especially when the air drawn in is drawn from the "normal" environment - not from a specially screened compressor room.
As a result, a large number of hydrocarbons enter the compression process. These include solvents such as ketones - such as acetone -, aromatic hydrocarbons such as benzene, toluene and xylene, or polycyclic aromatic hydrocarbons such as naphthalene. In addition, there are fuel residues in the ambient air, for example diesel oils, gasoline and kerosene. A highly "aggressive" mixture for them
Compressed air treatment.

Even a separate location for an oil-free compressor that is largely shielded from environmental influences is no guarantee of clean intake air.
Because also through the
Compressor's own gearbox ventilation oil aerosols and
Oil vapors can escape - an effect that occurs almost continuously with large compressors.
All of this makes it clear:
Even behind dry-running screw and piston compressors, where the actual
If the compression process takes place without oil as a lubricant, sealant or coolant, you should by no means expect clean compressed air in the sense of absolutely oil-free compressed air.

It depends on the environment.

Of course, this particularly applies to the use of oil-injection-cooled screw or oil-lubricated piston compressors. With the latter, the use of downstream filter systems is therefore practically an obligation and, with "oil-free" compressors in sensitive applications, a recommendation that is more than necessary.



This is how you should proceed

However, the modules downstream of the compressor are not always able to reduce the residual oil content in the system to the level required for demanding applications.

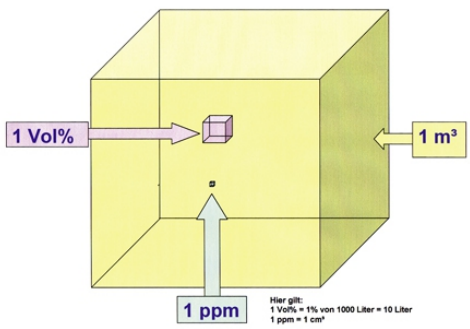
In practice, therefore, a considerable amount of uncertainty usually remains despite all efforts the constant, absolutely reliable quality of the prepared "oil-free" compressed air to the point of use. Because the factors that affect the filtration and adsorption in a compressed air system are too diverse. It starts with the choice of compressor type. Because the compression principle already has an influence on the shear and the heat input of the hydrocarbon molecules.

The hydrocarbon chains behind an oil-free compressor are shorter than behind an oil-lubricated one. The aerosol diameter, in turn, is smaller behind a screw compressor than behind a piston compressor. A strong atomization of the oil in the compressor stage causes an optimal surface enlargement for the cooling. However, the intensive contact with atmospheric oxygen also causes the oil to age earlier. Other aspects include the system operation, frequency control, cooling and the design of the oil separator.

For example, pressure switch-controlled compressors often switch between Load and idle operation result in an extremely high load on the oil separator, while frequency-regulated compressors cause fluctuating oil input, which in the lower Speed range is significantly higher than at full load. High-quality activated charcoal filters and activated charcoal adsorbers do an excellent job of processing compressed air, but they also require appropriate attention from the system operator. Regular maintenance and timely replacement are essential prerequisites for safe, reliable operation. Not always an easy task, because the negative influences on the filters and adsorbers are often beyond the control of the system operator ..... and next summer is sure to come.

Natural boundaries

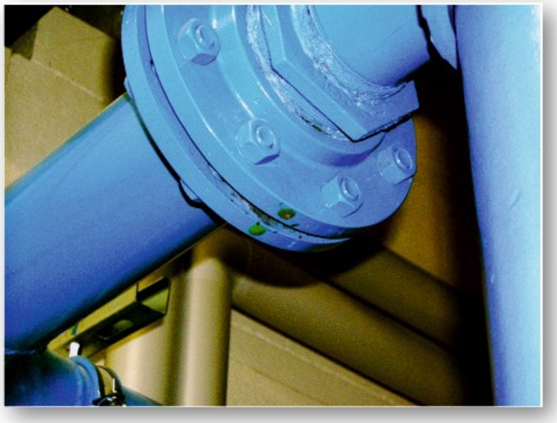
For example, the flow rate, the temperature and the humidity have a significant impact on the adsorption capacity of the activated carbon filters and activated carbon adsorbers.
In practice lie in compressed air systems Speeds of 5 to 15 meters per second. The technically optimal flow speed for the highest possible adsorption, on the other hand, is only 0.6 meters per second - a world apart from real everyday work away. Especially when starting up the system at particularly high speeds, there is always the risk of oils being carried away and sprayed, even in otherwise extremely stable filter systems.



Only in the rarest of cases does the operator have enough time for the oil breakthrough with the saving Shutdown of the system to respond. Because even after a pre-alarm he has only a few minutes to The worst to prevent: the escape of oily air at the consumption points.
With a flow velocity of 7 m / s, for example, the oil breakthrough reaches 2000 meters remote compressed air user within less than 3 minutes.

Filter and adsorption services are heavily dependent on pressure and temperature

As the filter performance increases with temperature subsides, the oil passage may be significant.
An activated carbon filter or activated carbon adsorber can also be used absorb only a limited amount of oil.
Here is the right time to change the filter to find is not easy.



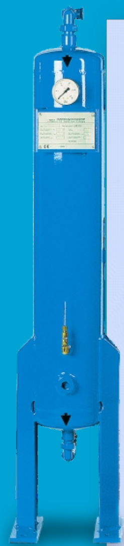
Oil under the flange = oil breakthrough!

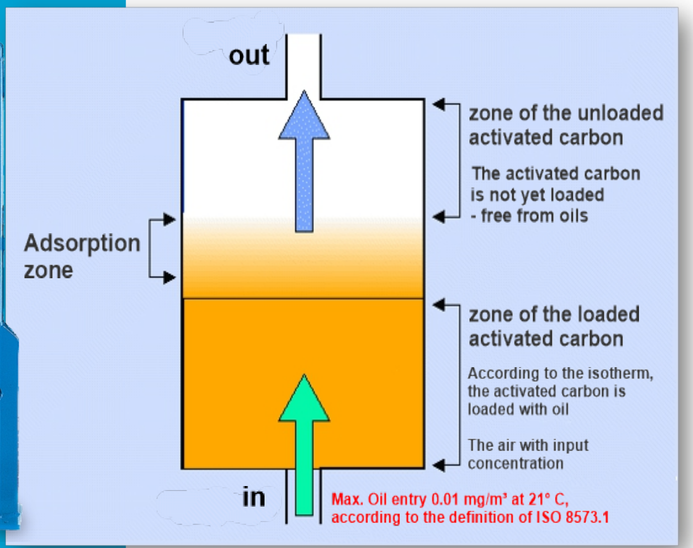
Service life of the activated carbon

The service life of the activated carbon depends heavily on the Amount of oil vapors to be adsorbed.
It only needs to be replaced when that usable capacity of the pore structure is exhausted (see activated carbon structure).
To achieve optimal cleaning results, it is important to work with a pressure dew point from -40 °C so that the activated carbon is not superimposed with water vapor and is not affecting the adsorption effect.

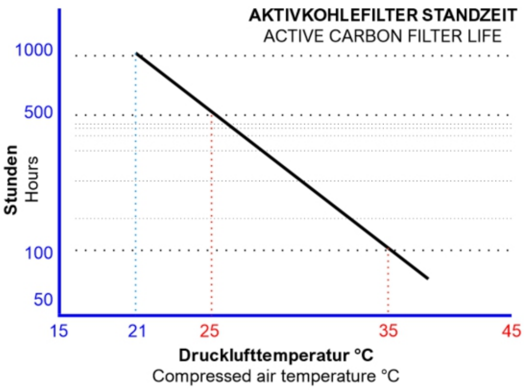
To achieve good service life is also on it to make sure that it is used in the coolest place!
The filtration temperature should not exceed 21 ° C.

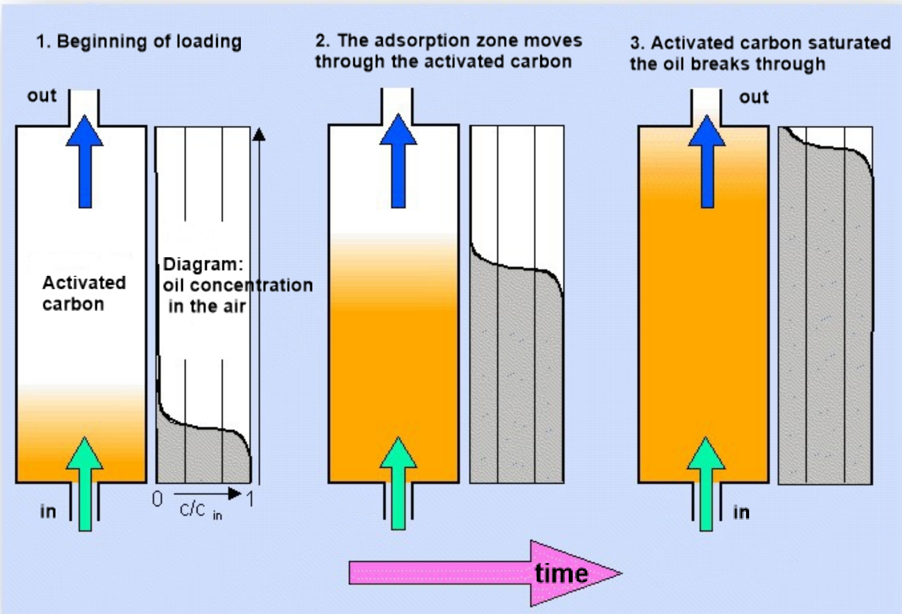
The oil vapor content increases at higher temperatures in the compressed air considerably and the service life is reduced proportional.
Once the saturation limit has been exceeded, the activated charcoal returns the concentrated oil content.
A major damage with subsequent costly Cleaning work is the result.





Activated charcoal container





Compressed air quality - monitor online

The OilControl continuously monitors the residual oil content (aerosols + steam) the flowing compressed air. The OilControl monitors reliably up to the Range of thousandths of a mg / m3 of residual oil content during operation. This ensures permanent process security and time-consuming Sampling and laboratory evaluations are no longer necessary.

Identify the measured values of the continuous online measurement Sources of contamination and also serve to document the compressed air quality. Especially in sensitive production areas of pharmaceutical, chemical, in the food industry and beverage manufacturers as well as in surface technology analysis and compressed air quality are of crucial importance

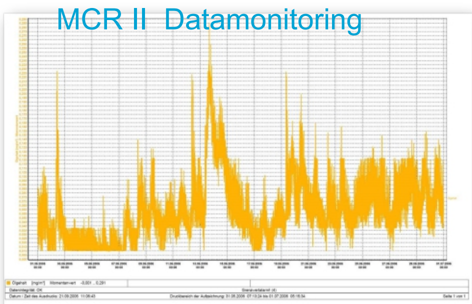


Image: Permanently guaranteed compressed air quality according to HACCP requirements

Filter / activated carbon monitoring with OilDewControl in one
Food production = permanent risk minimization
Oil content and pressure dew point measurement in one measuring cell

Reduce operating costs

Filter change intervals can be cost-optimized and activated carbon can be operated reliably up to Saturation limit can be used.
The lowest possible pressure loss has a positive impact on your energy balance.
Record data continuously and may be able to provide evidence in product liability cases, that you, as a producer and distributor, have done your best, the risk of oil contamination to avoid. Evidence required! That alone is the best argument for an OilDewControl.

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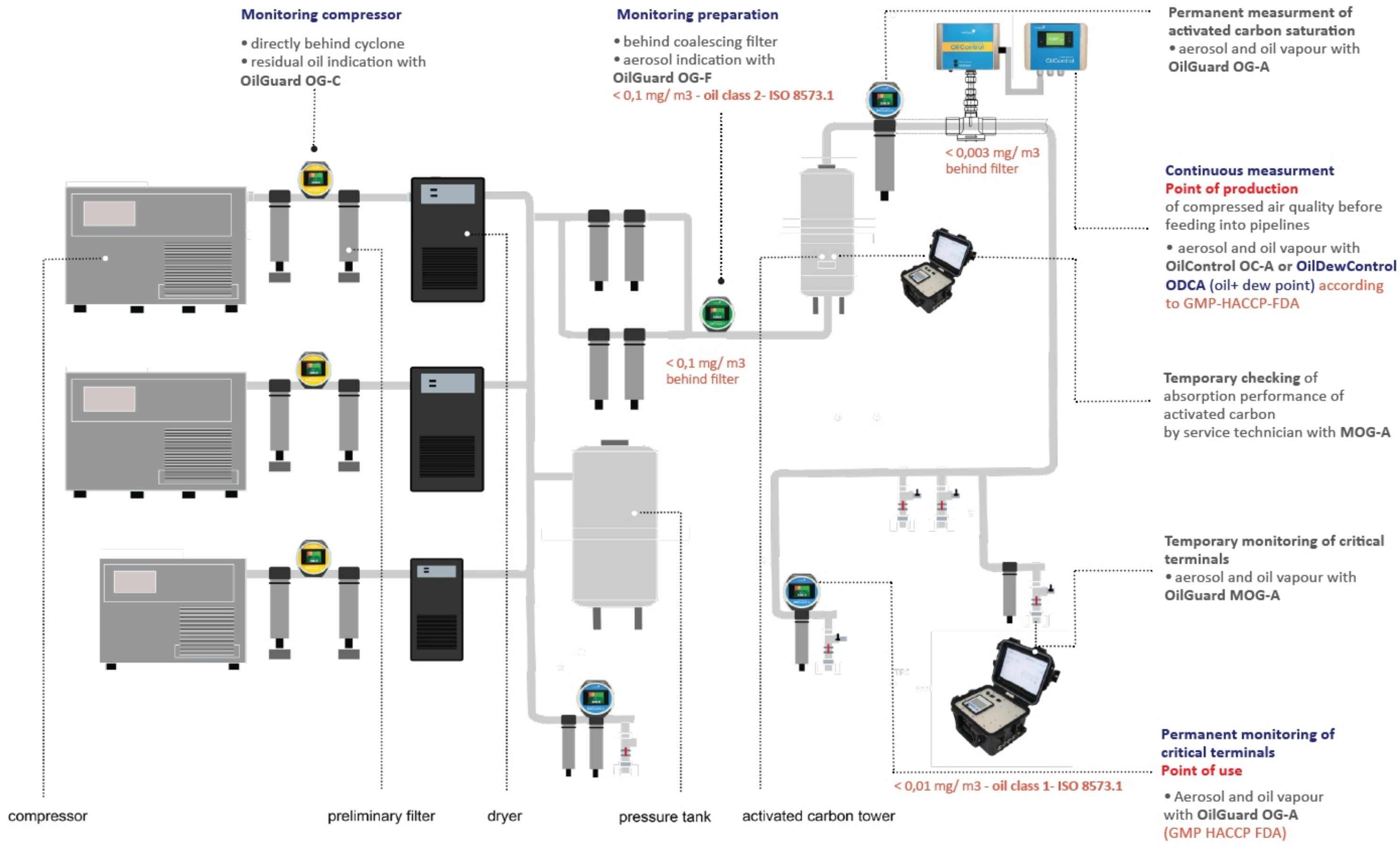

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- * ensures production rate and productivity
- * Monitoring for oil breakthrough 365 days / 24 hours
- * Monitors activated carbon for saturation
- * the economical and safe use of activated carbon, with optimal use, this is only possible
- * detects faulty compressor - oil separator
- * CCP monitors critical control points for hygiene
- * Detects bypass line left open immediately
- * protects against oil-contaminated pipes
- * Prevention instead of reaction

OilControl - used at

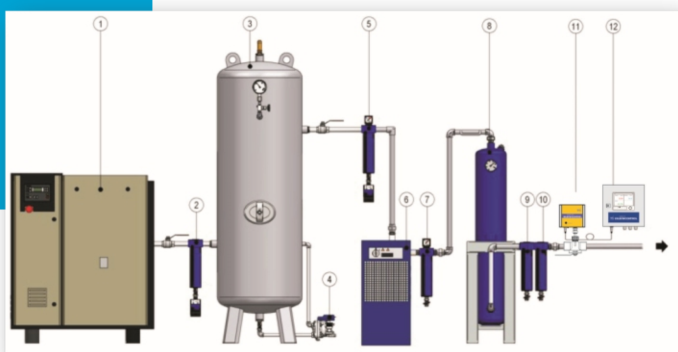
ISO 8573.1 qualifying classes

EN 12021 breathing air audit

Pharma Copea drug production

HACCP Risk control (CCP)

GMP + FDA drug production



Which does it mean HACCP?

HACCP is the abbreviation for Hazard Analysis Critical Control Points " and means the hazard analysis and Control of critical points in handling with medicines and food - at all levels of the Preparation, processing, Manufacturing, packaging, Storage, transport, Distribution, treatment and des Sales.

Who is HACCP for legally valid?

The HACCP affects everyone Areas / establishments in which at least one of the above Activities are carried out. It is it makes no difference whether it is Facilities with or without For profit.

What does that require HACCP system?

Medicines and food processing and in circulation transferring operations must according to the principles of HACCP system for the Product safety critical Determine points and for that Take care that appropriate Safety measures determined, carried out, complied with, checked and be documented.

Hazzard (H) means risk or danger. In the sense of a The HACCP concept, which pursues food safety as a goal, is a risk or danger of any biological, chemical or physical negative influence on raw materials, intermediate products or end products, which results in an unacceptable health-endangering condition.

Control point (CP) means steering point, control point or control point. A point, step or process at which biological, physical or chemical factors can be controlled that do not pose a health risk, but can cause quality-related or economic damage.

Critical Control Point (CCP): A point, step or process at which a security risk can be prevented, eliminated or reduced to an acceptable level through monitoring. A manufacturing process is controlled at several hundred points. To exclude a health risk, however, only a few points are decisive. Only these critical control points, which reduce or exclude a possible health risk, are the subject of the HACCP concept
(Nöhle, 1994, S. 350-354, u. Pierson u. Corlett, 1993, S. 203-204)

European hygiene law now gives manufacturers far more freedom for individual manufacturing processes and manufacturing conditions than was permitted under previous German law. But more freedom also means more responsibility. And the manufacturer must now live up to this greater responsibility in order to To ensure food safety right up to consumption by the consumer. This is especially true if it leaves the path of proven and recognized manufacturing processes. In order to rule out unacceptable health risks for the consumer, all food manufacturers are obliged to comply with the general hygiene requirements listed there in accordance with EC regulation 852/2004 on food hygiene.
In addition, the ordinance obliges them to "set up, implement and maintain one or more permanent procedures based on the HACCP principles".
For this purpose, the processes of food production - ideally from the production of raw materials through food processing to delivery to the end consumer - are systematically developed hygienic weak points tapped.

This means:
The entrepreneur must prepare a risk analysis and provide measures with which sufficient safety of the food placed on the market can be guaranteed under all circumstances. As a preventive, process-oriented monitoring system for food production, which guarantees and documents a product that is sufficiently safe for the consumer, HACCP is legally prescribed as a management system across Europe.

HACCP and Compressed Air - MOSH - MOAH

The new regulations require manufacturers to conduct a Hazard Analysis (HA) as part of the revised current Good Manufacturing Practices (cGMP). The hazard analysis is used to identify and inform critical control points. Critical Control Points (CCP) are steps, stages or points in a process at which the failure of a standard operating procedure or standard equipment leads to contamination of the product and harm to consumers
can lead. Together, hazard analysis and critical control points are referred to as HACCP.
Each CCP identified must be monitored and this monitoring must be documented.
The HACCP process provides information about the frequency and tolerance of this monitoring.

For example, if milk needs to be pasteurized to a temperature of 161 ° C, the process of heating the milk is a critical control point and the functioning of the equipment and the temperature reached need to be monitored and documented.

Don't wait for an exam - create security with the OilDewControl

Critical control points are often less obvious. When related to compressed air
and gas a system uses compressed air to topple a product at a certain point with a blast of air, this compressed air is in direct contact with the food and becomes a potential source of contamination. Compressed air that is used to clean a surface used to prepare food has indirect contact with the food. Obviously, air or gas in direct contact with food is at greater risk than gas in indirect contact with food, but both are still critical control points. Common uses of compressed air or gas in direct contact with food include drying, sorting, freezing, moving, carbonizing, cultivating, inert packaging and
Packing in a modified atmosphere. Examples of indirect contact of compressed air or gas with the product include cleaning surfaces, handling packaging, and pneumatically powered equipment. Each of them represents a critical control point. Compressed air systems are not static, but dynamic - they are constantly changing. Component parts fail and are faulty, which requires maintenance or replacement, and it is not always obvious that a device that is connected and running does not meet the standard. The online measurement safeguards the possibility of underperformance or non-performance. Compressed air quality is a critical aspect of hygiene in the food industry. While regulation is still in its infancy in some areas, the basic desire to protect consumers is enough to ensure regular air tests and ensure that equipment and processing environments are operating effectively.

An oil content measurement with integrated moisture measurement and auditable data recording,
in addition, the corresponding OilDewGuard as terminal monitoring, protected against higher costs for damage and product recall.

OilDewControl
OilControl

Use and function

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Sensitive areas such as Food, electronics, medical technology, painting systems, breathing air etc. place special demands on the purity of the compressed air and gases used.
Oil accumulations and sudden oil breakthroughs cause enormous follow-up costs.

The Andjana measuring devices have proven themselves for a high degree of process reliability for 19 years. These monitor the residual oil content and other hydrocarbons in the compressed air online and other non-corrosive gases. (e.g. oxygen, helium, nitrogen, argon ...)

The OilControl

works according to the long-established CSi process.
This is an ion exchange process in which oil components in the compressed air accumulates on the sensor surface exchange oxygen molecules and thus a change of the sensor potential. This will be continuous, every 50 ms measured and every 1 sec. electronically evaluated / displayed.

The decisive advantages are insensitivity against changing moisture influences, independence of changing flow conditions as well as the speed the measurement.

The surveillance was set up for 365 days 24 hours a day and is connected to an innovative color change display.

Monitoring can be carried out using freely adjustable alarm values be adapted to the local conditions.

Medium						
Compressed Air	CO_2	Nitrogen	Oxygen	Helium	Argon	Atmospheric Applications
✔	✔	✔	✔	✔	✔	✔

Versions:

The OilControl is built in different versions.

It is used to measure the total flowing oil content according to ISO 8573.1:

1. Use after the compressor
   - Installation of the OilControl OCC or OilGuard-C directly after the cyclone separator of the compressor

2. Use after filtration / activated carbon
   - Installation of the OilControl OCF / A - ODC-A/F after compressed air treatment - Dustfilter

3. OilDewControl
   Use of hygiene monitoring ODC-F / A
   - Oil content and pressure dew point measurement in one device

4. OilDewControl HP ODCF / A -HP 45
   - Pressure range up to 45 bar optional till 415 bar

OilDewControl
OilControl

Technical specifications

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Andjana Instruments offers the OilControl and the OilDewControl in the variants:

* OCA use in high purity compressed air - after activated carbon filter and catalysts
* ODCA use for hygiene monitoring HACCP
* OCF use after compressed air stage filtration - refrigeration dryer after filtration
* OCC insert behind compressors

The scope of delivery includes the measuring cell, probe and a connecting cable.

Optional:

* Evaluation display with color change, switching output and integrated Power supply in a plastic housing

* Data logging and software

* OilDewControl Oil content and pressure dew point measurement -80 ... +20 ° Ctp
2 evaluation displays with color change, 1 switching output each
and integrated power supply in a plastic housing

* OilDewControl-MCR II monitor version with data logger, switching outputs,
integrated power supply, web server and Ethernet,
Pressure dew point measurement -80 ... +20 ° Ctp
and pressure 0 ... 16 bar (g)

The OilControl measuring system is suitable for classifying ISO 8573.1-C (oil).

It works reliably in the temperature range between -20 and +50 ° C,
unaffected by changing humidity and flow conditions.

OCA
Measuring range 0.001 - 1,000 mg / m³ (total ISO 8573.1-C)
Use after refrigeration dryer, behind activated carbon filter / adsorber or catalyst
(all filters / components after the activated carbon / a catalyst must be free of
oil and grease)

OCF
Measuring range 0.50 - 20.00 mg / m³
Use after refrigeration dryer, behind coalescence filters

OCC
Measuring range 1.0 - 50.0 mg / m³ optionally 1.0 ... 99.99 mg / m³
Use after the compressor cyclone separator

Measuring principle: calorimetric-spectrometric ion exchange method
Measured variable: mg / m³ based on normal conditions 1 bar and 20 ° C
Connection probe: G 3/8 "external thread (socket with internal thread required)
Operating temperature: measuring cell -20 ... + 50 ° C
Operating temperature electronics: 0 ... + 50 ° C
Operating pressure: min. 2 bar to max. 10 bar, (optional 16, 45, 350 bar)
Analog output: 4 ... 20 mA, depending on the version, optional ModBus
Measured value output: 1 sec. (Measurement 100 ms)
Relay output: 1 relay, 230 V AC / 2A
Measuring section: (recommended) stainless steel 1.4301 or higher
Operating voltage electronics: 115 ... 230 VAC, 50/60 Hz (24V as option)

Technical data and scope of delivery are subject to change without notice. Similar pictures.

OilDewControl
OilControl

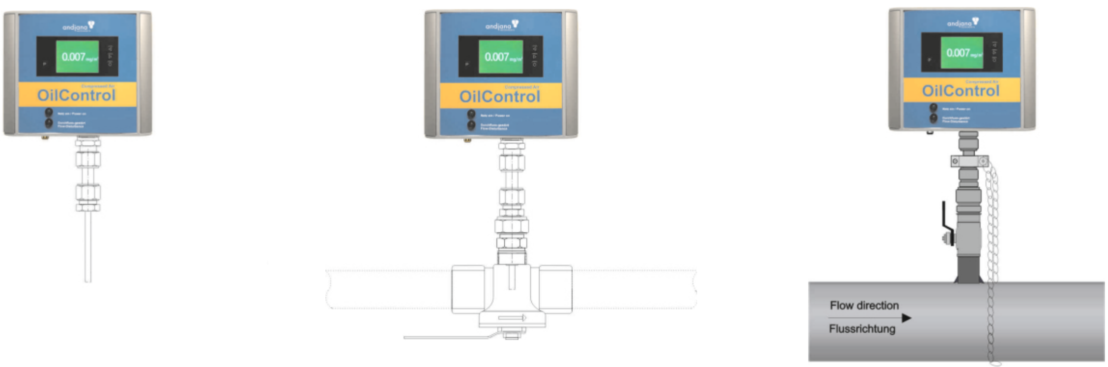
Versions

OilDewControl
701

OilControl
401

OilDewControl
702
703

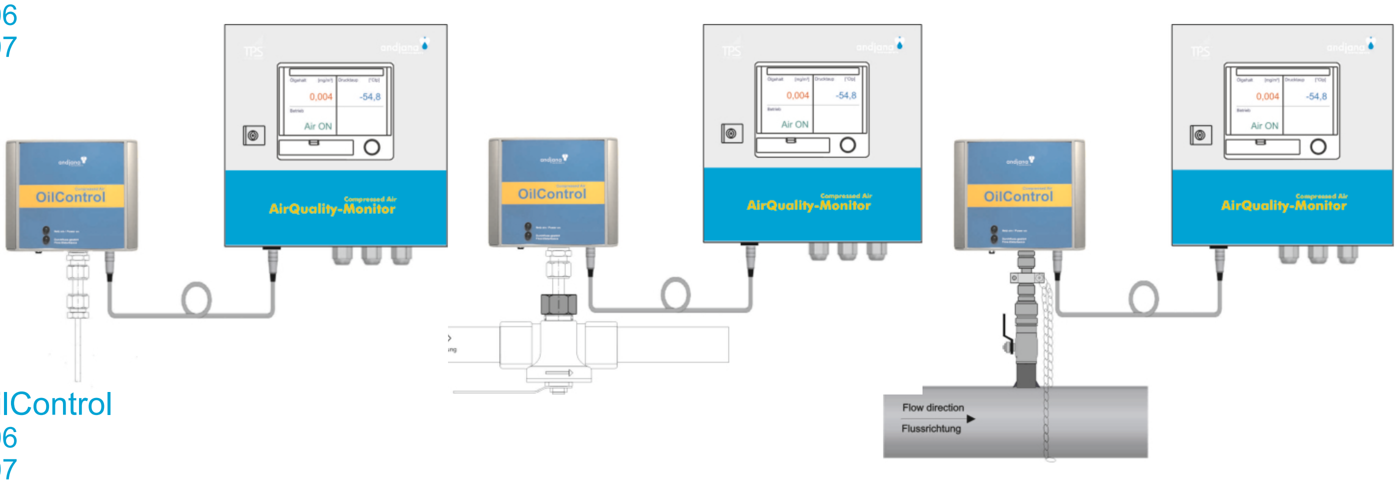
OilControl
402
403



OilDewControl
704

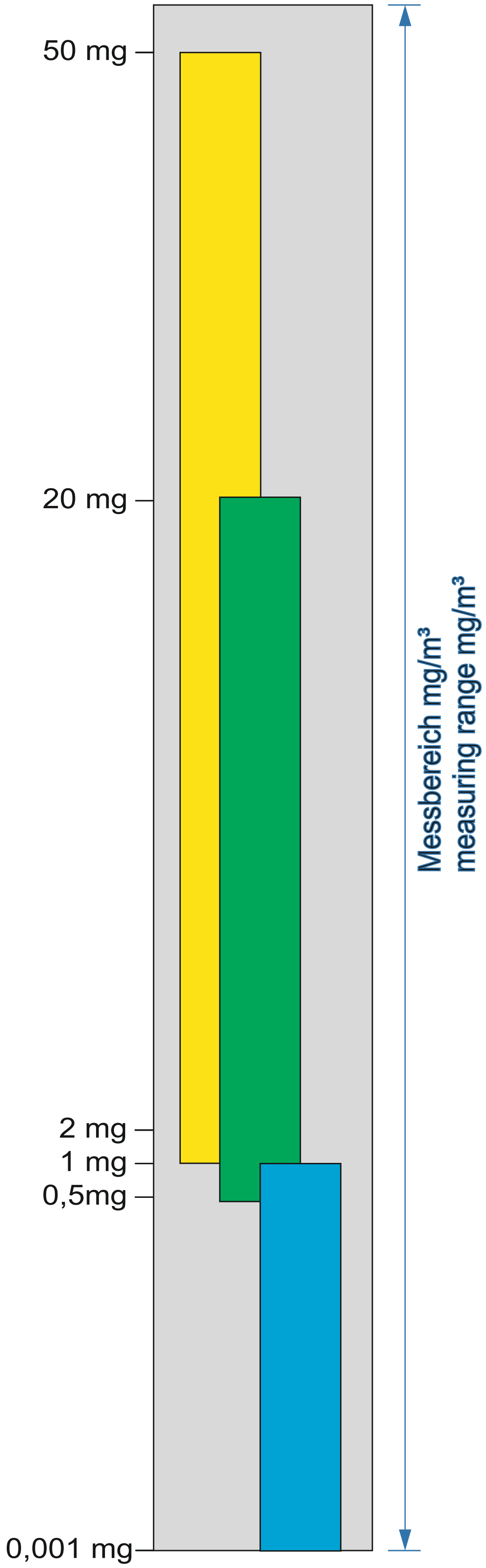
OilControl
404

OilDewControl
706
707



OilControl
406
407

Measuring ranges
OilControl - OilDewControl



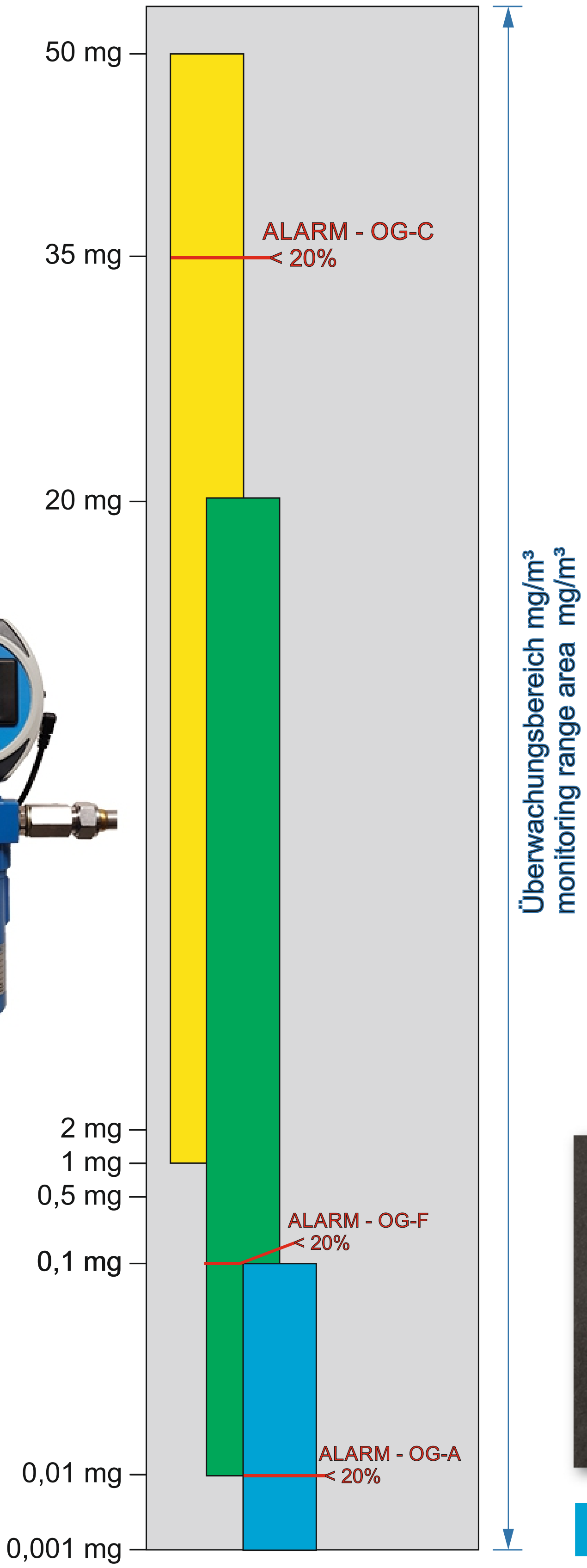
OilControl - C

OilControl - F
OilDewControl

OilControl - A
OilDewControl

Monitoring areas

OilGuard + OilDewGuard



OilGuard - C 50 / 100
für Kompressoren

OilGuard - F 0.1 / 0.5
ISO 8573 Klasse 2

OilGuard - A
ISO 8573 Klasse 1

OilDewGuard
Oil + Dewpoint

more than 20 years Measurement technology for:

Oil content in compressed air

Humidity - pressure dew point

Pressure - temperature

Particles

Volume flow gas u. liquids

atm. Harmful gases

Breathing air EN 12021

medical breathing air ISO 7396

Data recording - Paperless recorder

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