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1.2 Classification According to ISO 8573-1

1.3 Arrangement of Components

1.3.1 Central Air Treatment
1.3.2 Aircenter / Airtower
1.3.3 Boosters

1.4 Air Quality in the Food Industry

1.4.1 Packing Machines in Food and Pharmaceuticals
1.4.2 Air in Direct Contact with the Product
1.4.3 Sterile Air

1.5 Certification of Quality to ISO 8573-23

1.6 Components compressed air treatment SX => HSD (T 7397.7e)

1.7 Components compressed air treatment Airtower (T 9717.1e)

1.2 Classification according to ISO 8573-1

ISO 8573, "Compressed Air for General Use" consists of the following sections:

Part 1: Contaminants and Quality Classes

Part 2: Test Methods for Aerosol Oil Content

Part 3: Determination of Humidity

Compressed air quality classes to ISO 8573-1

The designation of the quality class of compressed air should include the following information in the order given:

a) "Air of quality class";

b) the solid contaminants class;

c) the water class;

d) the total oil (droplets, aerosols and vapours).

ISO 8573-1 (2001) Class	Solid particle content						Moisture content	Oil content
	max. number of particles per m^3 sized d [µm]				µm	mg/m^3	PDP °C *(X = liquid water content [g/m^3])*	mg/m^3
	≤ 0.1	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0				
0	As specified by the equipment user or supplier and more stringent than class 1							
1	-	100	1	0	-	-	≤ -70°C	≤ 0.01
2	-	100,000	1,000	10	-	-	≤ -40°C	≤ 0.1
3	-	-	10,000	500	-	-	≤ -20°C	≤ 1.0
4	-	-	-	1,000	-	-	≤ +3°C	≤ 5.0
5	-	-	-	20,000	-	-	≤ +7°C	-
6	-				≤ 5	≤ 5	≤ +10°C	-
7	-				≤ 40	≤ 10	*X ≤ 0,5*	-
8	-				-	-	*0.5 < X ≤ 5.0*	-
9	-				-	-	*5.0 < X ≤ 10,.0*	-

PDP = Pressure Dew Point

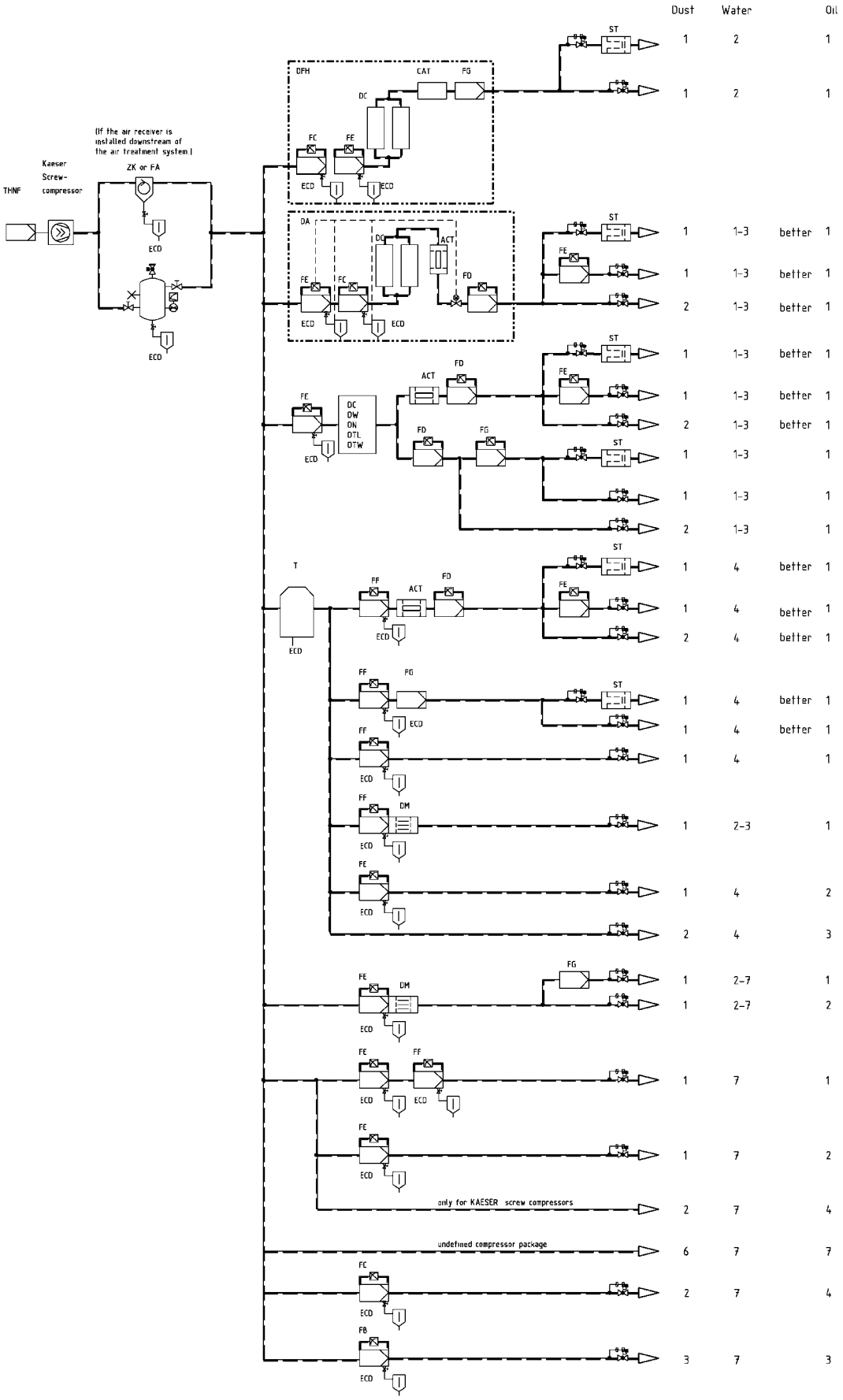
1.3 Arrangement of Components

The following designations are used for the identification of individual components:

FA	**=**	**Centrifugal separator**
FB	**=**	**Prefilter 3 µm**
FC	**=**	**Prefilter 1 µm**
FD	**=**	**Particulate filter 1 µm**
FE	**=**	**Microfilter 0.01 ppm**
FF	**=**	**Microfilter 0.001 ppm**
FG	**=**	**Activated carbon filter**
FFG	**=**	**Combination filter**

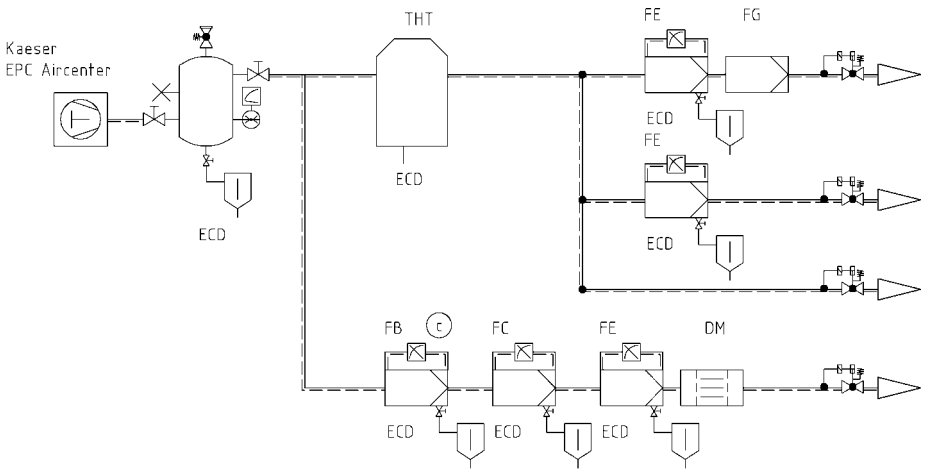
ACT	**=**	**Activated carbon adsorber**
THP	**=**	**High-pressure dryer**
DM	**=**	**Membrane dryer**
T	**=**	**Refrigeration dryer**
TL/TW	**=**	**Refrigeration dryer**
THT	**=**	**High-temperature refrigeration dryer**
DTL/DTW	**=**	**Refrigeration/desiccant dryer combination**
DC	**=**	**Desiccant dryer, heatless regeneration**
DW	**=**	**Desiccant dryer, heated regeneration**
DN	**=**	**Desiccant dryer, no purge air**
DA	**=**	**Pure air system**
DFH	**=**	**Breathing air system**

1.3.1 Central Air Treatment



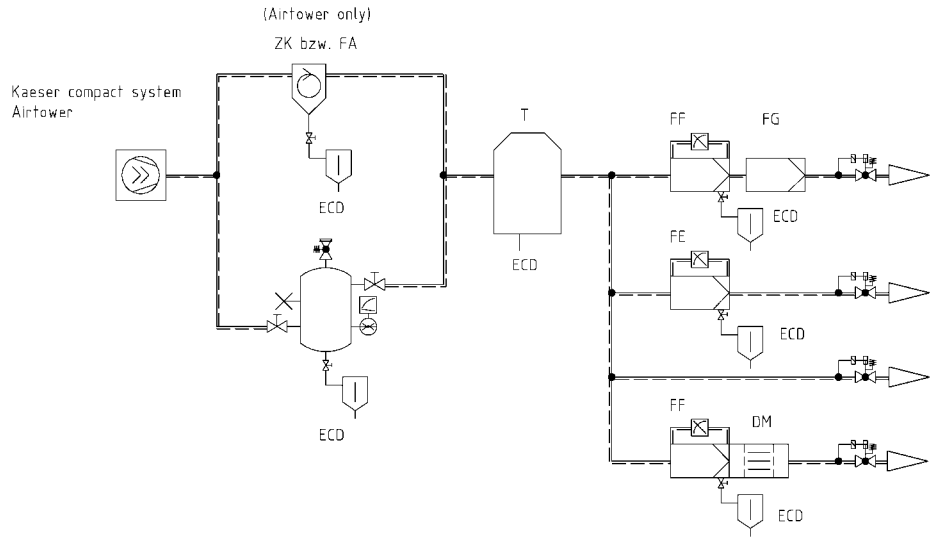
1.3.2 Aircenter / Airtower

Aircenter



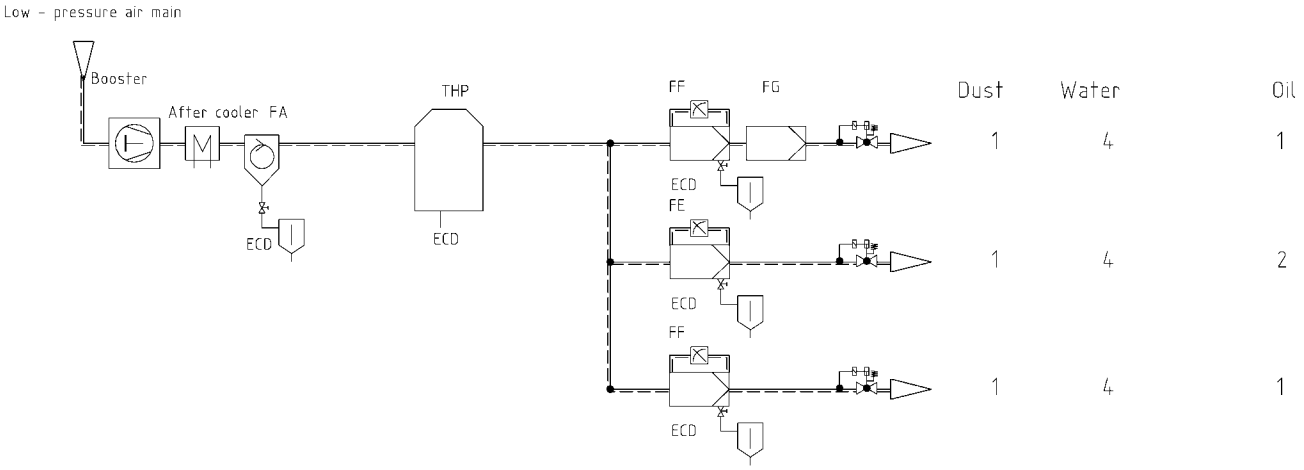
	Dust	Water		Oil
	1	4-6	better	1
	1	4-6		2
	3	4-6		5
	1	2-7		2

Airtower



	Dust	Water		Oil
	1	4	better	1
	1	4		1
	2	4		3
	1	2-3		1

1.3.3 Boosters



1.4 Air Quality in the Food Industry

Recommendations of the VDMA, December 1997

Based on	ISO 8573-1 Standard

Quality classes to ISO 8573-1: 2001

ISO 8573-1 (2001) Class	Solid particle content						Moisture content	Oil content
	max. number of particles per m^3 sized d [µm]				µm	mg/m^3	PDP °C *(X = liquid water content [g/m^3])*	mg/m^3
	≤ 0.1	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0				
0	As specified by the equipment user or supplier and more stringent than class 1							
1	-	100	1	0	-	-	≤ -70°C	≤ 0.01
2	-	100,000	1,000	10	-	-	≤ -40°C	≤ 0.1
3	-	-	10,000	500	-	-	≤ -20°C	≤ 1.0
4	-	-	-	1,000	-	-	≤ +3°C	≤ 5.0
5	-	-	-	20,000	-	-	≤ +7°C	-
6	-				≤ 5	≤ 5	≤ +10°C	-
7	-				≤ 40	≤ 10	*X ≤ 0,5*	-
8	-				-	-	*0.5 < X ≤ 5.0*	-
9	-				-	-	*5.0 < X ≤ 10,.0*	-

Recommendation:

This recommendation is valid for all compressors, regardless of the principle of compression and type.

1.4.1 Packaging machines in food and pharmaceuticals

Requirements for compressed air that has contact with packing materials having direct contact with the product.

Classification of air quality to DIN ISO 8573-1

Oil:	class 1
Particles:	class 1
Water:	class 4

For sterile packaging: additional sterilisation

Bacterial retention:

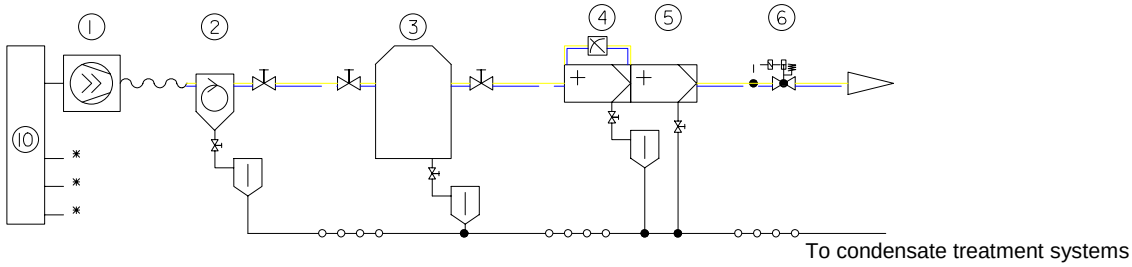
Separation: LRV (logarithmic reduction value) > 7/cm² effective filter area, referred to test organism Brevundimonas diminuta (previously Pseudomonas diminuta) ATCC 19146

Case example:

A. New or clean air system of the following materials:

1) galvanised steel, suitable for food
2) V2A/V4A
3) plastics permitted for use with compressed air
4) Aluminium

Treatment of air for removal of oil / particles / water	central



* To online compressor systems

(1) Compressor
(2) Centrifugal separator or air receiver (with monitored/switched condensate drain). If a centrifugal separator is installed ensure that there is enough storage volume in the air main system
(3) Refrigeration dryer with pressure dew point alarm (with monitored/switched condensate drain)
(4) Micro fine filter retention 0.01 µm, 99,999 % (with pressure gauge switch and monitored/switched condensate drain) (service life is monitored)
(5) Activated carbon filter, useful service life 4000 h or 6 months
(6) Air main charging system (unloaded charge) switching at fault (alarm function)
(10) Master controller co-ordinating and supervising the compressors.

Special cases:
If compressors that heavily contaminate the air main system (for example, ageing oil lubricated reciprocating compressors or ageing sliding vane compressors) are used, filtration should be increased, i.e. a 3-5 µm filter is to be added upstream of filter (4). This filter would have to be fitted with a pressure gauge switch and monitored/switched condensate drain.

Important: All treatment systems should be fitted without a bypass.

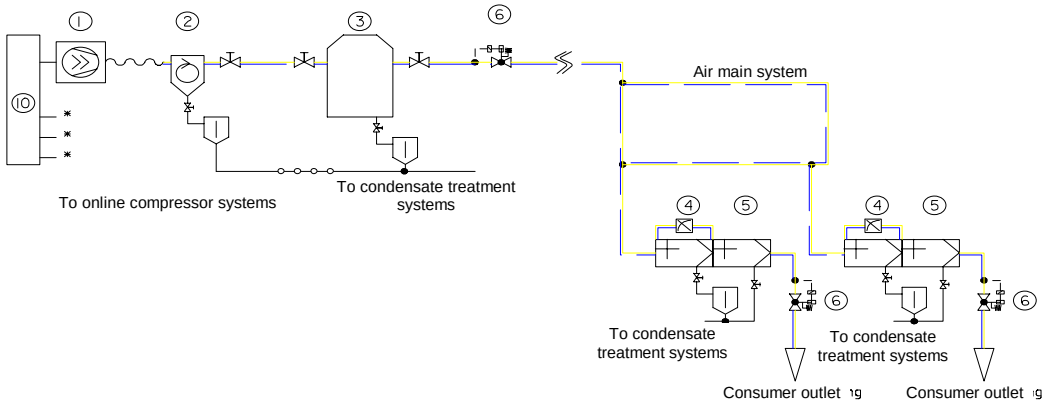
A standby system of the same capacity should be available in case of a fault or for servicing requirements.

Ambient and local conditions must be taken into consideration during design.

B. Air mains that are contaminated and difficult to clean

Undefined pipe material

Water treatment	central
Oil / Particle treatment	de-central directly upstream of each machine



(1) Compressor
(2) Centrifugal separator or air receiver (with monitored/switched condensate drain) If a centrifugal separator is installed ensure that there is enough storage volume in the air main system
(3) Refrigeration dryer with pressure dew point alarm (with monitored/switched condensate drain)
(4) Micro fine filter retention 0.01 µm, 99,999 % (with pressure gauge switch and monitored/switched condensate drain) (useful service life is monitored)
(5) Activated carbon filter, service life 4000 h or 6 months
(6) Air main charging system (unloaded charge) switching at fault (alarm function)
(10 Master controller co-ordinating and supervising the compressors.

Special cases:
If compressors that heavily contaminate the air main system (for example, ageing oil lubricated reciprocating compressors or ageing sliding vane compressors) are used, filtration should be increased, i.e. a 3-5 µm filter is to be added upstream of filter (4). This filter would have to be fitted with a pressure gauge switch and monitored/switched condensate drain.

Important: All treatment systems should be fitted without a bypass.

A standby system of the same capacity should be available in case of a fault or for servicing requirements.

Ambient and local conditions must be taken into consideration during design.

1.4.2 Air in direct contact with the product

If the compressed air has direct contact with the product or is mixed with it, the following treatment is recommended to remove odours and flavours.

Classification of air quality to DIN ISO 8573-1

Oil:	class 1
Particles:	class 1
Water:	class 4

For sterile areas: additional sterilisation.

Bacteria retention:

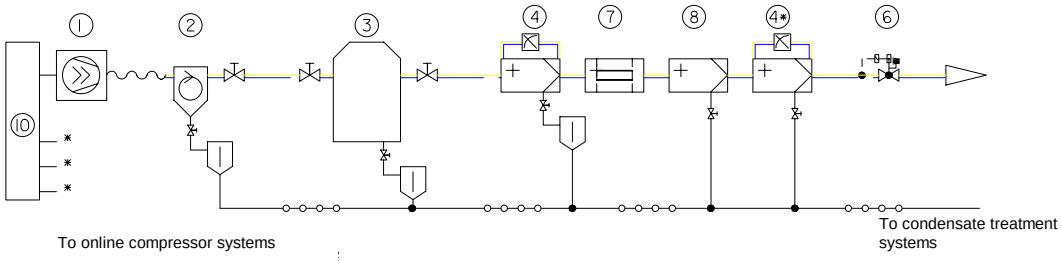
Separation: LRV (logarithmic reduction value) > 7/cm² effective filter area, referred to test organism Brevundimonas diminuta (previously Pseudomonas diminuta) ATCC 19146

Case example:

A. New or purified air system of the following materials:

1) galvanised steel, suitable for food
2) V2A/V4A
3) plastics permitted for use with compressed air
4) Aluminium

Treatment of air against oil / particles / water	central



(1) Compressor
(2) Centrifugal separator or air receiver (with monitored/switched condensate drain) If a centrifugal separator is installed ensure that there is enough storage volume in the air main system
(3) Refrigeration dryer with pressure dew point alarm (with monitored/switched condensate drain)
(4) Micro fine filter, retention 0.01 µm, 99,999 % (with pressure gauge switch and monitored/switched condensate drain) (service life is monitored)
(4*) Micro fine filter (if required, to achieve class 1 particle size)
(5) Activated carbon filter, service life 4000 h or 6 months
(6) Air main charging system (unloaded charge) switching at fault (alarm function)
(7) Activated carbon adsorber, useful service life 10000 h or 18 months
(8) Dust filter, retention 3 – 5 µm with differential pressure gauge (service monitoring, class 3 particles, manual dust extraction)
(10) Master controller co-ordinating and supervising the compressors.

Special cases:

a) Products that are extremely prone to moisture and for which quality class 4 is not sufficient. In this case, a desiccant dryer with a correspondingly low dew point must be used instead of (3).

b): If compressors that heavily contaminate the air main system (for example, ageing oil lubricated reciprocating compressors or ageing sliding vane compressors) are used, filtration should be increased, i.e. a 3-5 µm filter is to be added upstream of filter (4). This filter would have to be fitted with a pressure gauge switch and a monitored/switched condensate drain.

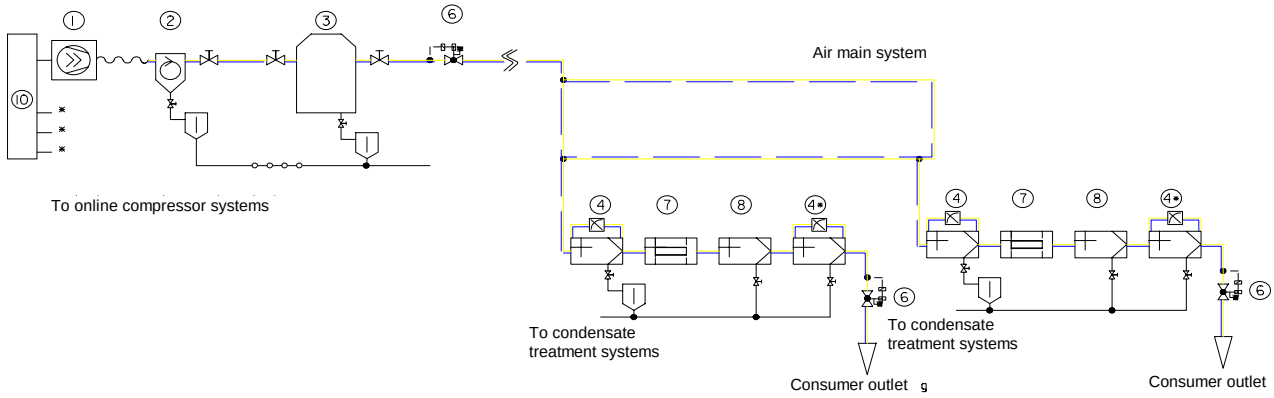
Important: All treatment systems should be fitted without a bypass.

A standby system of the same capacity should be available in case of a fault or for servicing requirements.

Ambient and local conditions must be taken into consideration during design.

B. Air mains that are contaminated and difficult to clean
Undefined pipe materials

Water treatment	central
Oil / Particle treatment	de-central directly upstream of each consumer



(1) Compressor
(2) Centrifugal separator or air receiver (with monitored/switched condensate drain) If a centrifugal separator is installed ensure that there is enough storage volume in the air main system
(3) Refrigeration dryer with pressure dew point alarm (with monitored/switched condensate drain)
(4) Micro fine filter, retention 0.01 µm, 99,999 % (with pressure gauge switch and monitored/switched condensate drain) (service life is monitored)
(4*) Micro fine filter (if required, to achieve class 1 particle size)
(5) Activated carbon filter, service life 4000 h or 6 months
(6) Air main charging system (unloaded charge) switching at fault (alarm function)
(7) Activated carbon adsorber, useful service life 10000 h or 18 months
(8) Dust filter, retention 3 – 5 µm with differential pressure gauge (service monitoring, class 3 particles, manual dust extraction)
(10) Master controller co-ordinating and supervising the compressors.

Special cases:

a) Products that are extremely prone to moisture and for which quality class 4 is not sufficient. In this case, a desiccant dryer with a correspondingly low dew point must be used instead of (3).

b): If compressors that heavily contaminate the air main system (for example, oil lubricated reciprocating compressors or ageing sliding vane compressors) are used, filtration should be increased, i.e. a 3-5 µm filter is to be added upstream of filter (4). This filter would have to be fitted with a pressure gauge switch and monitored/switched condensate drain.

Important: All treatment systems should be fitted without a bypass.

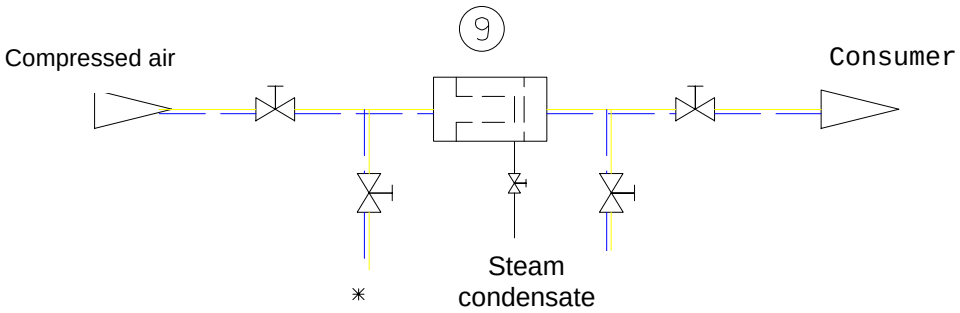
A standby system of the same capacity should be available in case of a fault or for servicing requirements.
Ambient and local conditions must be taken into consideration during design.

1.4.3 Sterile air

Always treat the air directly upstream of the consumer

Example

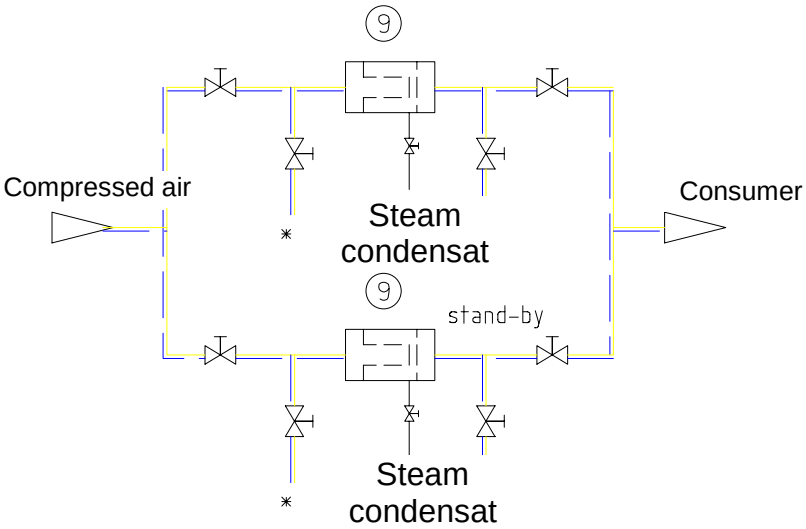
A. Intermittent operation
Sterilisation (regeneration) of the filter during operational breaks.



* Steam connections

(9) Sterile filter

B. Continuous operation
Sterilisation (regeneration) of the filter is done in standby.



* Steam connections

(9) Sterile filter (alternating standby).

1.5 Certification of Quality to ISO 8573-2

The following quality certificates are available:

Treatment with centrifugal separator

Treatment with centrifugal separator + refrigeration dryer

Treatment with centrifugal separator + refrigeration dryer + filter

Treatment with centrifugal separator + refrigeration dryer + combination filter

Treatment with centrifugal separator + refrigeration dryer + filter + activated carbon adsorber + particle filter

Treatment with centrifugal separator + desiccant dryer

Treatment with centrifugal separator + desiccant dryer + activated carbon filter

Treatment with centrifugal separator + oil-free-pac

Treatment with centrifugal separator + refrigeration dryer + filter FE + membrane dryer

Treatment with centrifugal separator + refrigeration dryer + filter FF + membrane dryer

TÜV

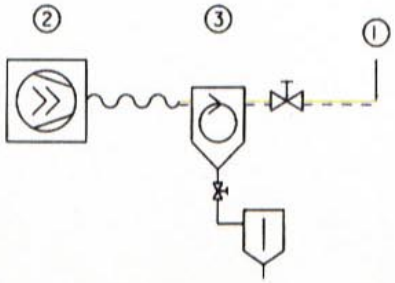
Certificate of Quality

The TÜV Bayern certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1.
An oil carry-over in class: **3**
was achieved with the configuration shown below.

The precise value was: 0.3587 mg/Nm³



1 Point of measurement

2 KAESER oil-cooled screw compressor

3 Water separator

Anlagen- und Umwelttechnik GmbH
Niederlassung Hof
Erlhofer Straße 75
95032 Hof

Coburg, 10.04.97

The branch manager

Technische Überwachung • Bayern • TÜ 12

Hans-Jürgen Wolf

The expert

A detailed description of the measurement points is given in the annex

TÜV

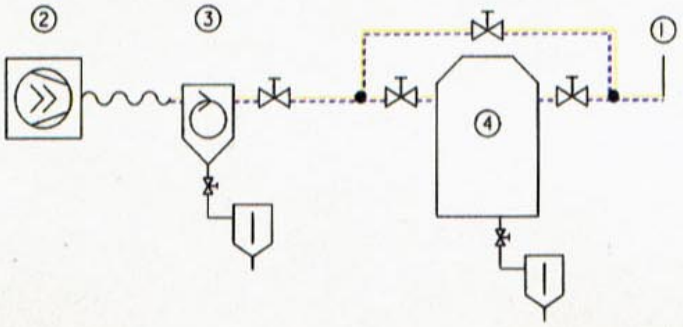
Certificate of Quality

The TÜV Bayern certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1.
An oil carry-over in class: **2**
was achieved with the configuration shown below.

The precise value was: 0.0402 mg/Nm³



1 Point of measurement

2 KAESER oil-cooled screw compressor

3 Water separator

4 Refrigeration dryer

Anlagen- und Umwelttechnik GmbH
Niederlassung Hof
Erlhofer Straße 75
95032 Hof

Coburg, 10.04.97

The branch manager

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Hans-Jürgen

The expert

A detailed description of the measurement points is given in the annex

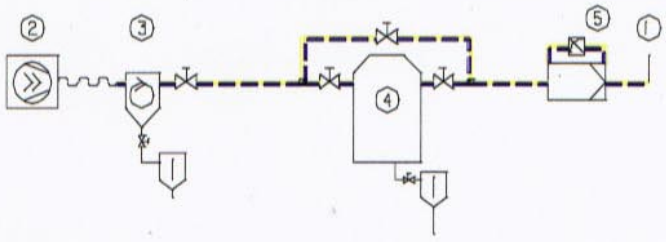
TÜV
Süddeutschland

Certificate of Quality

The TÜV Süddeutschland certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1 .
An oil carry-over in class: **1**
was achieved with the configuration shown below.
The precise value was: 0.00923 mg/Nm³



1 Point of measurement
2 KAESER oil-cooled screw compressor
3 Water separator
4 Refrigeration dryer
5 FE- Filter

Bau und Betrieb GmbH
Abteilung Dampf und Druck
Erlhofer Straße 75
95032 Hof

Technische Überwachung TÜ 12 Bayern

Coburg, 20.09.1999

The expert

A detailed description of the measurement points is given in the annex

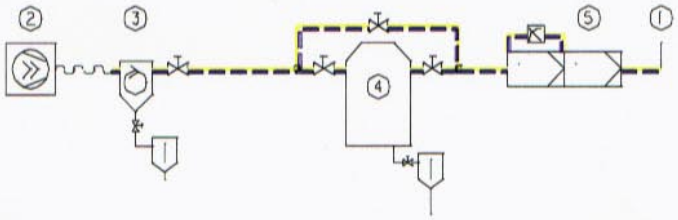
TÜV Süddeutschland

Certificate of Quality

The TÜV Süddeutschland certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1 .
An oil carry-over in class: **1**
was achieved with the configuration shown below.
The precise value was: 0.00172 mg/Nm³



1 Point of measurement
2 KAESER oil-cooled screw compressor
3 Water separator
4 Refrigeration dryer
5 FFG- Filter combination

Bau und Betrieb GmbH
Abteilung Dampf und Druck
Erlhofer Straße 75
95032 Hof

Coburg, 20.09.1999

Technische Überwachung TO 12 Bayern

The expert

A detailed description of the measurement points is given in the annex

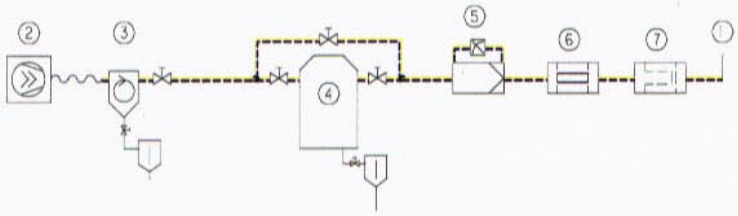
TÜV
Süddeutschland

Certificate of Quality

The TÜV Süddeutschland certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1 .
An oil carry-over in class: **1**
was achieved with the configuration shown below.
The precise value was: 0,00128 mg/Nm³



1 Point of measurement
2 KAESER oil-cooled screw compressor
3 Water separator
4 Refrigeration dryer
5 FF- Filter
6 Activated carbon adsorber
5 FD- Filter

Bau und Betrieb GmbH
Abteilung Dampf und Druck
Erlhofer Straße 75
95032 Hof

Coburg, 07.10.1999

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The expert

A detailed description of the measurement points is given in the annex

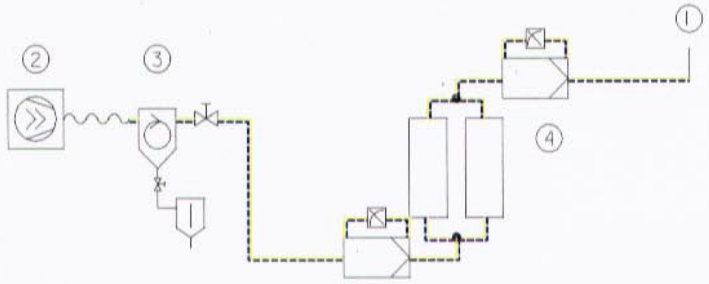
TÜV Süddeutschland

Certificate of Quality

The TÜV Süddeutschland certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1 .
An oil carry-over in class: **1**
was achieved with the configuration shown below.
The precise value was: 0,0113 mg/Nm³



1 Point of measurement
2 KAESER oil-cooled screw compressor
3 Water separator
4 Desiccant dryer

Bau und Betrieb GmbH
Abteilung Dampf und Druck
Erlhofer Straße 75
95032 Hof

Coburg, 03.11.1999

Technische Überwachung TO 12 Bayern

The expert

A detailed description of the measurement points is given in the annex

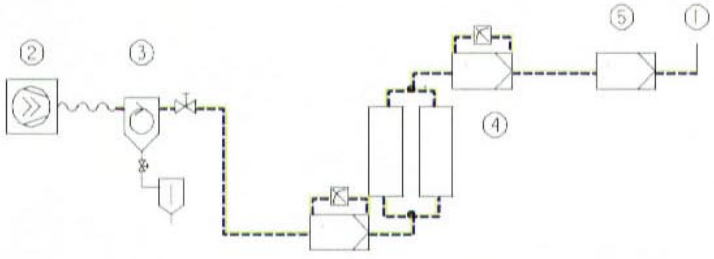
TÜV Süddeutschland

Certificate of Quality

The TÜV Süddeutschland certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1 .
An oil carry-over in class: **1**
was achieved with the configuration shown below.
The precise value was: 0,0035 mg/Nm³



1 Point of measurement
2 KAESER oil-cooled screw compressor
3 Water separator
4 Desiccant dryer
5 FG- Filter

Bau und Betrieb GmbH
Abteilung Dampf und Druck
Erlhofer Straße 75
95032 Hof

Coburg, 03. 11. 1999

Technische Überwachung • Bayern • Bund TÜ 12

Hans Jürgen Voll
The expert

A detailed description of the measurement points is given in the annex

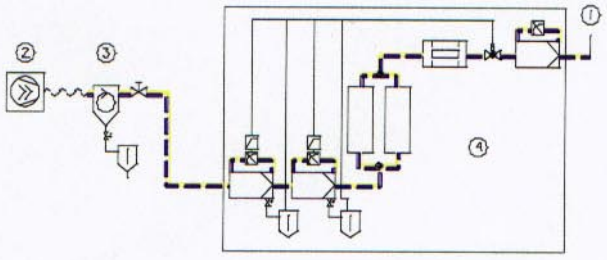
TÜV
Süddeutschland

Certificate of Quality

The TÜV Süddeutschland certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1 .
An oil carry-over in class: **1**
was achieved with the configuration shown below.
The precise value was: 0,00337 mg/Nm³



1 Point of measurement
2 KAESER oil-cooled screw compressor
3 Water separator
4 Pure Air Systems

Bau und Betrieb GmbH
Abteilung Dampf und Druck
Erlhofer Straße 75
95032 Hof

Coburg, 07.10.1999

Technische Überwachung TO 12 Bayern

The expert

A detailed description of the measurement points is given in the annex

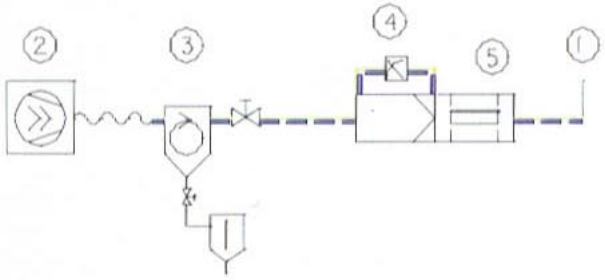
TÜV
Süddeutschland

Certificate of Quality

The TÜV Süddeutschland certifies herewith that

KAESER COMPRESSORS

has provided evidence of compressed air quality
in conformance with DIN 8573 - 1 .
An oil carry-over in class: **1**
was achieved with the configuration shown below.
The precise value was: 0,0078 mg/Nm³



1 Point of measurement
2 KAESER oil-cooled screw compressor
3 Water separator
4 FE- Filter
5 Membrane dryer

Bau und Betrieb GmbH
Abteilung Dampf und Druck
Erlhofer Straße 75
95032 Hof

Coburg, 03. 11. 1999

Technische Überwachung TO 12 Bayern

Hans Jürgen Lay
The expert

A detailed description of the measurement points is given in the annex

TÜV Süddeutschland

Certificate of Quality

The TÜV Süddeutschland certifies herewith that

KAESER COMPRESSORS

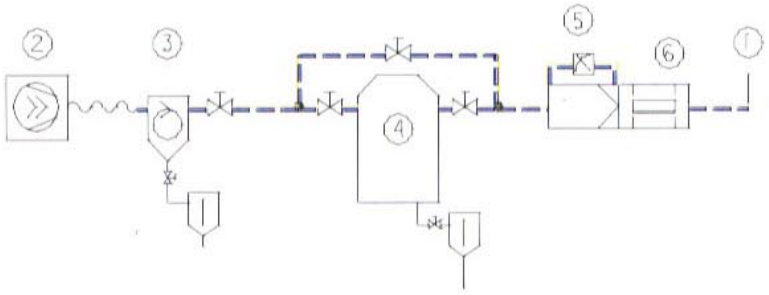
has provided evidence of compressed air quality

in conformance with DIN 8573 - 1 .

An oil carry-over in class: **1**

was achieved with the configuration shown below.

The precise value was: 0,0057 mg/Nm³



1 Point of measurement

2 KAESER oil-cooled screw compressor

3 Water separator

4 Refrigeration dryer

5 FF- Filter

6 Membrane dryer

Bau und Betrieb GmbH
Abteilung Dampf und Druck
Erlhofer Straße 75
95032 Hof

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Test Report

Measurement of Compressed Air Quality

Oil aerosol measurement to ISO 8573/2, test method B 2 (partial flow)

Measurement point downstream of FX-microfilter, desicant-dryer, activated-carbon-adsorber, FV-dustfilter, FX-microfilter.

Measured on the premises of:	Kaeser Kompressoren GmbH, Coburg	
Samples taken on:	27, 28 and 29 January 1997	
Present at the test	Mr. Decker	Ultrafilter
	Mr. Wolf, Dipl.-Ing.	TÜV Bayern
	Mr. Wolf, Dipl.-Ing.	Environmental Technology Dept., Kaeser GmbH
	Mr. Ernst, Dipl.-Ing.	Kaeser GmbH, Coburg
Test carried out by:	Mr. Decker	Ultrafilter
Test supervised by:	Mr. Wolf, Dipl.-Ing.	TÜV, Bayern
	Mrs. Bräunlich, Dipl.-Ing.	TÜV, Rhineland

1. General

The test method is suitable for providing proof of the presence of oil aerosols in flowing air and the presence of non-toxic, non-aggressive non-flammable or non-explosive gases.

The measurement, carried out according to ISO 8573/2, test method B 2, the purpose of which is to test the quality of compressed air produced with the components listed in item 2 and was carried out in the test station of the Kaeser company in Coburg under practical conditions.

2. Description of the test set-up:

Compressed air production:

The compressor was an oil-cooled, single-stage rotary screw compressor driven via V-belts by an electric motor.

Compressor model: Kaeser oil-injected

Air treatment:

The following components were installed in series as listed:

- air receiver
- microfilter F432X
- desicant-dryer CH 560/70
- active carbon adsorber AKC 2400
- dust-filter F432V
- microfilter F432X

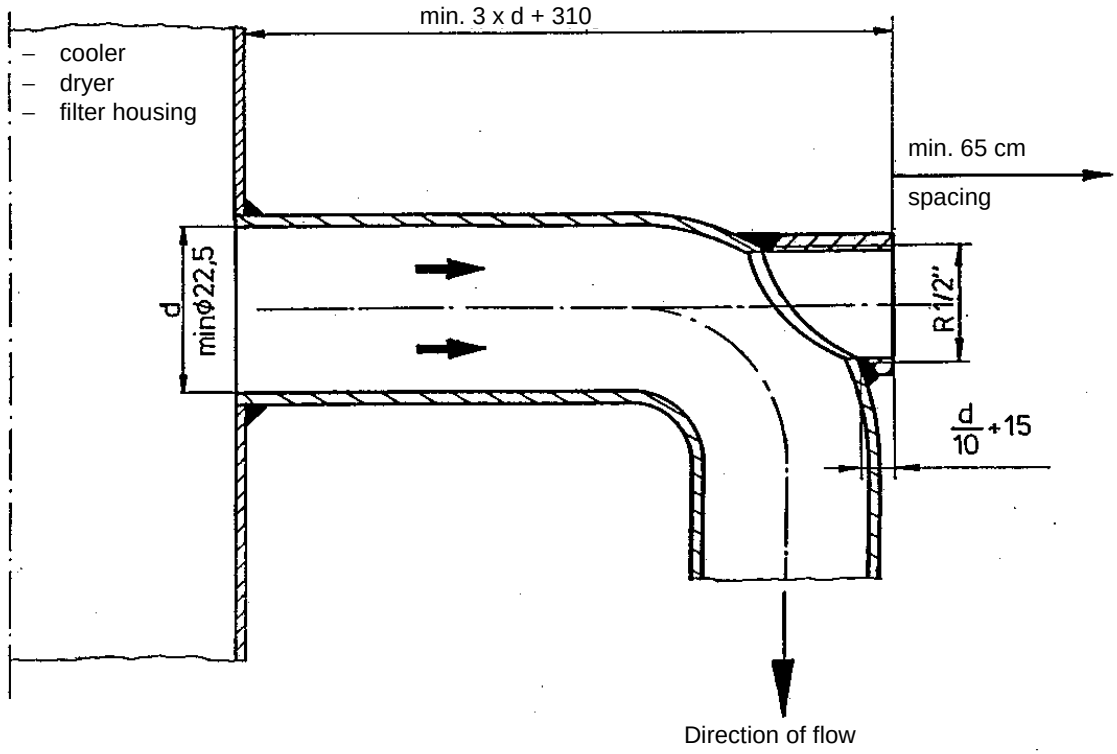
Data measured:

Capacity:	..... Nm^3/h
Gauge pressure:	.....bar
Nominal dia.:	.....DN
Diameter of sample probe:	..... mm

3. Description of sample / measurement:

Sample:

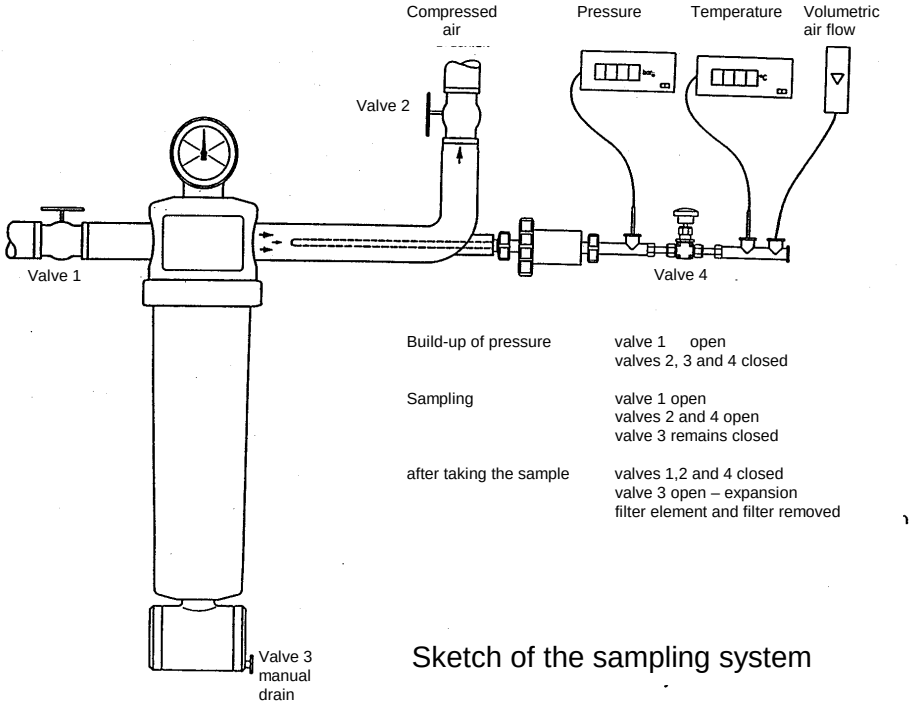
A 90° pipe bend was welded in at the test point in which an R ½“ sleeve was attached in counter-flow.



Sketch of the special connector port

A sampler probe was fitted in the connector port under conditions of no pressure. An isokinetic sample was assured because of the size and shape of the nozzle at the test point.

A filter cell was fitted downstream of the probe, the variables pressure, temperature and volumetric air flow were registered.



Sketch of the sampling system

4. Test procedure

Before starting the test procedure, all components used were put into operation and run until constant system operation with reference to volumetric flow, pressure and temperature was reached.

A defined volume of compressed air was taken from the flow of compressed air. A representative sample of the contaminants contained in the gas can only be taken if isokinetic conditions exist at the tip of the probe's nozzle. That is, the flow velocity at the tip of the nozzle must equal the flow velocity in the air main (network); the flow at the inlet of the nozzle may not be disturbed.

The required nozzle diameter and the sample volume was determined in that the flow velocity in the pipe was evaluated at each test point. The inside diameter of the pipe, the line pressure and the volumetric flow at the time of the test were measured. Volumetric flow and pressure were kept constant and free of pulsation for the complete sampling time.

The partial air flow sample was routed through the filter cell. The filter cell contained a binder-free microfibre web that separated oil droplets down to 0.01 µm.

The time required for the sample resulted from the nominal treatment upstream of the test point and the expected effective hourly capacity of the filter.

To acquire the oil droplets separated in the sampling probe, the probe was flushed on-site with freon 113 (1,1,2 trichlortrifluorethane) and the captured solution was also

analyzed together with the absolute filter.

5. Analyses

The filter material was extracted with freon 113 for a quantitative analysis. After determination of the precise volume, the solution was measured with an infrared spectrometer. The solution from the on-site flushed probe was treated in the same way. (see also item 4).

Hydrocarbons (mineral oils are hydrocarbons) absorb a very definite wavelength of infrared light. A peak appears in the infrared spectrum at this wavelength. The height of the peak is dependent on the oil concentration in the solution.

After production of a calibration curve, that is, the analysis of different solutions of the compressor oil used in a freon 113 solvent, the concentration in the unknown solution can be evaluated using the calibration factor. This value is referred to the sample volume taken on the customer's premises.

The result is quoted as a concentration of oil in the volume of gas (mg/Nm³).

The measurement range covers approx. 20 mg/Nm³ to 0.001 mg/Nm³ for correspondingly longer sampling times.

The test method is described in detail in ISO 8573.2, Test Method B 2, 'Compressed Air for General Applications, Sect. 2, Test Method for Oil Aerosols'.

6. Results

Measured volume:	..... Nm³
Overall oil mass:	..... mg
Oil concentration:	..... mg/Nm³

It can be seen from the results, that the compressed air produced by the selected components achieved an oil carry-over classification of 1 according to ISO 8573 - 1.

Design Criteria:

Air treatment components are designed for working pressures:

7.0 bar for 7.5 bar units.
8.5 bar for 9.0 bar units.
9.0 bar for 10.0 bar units and
12.0 bar for 13.0 bar units

related to +20°C inlet temperature
and 1.0 bar absolute pressure.

THNF = High pollution air intake filter
Specific filter loading: 80 m^3/m^2h

ZK = Centrifugal separator
Pressure drop: < 0.05 bar

FB = Prefilter
Separated particle size: > 3 µm
class 3 to ISO 8573-1
Oil aerosol carry-over: ≤ 5 mg/m^3
class 4 to ISO 8573-1

FC = Prefilter
Separated particle size: > 1 µm
class 2 to ISO 8573-1
Oil aerosol carry-over: ≤ 1 mg/m^3
class 3 to ISO 8573-1

FE = Microfilter
Separated particle size: > 0.01 µm
class 1 to ISO 8573-1
Oil aerosol carry-over t: ≤ 0.01 mg/m^3
class 1 to ISO 8573-1

FF = Microfilter
Separated particle size: > 0.01 µm
class 1 to ISO 8573-1
Oil aerosol carry-over: ≤ 0.001 mg/m^3
better than class 1 to ISO 8573-1

FFG = Microfilter-Activated carbon combination filter
Separated particle size: > 0.01 µm
class 1 to ISO 8573-1
Oil aerosol carry-over: ≤ 0.001 mg/m^3
better than class 1 to ISO 8573-1
Oil vapor content: ≤ 0.003 mg/m^3
better than class 1 to ISO 8573-1

FST = Sterile filter
Efficiency: 100 % sterile

T = Refrigeration dryer
Air inlet temperature: +35°C
Ambient temperature: +25°C
Pressure dewpoint: +3°C

AT = Desiccant dryer

DC series … (heatless regenerating)
Air inlet temperature: +35°C
Pressure dewpoint: -40/-70°C

DW series… (external heat regenerating)
Air inlet temperature: +35°C
Pressure dewpoint: -40°C

DN series… (external heat regenerating)
no regenerating air requirement
Air inlet temperature: +35°C
Pressure dewpoint: -40°C

ACT = Activated carbon adsorber
Oil aerosol carry-over: ≤ 0.003 mg/m^3
Air inlet temperature: +35°C

Attention:

If there are deviations in operating conditions (different pressure, higher ambient temperature, higher air inlet temperature) or the components are intended for special units, they must be specially designed.

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Air treatment components are designed for working pressure:

7.0 bar for 7.5 bar units.
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class 1 to ISO 8573-1
Oil aerosol carry-over t: ≤ 0.01 mg/m³
class 1 to ISO 8573-1

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Separated particle size: > 0.01 µm
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better than class 1 to ISO 8573-1

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better than class 1 to ISO 8573-1

FST = Sterile filter
Efficiency: 100 % sterile

ACT = Aktivated carbon adsorber
Oil aerosol carry-over: ≤ 0.003 mg/m³
Air inlet temperature: +35°C

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