

OIL MIST SEPARATORS FOR DEMANDING APPLICATIONS

**LEADING FILTER TECHNOLOGY FOR INTERNAL COMBUSTION
ENGINES AND LUBE OIL TANK VENTILATION**

MARKET LEADER WITH A PASSION FOR PERFECTION AND ENVIRONMENTAL PROTECTION

STATE-OF-THE-ART ENGINEERING SINCE 1969

For almost 50 years, we have been passionate about developing highly efficient filter technologies protecting our environment as best as possible. Based on our well-founded experience, we develop, manufacture and distribute products preventing the escape of oil mist into the engine compartment and environment almost completely.

With the integration of our oil mist separators, you not only contribute considerably to environmental protection but also profit from a higher engine reliability, lower costs and best possible health and safety.

Our quality is proven and tested: For many years, leading engine manufacturers, plant manufacturers and shipyards rely on our products and services.



Some of the companies which trust UT99 are

2G Energy Bergen Engines (Rolls-Royce Power Systems)
Caterpillar Energy Solutions Dritte Kusch Yachtbau
GE Power Liebherr Components Colmar
Liebherr Machines Bulle MAN Energy Solutions
Meyer Werft MTU Friedrichshafen (Rolls-Royce Power Systems)
MV WERFTEN Wismar SCHNELL Motoren
Siemens Power Generation Oil & Gas

SWISS  MADE

OIL MIST SEPARATION PERFECTED

WITH OUR PRODUCTS FOR POWER PLANTS,
OFF-HIGHWAY AND MARITIME APPLICATIONS
IT IS POSSIBLE TO MEET TOMORROW'S STANDARD
ALREADY TODAY



Environmentally friendly and future-proof

While the legislation for car engines has standardised closed crankcase ventilation (CCV) for decades, so far this technology is only used occasionally for large industrial engines. Here, international legislative changes, regulations and standards are foreseeable as well. Therefore, we are prepared: Already today, applications developed in cooperation with us and our technologies, are significantly eco-friendlier and ensure compliance with future specifications.



Less costs and higher engine reliability

By integrating our highly efficient oil mist separators, sensible components are reliably protected against contamination. This means you not only benefit from an overall reliable system, but also from extended maintenance intervals and lower life-cycle costs.



Improved health and safety – also on cruise ships

In addition to the contamination of sensitive components, our technology also prevents the formation of lubricating films and thus contributes to a safe and clean work environment. It also meets the especially high requirements on safety and cleanliness on cruise ships. We obtained the respective certificates by several international classification societies.



Increased efficiency

With gas-powered engines, our highly efficient filtration of blow-by gas leads to a permanently increased efficiency if combined with the closed crankcase ventilation (CCV). Because the fuels, which would be lost in an open crankcase ventilation (OCV), are returned to the combustion chamber. Today we are already thinking about tomorrow. Therefore, our products are designed so that further efficiency increases can be achieved by design optimisations of the intake section and the turbocharger.



Significantly below legal requirements

With our separation efficiency of 99.9%, it is ensured that the limit values of TA Luft (Technical Guideline for Air Pollution Control) are undercut. We can even ensure compliance with future, more stringent specifications without a problem.

ALWAYS ON THE SAFE SIDE

CUSTOMISED SOLUTIONS IN TOP QUALITY



Reliability ensured – even under severe conditions

We are able to ensure a smooth and permanent oil mist separation, even in complex systems and adverse operating conditions. That we will guarantee with a filter service life of up to 32,000 operating hours. Numerous companies of different industries with various requirements rely on our technologies and services as well as our well-founded experience. Our products are integrated, for instance, in power plants, off-highway vehicles, in maritime or in offshore applications.



Application-specific solutions from one source

Development, engineering, manufacturing and distribution of oil mist separators – at our head office in Andelfingen, we work permanently on optimisations, in order to be always able to offer you the perfect solution. Based on the entire supply chain on site, we are able to define the model, service life, pressure loss and separation efficiency of our oil mist separators custom-made and precisely. Your application benefits from the best possible performance in blow-by filtration.



Strategic partnerships

With companies using our products, we enter into a strategic partnership and prepare cooperative solutions for specific applications. In this process, you will always be supported by a dedicated contact person accompanying you from planning and designing via prototyping as well as testing and measuring under real-life conditions up to the production stage. In case of critical issues, your single source of contact usually reacts on the same day.



Worldwide unique

Based on the voluntary type approval for our UPF-844 series, we were able to meet the project requirement of most of the leading shipyards, as the only manufacturer worldwide.



FUTURE-PROOF AND COST-EFFICIENT



Worldwide unique: CCV up to 32 megawatts

For almost two decades, we have been the experts for closed crankcase ventilation, and we are the only manufacturer in the world that offers proven oil mist separators for engines up to 32 megawatts – upon request even with type approval.

CLOSED CRANKCASE VENTILATION AND HIGHLY EFFICIENT OIL MIST SEPARATION – A PROFITABLE DUO

While gas engine manufacturers have long benefited from the many advantages of the complete reduction of the crankcase emissions ("blow-by"), more and more diesel and dual-fuel engine manufactures start relying on this technology as well.

Increase of efficiency

With the high content of unburnt gaseous hydrocarbon in blow-by, the efficiency for gas engines increases by up to 0.7 % – with a guaranteed residual oil content of less than 1 mg/m³. Thus, turbocharger contaminations and build up of deposits within the entire intake section are reliably prevented.

Market leader in cogeneration gas engines

The quality and reliability of our products have already convinced already numerous companies in the industry. By dealing intensively with the special requirements of oil mist separators used in cogeneration plants, we know the technical challenges and have provided our customers with customised solutions for many years.



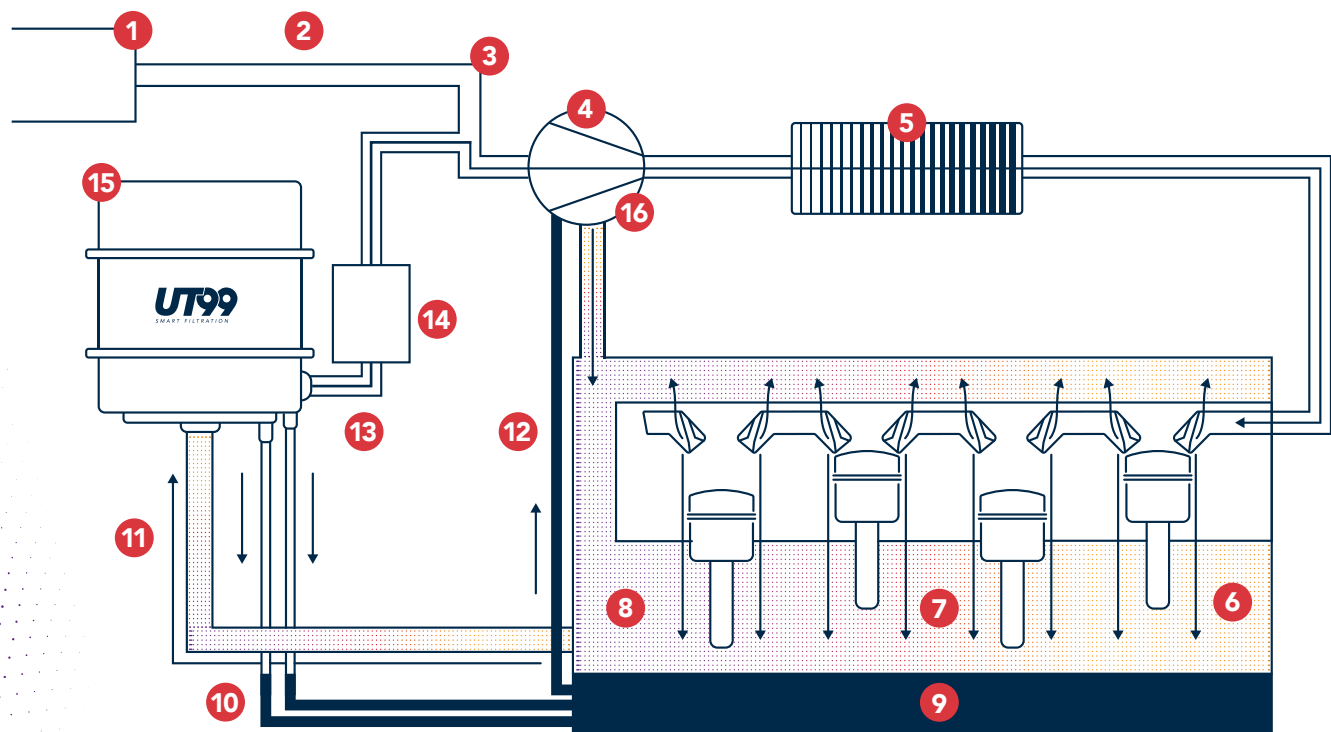
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OIL MIST SEPARATORS

UPF-CCV SERIES

BLOW-BY FILTERS FOR CLOSED CRANKCASE VENTILATION OF COMBUSTION ENGINES

Less costs, improved health and safety and greater environmental protection – there are many good reasons to use closed crankcase ventilation. Years of experience and designated references are proof of the reliable and flawless interaction of the components, so that your engines and customers benefit permanently from all positive aspects.



- 1 Air intake filter

2 Air intake line

3 Intake air or air fuel mixture

4 Turbocharger

5 Charge air cooler

6 Blow-by gas
- 7 Crankcase compartment

8 Oil mist

9 Oil sump

10 Oil discharge lines

11 Crankcase ventilation line

12 Pressure oil line
- 13 Suction line

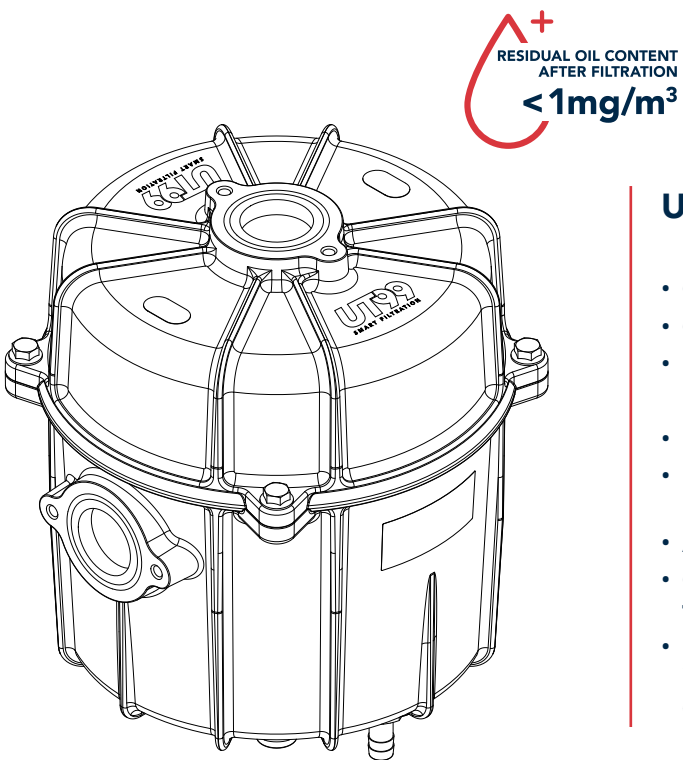
14 Optional throttle valve

15 Oil mist eliminator

16 Oil return line

MODEL	ENGINE POWER	BLOW-BY FLOW RATE
UPF-CCV-15 / UPF-SauKuL	≤ 500 kW	≤15 m³/h
UPF-CCV-450-P1D	> 500 to 1,000 kW	≤ 30 m³/h
UPF-CCV-450-P2D	> 1,000 to 2,000 kW	≤ 60 m³/h
UPF-CCV-450-P3D	> 2,000 to 3,000 kW	≤ 90 m³/h
2 x UPF-CCV-450-P2D	> 3,000 to 4,000 kW	≤ 120 m³/h
2 x UPF-CCV-450-P3D	> 4,000 to 5,000 kW	≤ 180 m³/h
UPF-CCV-844-P/G1M*	> 5,000 to 8,000 kW	≤ 250 m³/h
UPF-CCV-844-P/G2M*	> 8,000 to 16,000 kW	≤ 500 m³/h
UPF-CCV-844-P/G3M*	> 16,000 to 24,000 kW	≤ 750 m³/h
UPF-CCV-844-P/G4M*	> 24,000 up to 32,000 kW	≤ 1,000 m³/h

* optional with fan for underpressure control



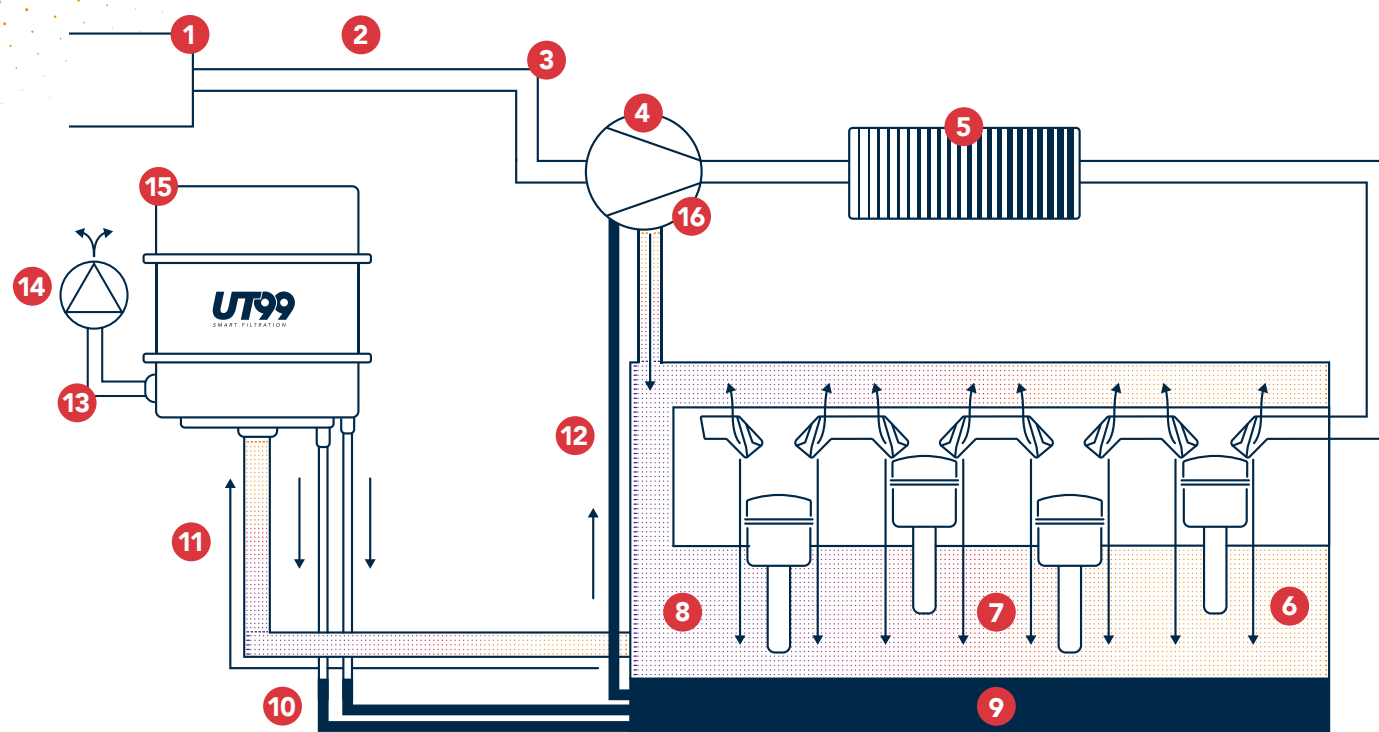
UPF-CCV specifications

- Coalescence filter
- Oil mist separation: 99.9%
- Residual oil content after filtration: < 1 mg/m³, up to 0.1 mg/m³ if required
- Filtration: up to 0.1 µm droplet size
- Pressure loss: < 20 mbar, up to 8 mbar if required
- ATEX certification: optional
- Germanischer Lloyd (GL) and RINA type approval: optional
- Maintenance-friendly, filter change intervals up to 16,000 hours; depending on the design, also up to 32,000 hours

OIL MIST SEPARATORS UPF-OCV SERIES

BLOW-BY FILTERS FOR OPEN CRANKCASE VENTILATION OF COMBUSTION ENGINES

Especially for engines with a power of up to 100 megawatts our oil mist separators ensure top separation performance and functional safety – thus, they can be used even for critical applications, such as a potentially explosive atmosphere. With a residual oil quantity of less than 5 mg/m³, the statutory limit values of the TA Luft are significantly undercut. When required, we provide all models in an ATEX certified design.



- | | | |
|----------------------------------|-------------------------------|------------------------|
| 1 Air intake filter | 7 Crankcase compartment | 13 Blow-by outlet |
| 2 Air intake line | 8 Oil mist | 14 Fan |
| 3 Intake air or air fuel mixture | 9 Oil sump | 15 Oil mist eliminator |
| 4 Turbocharger | 10 Oil discharge lines | 16 Oil return line |
| 5 Charge air cooler | 11 Crankcase ventilation line | |
| 6 Blow-by gas | 12 Pressure oil line | |

Safe and environmentally friendly

Our substantial separation performance of more than 99 % not only protects the environment but also your employees. Since the oil content of the combustion gases is significantly reduced, slippery surfaces, possible ignitions and oil in the atmosphere can be dealt with successfully.

Optimized crankcase pressure

You can best prevent an inadmissible pressure increase within the crankcase by using our UPF-OCV oil mist filters. With a regulated fan, the required underpressure inside the crankcase can also be regulated accurately for variable operating conditions. In addition, the low pressure loss of our UPF oil mist separators also saves costs by ensuring low power consumption.

One of a kind, with guaranteed reliability

Especially in the cruise ship industry, an increased environmental awareness, stricter obligations and requirements on cleanliness and safety lead to an increased need in oil mist separation. Being a pioneer in the industry, we have reacted to this early: As the worldwide only manufacturer, we provide oil mist separators which are approved by several international classification societies.

MODEL	ENGINE POWER	BLOW-BY FLOW RATE
UPF-OCV-500-X1F	≤ 3,200 kW	≤ 100 m ³ /h
UPF-OCV-500-X2F	> 3,200 to 6,400 kW	≤ 200 m ³ /h
UPF-OCV-844-X1M	> 6,400 to 11,500 kW	≤ 350 m ³ /h
UPF-OCV-844-X2M	> 11,500 to 23,000 kW	≤ 700 m ³ /h
UPF-OCV-844-X3M	> 23,000 to 35,000 kW	≤ 1,050 m ³ /h
UPF-OCV-844-X4M	> 35,000 to 46,000 kW	≤ 1,400 m ³ /h

All models are delivered with a fan and can optionally be provided with an electronic underpressure control.

UPF-OCV specifications

- Coalescence filter
- Oil mist separation: 99.5 %
- Residual oil content after filtration: < 5 mg/m³
- Limit values of TA Luft are undercut
- Filtration: up to 0.1 µm droplet size
- ATEX certification: optional
- Germanischer Lloyd (GL) and RINA type approval: optional
- Maintenance-friendly, filter change intervals up to 24,000 hours; depending on the design, also up to 32,000 hours

OIL MIST SEPARATORS UPF-OTV SERIES

OIL MIST SEPARATORS FOR GAS AND STEAM TURBINES

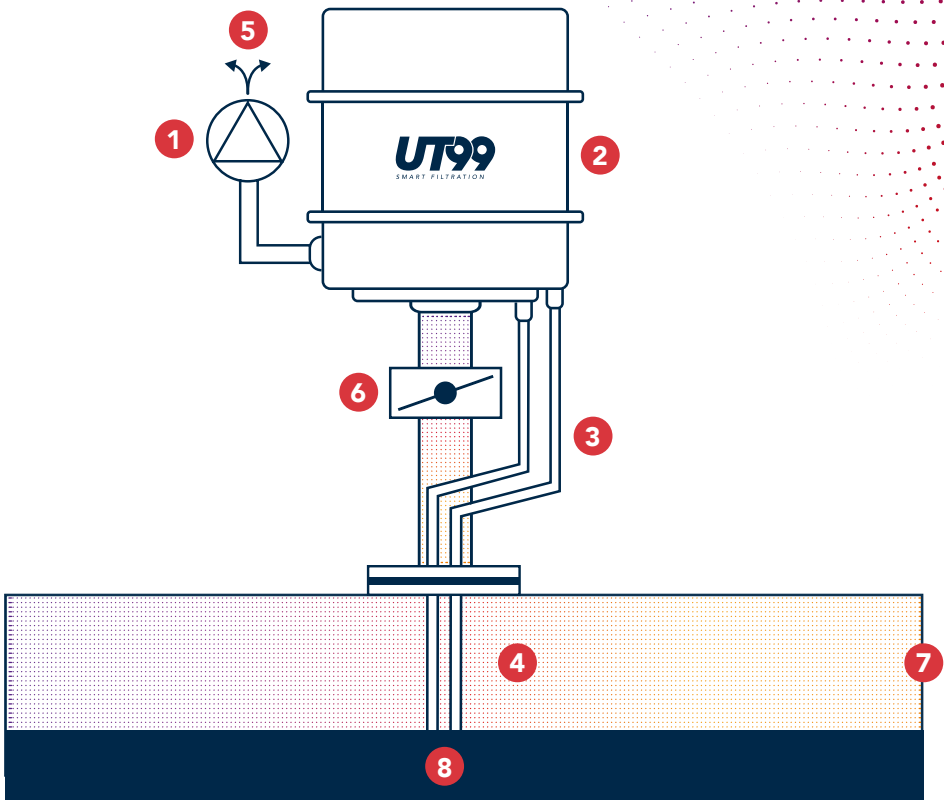
The ventilation of the lubrication oil tank of turbines or large bearings require the generation of a constant underpressure. Oil mist separators of the UPF-OTV series perfectly meet all technical requirements within the applicable emission and labour protection laws. The escape of oil during ventilation is reliably prevented.

Plant operators using the UT99 technology depend on an efficient separation and functional safety. We guarantee this permanently.

The UPF-OTV series includes standard products and a wide range of customised special designs. This way, for instance, highest safety requirements are met and a reliable operation is ensured even under especially adverse environmental conditions as they exist on off shore applications like oil rigs.

MODEL	TANK VOLUME	FLOW RATE
UPF-OTV-500-A1F*	≤ 5 m³	≤ 100 m³/h
UPF-OTV-500-A2F*	≤ 10 m³	≤ 200 m³/h
UPF-OTV-630-A2K*	≤ 16 m³	≤ 300 m³/h
UPF-OTV-844-A1M*	≤ 20 m³	≤ 350 m³/h
UPF-OTV-844-A2M*	≤ 40 m³	≤ 700 m³/h
UPF-OTV-844-A3M*	≤ 60 m³	≤ 1050 m³/h

* with fan



- 1

Fan
- 2

Oil mist separator
- 3

Oil return
- 4

Oil mist
- 5

Outlet
- 6

Throttle valve
- 7

Lubrication oil tank
- 8

Lubrication oil

UPF-OTV specifications

- **Coalescence filter**
- **Generated underpressure: typically 5-10 mbar, depending on the design also significantly more**
- **Oil mist separation: 99 %**
- **Residual oil content after filtration: < 20 mg/m³**
- **Limit values of TA Luft are undercut**
- **Filtration: up to 0.1 µm droplet size**
- **ATEX certification: optional**
- **Germanischer Lloyd (GL) and RINA / Type approval: optional**
- **Maintenance-friendly, filter change intervals up to 24,000 hours; depending on the design also up to 32,000 hours**

QUALITY IN PERFECTION

MANUFACTURE AND TESTING

In order that you can rely on our products at any time, they are manufactured not only in highest precision but are also strictly tested. This way we are able to ensure a maximum of satisfaction and reliability.

Swiss made

Our passion for technology, and state-of-the-art engineering are the foundation of our leading position in the market. All products are developed and produced according to the most stringent specifications at our site in Andelfingen. All components are manufactured in our own as well as Central European production facilities and leave our plant only after a comprehensive quality control. Our management system is certified in accordance with ISO 9001:2015.

Always up to date

To be able to always provide the best possible product, we are partner of the consortium "Crankcase Ventilation and formation of Oil Aerosol" which is under the direction of the Karlsruhe Institute of Technology (KIT). Thus, our technology is based on current scientific findings, long years of field experience and intensive cooperation with manufacturers and operators.

SWISS  MADE

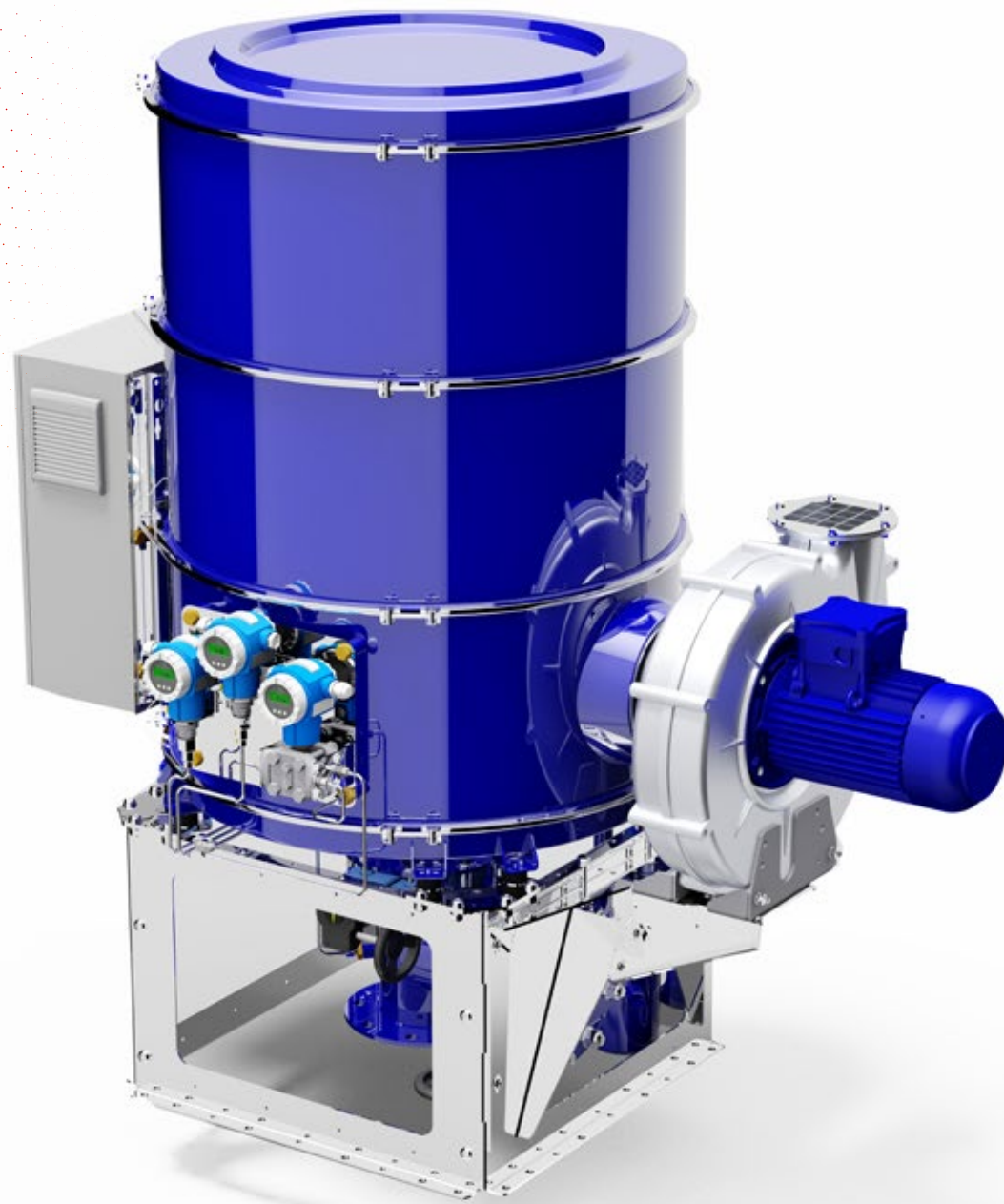


Comprehensive testing methods

In order to ensure the high quality of our products, we subject each device to acceptance testing under real-life conditions prior to the delivery. On our specifically developed test track according to DIN 5167, we are able to simulate all application profiles.

OUR PRODUCTS

OIL MIST SEPARATORS OF THE UPF SERIES



UPF-250,
UPF-Saukul, UPF-15

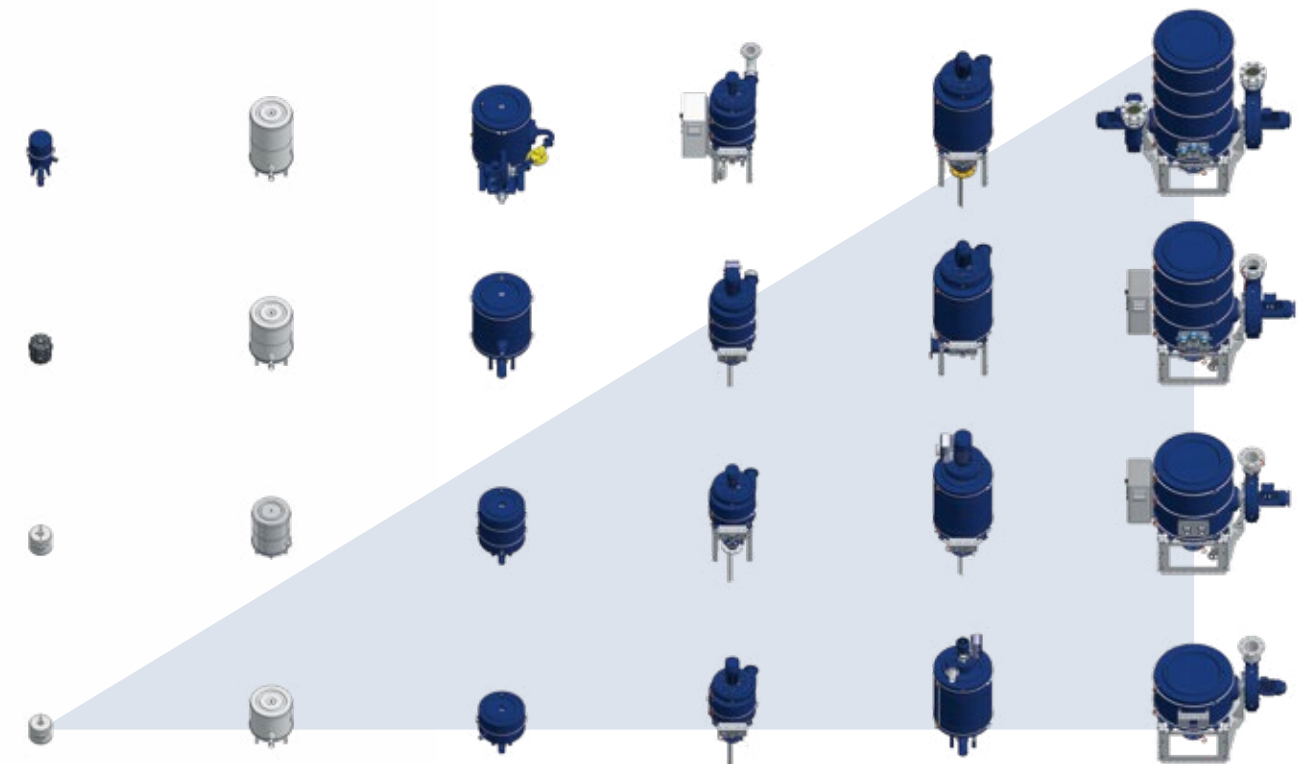
UPF-450

OEM devices
(customised)

UPF-500

UPF-630

UPF-844



FLOW RATE: 15m³/h

1400m³/h



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SMART FILTRATION