



SEPARATION

# THE INNOVATIVE WAY TO MINERAL OIL RECOVERY

DYNAMIC CROSSFLOW FILTRATION

**ANDRITZ**

ENGINEERED SUCCESS



# 100% particle-free oil with energy-saving separation

The mineral oil sector is facing one big challenge: Crude oil resources on our planet are limited. ANDRITZ Separation is always searching for new processes and innovative technologies to recycle waste products from the mineral oil industry. The Krauss-Maffei dynamic crossflow filter DCF is the advanced technology for mechanical purification of contaminated mineral oils, removing 100% of impurities.

## LIGHT FUEL OIL – FAST AND EASY RECOVERY

One of the products from crude oil is also a main energy carrier for heating: light fuel oil. It is stored in tanks either in private households, industrial facilities, or in gas stations. After several years, solid contaminants as well as moisture from the environment accumulate inside the tanks together with the remaining oil. Thus, these storage tanks need to be cleaned periodically and the contaminated light fuel fraction disposed of. Depending on the amount of initial contamination, the material mass for disposal can be reduced to less than 1% of the original contamination, the material mass for disposal. This remaining waste will be a pasty material, which is easy to handle and transport.

## LUBRICANT OILS – 100% REMOVAL OF PARTICLES

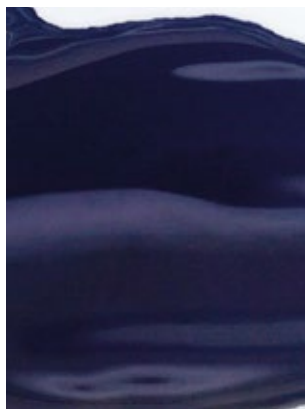
Another very important group of substances derived from crude oil are lubricant oils. After being used in the metal working industry, these oils are often contaminated with very fine metal particles. The dynamic crossflow filter from ANDRITZ Separation is the latest technology for quick and easy on-site regeneration of the lubricants by removing 100% of the particles.

## DYNAMIC MEMBRANE FILTRATION AS THE FIRST CHOICE

In traditional crossflow filtration, a clogging layer is prevented from developing on the surface of the filter membranes by pumping the feed. However, this method is neither efficient nor viable when handling sensitive or highly viscous products. At ANDRITZ Separation, we have taken a leap forward in development and designed the Krauss-Maffei dynamic crossflow filter DCF. In this process, overlapping rotating disks generate a differential speed. This setup creates a crossflow without requiring a pump to circulate the slurry and without any circulation line at all. The stationary principle of crossflow causes a zone of discontinuity at the entrance to the overlapping zone. This zone of discontinuity creates a very efficient, local cleaning effect due to the turbulent flow. The turbulent flow is directed in parallel, but also perpendicular to the membrane surface. The perpendicular component in particular generates high detaching forces, even in highly adhesive clogging layers.



Purified oil after dynamic crossflow filtration



Oil after conventional purification system



Krauss-Maffei dynamic crossflow filter DCF



Krauss-Maffei dynamic crossflow filter  
DCF filter membranes

### SCOPE OF SUPPLY

- Plug-and-play skid, minimum of process and utility connections
- All process instruments included
- Touch screen panel with graphic visualization of the P&ID
- Feed pump with frequency converter included
- Full automation package with automatic valve and pump control
- Control of waste sludge discharge
- Fast and frequent backflush to maintain high filtration level

### STANDARD DESIGN

- Small membrane diameter to provide optimum membrane strength
- Small membrane distance to provide high filtration rates
- Double jacket for heating
- Only one drive motor
- Hanging arrangement of membrane disc stack to allow full self-venting
- Elliptic housing for minimum dead volume and retention time
- Minimum noise from the dynamics of the filter and the process pump



Krauss-Maffei dynamic crossflow filter DCF installation in an oil purification application

### YOUR BENEFITS

- 100% removal of impurities, even higher purity than most standard fuel oils delivered by petrochemical companies
- Recovery of more than 99% of the oil
- Low energy consumption of approx. 0.02 kWh per liter of recovered light fuel oil
- Fast and easy installation due to turnkey concept
- Minimum operator effort required for operation
- Very low noise (<65dB)
- No chemical cleaning required

# Technical data

	Unit	DCF 312/8	DCF 312/16	DCF 312/32
Installed membrane surface	m <sup>2</sup>	8	16	32
Typical throughput	l/h	125 to 250	250 to 500	500 to 1,000
Transportation weight of DCF	kg	1,600	1,800	3,000
Transportation weight of skid	kg	800	800	900
Total weight	kg	2,400	2,600	3,900
Installation footprint	mm x mm	2,400 x 1,300	2,400 x 1,300	2,600 x 1,500
Installation/maintenance height	mm	2,500 / 3,900	3,000 / 4,300	3,000 / 4,600
Total installed power	kW	9	15	30
Noise level	db (A)	65	65	65



Krauss-Maffei dynamic crossflow filter DCF skid



# Intelligence for machine and process control

With Metris addIQ, you have a well-proven, intelligent control solution for industrial processes and machines. Our solid/liquid separation specialists use their in-depth expertise to provide scalable solutions that are individually tailored to regional and application requirements. Whether you're automating new equipment or upgrading to extend the lifecycle of existing systems, we find the ideal solution for you.

## **METRIS addIQ CONTROL SYSTEMS**

Our tailored turnkey systems from a single supplier can improve entire plants or individual machines. By providing state-of-the-art automation technologies and digitalization, we ensure best-in-class performance. Automating machine and plant equipment measurably reduces gaps in many different production process steps. By using automation from ANDRITZ, you can reduce downtime thanks to features such as predictive analysis that allow you to optimize productivity.

Metris addIQ covers all levels of automation, starting at basic automation (machine, process, and plant control), to upgrades, and add-ons for process optimization. Together, you have a full range of optimized solutions that help reduce maintenance efforts and ensure preventive service for your machines and plants. These are all delivered from a single source and always individually tailored to your business demands. addIQ control systems are part of Metris, the ANDRITZ brand for digital solutions.



**Metris**  
ANDRITZ Digital Solutions



ANDRITZ offers a broad and constantly growing range of innovative products and services in the industrial digitalization sector under the brand name Metris, helping customers to enhance plant efficiency and profitability, optimize the use of resources, achieve constant and highest product quality, reduce production downtime, and maximize user-friendliness.





# Put our 150 years of OEM experience to work for you

Need to optimize your process? Boost availability? Ensure non-stop productivity? When you work with ANDRITZ, you gain access to one of the world's largest OEM manufacturers for solid/liquid separation. Put our in-depth knowledge of separation equipment and processing to work for you.

## VAST EXPERIENCE THROUGH LARGE INSTALLED BASE

With an installed global base of more than 55,000 solid/liquid separation machines and systems, you can imagine that we take service seriously. Wherever these customers are located, we work very closely with them to maximize uptime and boost efficiency.

## WELL-KNOWN OEM BRANDS

Some customers know us as the people with ANDRITZ on our overalls. Others have come to understand that we are the OEM behind former brand names like 3Sys Technologies, Bird, Delkor Capital Equipment (Pty) Ltd., Escher Wyss dryers, Frautech, Guinard Centrifugation, KHD Humboldt Wedag, Krauss-Maffei centrifuges, dryers, and filters, Lenser, Netzsch Filtration, Rittershaus & Blecher, Royal GMF Gouda, Sprout Bauer, and Vandenbroek – all companies that have been acquired by ANDRITZ. But frankly, we are capable of servicing and supplying spare parts for nearly all brands of solid/liquid separation equipment on the market.

## LOCAL SUPPORT BACKED BY GLOBAL EXPERTISE

Our service philosophy is simple: One phone call, one contact person, one dedicated team that speaks your language and knows your equipment and process. This is not an empty promise. It is backed by a network of 550 service specialists for separation equipment and systems as well as service centers all around the world.

## A TRUE FULL-SERVICE PROVIDER

Whether you need spare parts, rentals, local service, repairs, upgrades, or modernization of your equipment, ANDRITZ is your service specialist in all aspects of separation. From initial consulting through to service agreements, process optimization, and training programs, we are always looking for ways to minimize downtime and increase predictability in operations while raising your overall production efficiency. In short, we've got you covered.



### LOCAL SUPPORT

Responsive local service centers and field service technicians



### REPAIRS & UPGRADES

Optimization of machine and process performance, repair work, retrofitting, and modernization



### LAB AND ON-SITE TESTS

Lab and testing capabilities for process optimization and machine upgrades



### TRAINING

Operator training and tailored seminars for operating and maintenance personnel



### OEM SPARE PARTS

Filter cloths, spare and wear parts from OEMs or with OEM level quality, all readily available



### SERVICE AGREEMENTS

Preventive maintenance, contracts for spare parts, maintenance, inspections, repairs, upgrades, operation, and equipment monitoring



### PROCESS OPTIMIZATION

Automation tools and process expertise to boost your profit



### SECOND-HAND & RENTALS

Certified second-hand and rental machines





## WHAT'S YOUR SEPARATION CHALLENGE?

ANDRITZ Separation is the world's leading separation specialist with the broadest technology portfolio and more than 2,000 specialists in 40 countries. For more than 150 years, we have been a driving force in the evolution of separation solutions and services for industries ranging from environment to food, chemicals, and mining & minerals. As the OEM for many of the world's leading brands, we have the solutions and services to transform your business to meet tomorrow's changing demands – wherever you are and whatever your separation challenge. **Ask your separation specialist!**

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