CARDEV®

Product Range

Contents

Oil Filtration

More than 3/4 of all problems in fluid systems can be traced back to contaminated oil!*

Oil cleanliness is critical to the reliability of your machinery. As technology advances, the demands placed on a lubricant are ever-increasing: pressures and temperatures are higher, reservoir sizes are smaller and component tolerances are closer.

CARDEV offline & by-pass filtration is capable of maintaining oil in a "cleaner than new" condition, extending oil life, reducing component wear and increasing system reliability. We work predominantly with hydraulic and engine oil but the technology is also suitable for transformer oil, gear oil and neat cutting oil. By changing to a different filter element metalworking/water based fluids can also be filtered.

Filtration Types

Bypass Filtration

Permanently installed filtration using the flow and pressure of the system that is being filtered.

Benefits of Bypass Filtration

- Constant filtration whilst the system is working - clean the entire system, not just the oil in the reservoir.
- Fit and forget -
  Change filter element as part of routine servicing.

Offline Filtration

Mobile or permanently installed filtration systems that work independently of the system being filtered, relying on integrated pumps to provide pressure and flow.

Benefits of Offline Filtration

- Filtration even when the system is inactive – ideal for systems that operate infrequently – cranes, lock gates etc.
- One system can service an entire facility.

Why Not In-line Filtration?

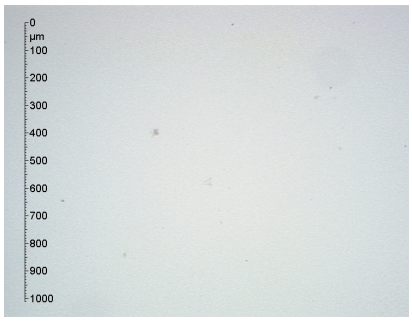
With in-line filtration there is always a trade-off between fineness of filtration and the flow/pressures of the machine. This means that in-line filtration typically serves only to protect equipment from very large particles and immediate, catastrophic failure.

Offline/By-pass filtration operates on the principle of SLOW and LOW – slow flow rates and low pressures (relative to the system as a whole) to allow very fine levels of filtration to be achieved.

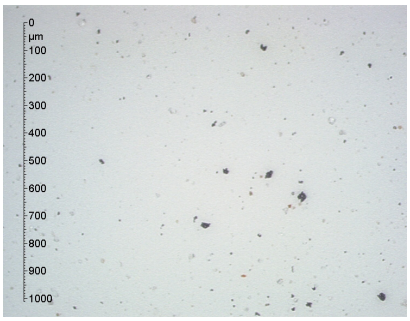
* (Bosch Rexroth, re08016)

Understanding Oil Cleanliness Levels

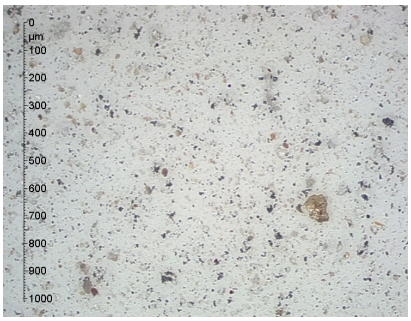
Code ISO 4406	Number of particles/100ml			NAS 1638	
	>4µm	>6µm	>14µm		
23/21/18	8.000.000	2.000.000	250.000	12	Very contaminated - Breakdowns inescapable
22/20/18	4.000.000	1.000.000	250.000	-	
22/20/17	4.000.000	1.000.000	130.000	11	
22/20/16	4.000.000	1.000.000	64.000	-	
21/19/16	2.000.000	500.000	64.000	10	
20/18/15	1.000.000	250.000	32.000	9	
19/17/14	500.000	130.000	16.000	8	Minimum required cleanliness class for high pressure-, servo valve hydraulic systems, new/fresh oil DIN51524
18/16/13	250.000	64.000	8.000	7	
17/15/12	130.000	32.000	4.000	6	
16/14/12	64.000	16.000	4.000	-	
16/14/11	64.000	6.000	2.000	5	(Achievable) result after CARDEV Microfiltration
15/13/10	32.000	8.000	1.000	4	
14/12/9	16.000	4.000	500	3	
13/11/8	8.000	2.000	250	2	
12/10/8	4.000	1.000	250	-	
12/10/7	4.000	1.000	130	1	
12/10/6	4.000	1.000	64	-	



NAS Class 3



NAS Class 8



NAS Class 12

High Pressure Hydraulic Filtration (<350 Bar)

HDU-H300
Bypass Oil Filter

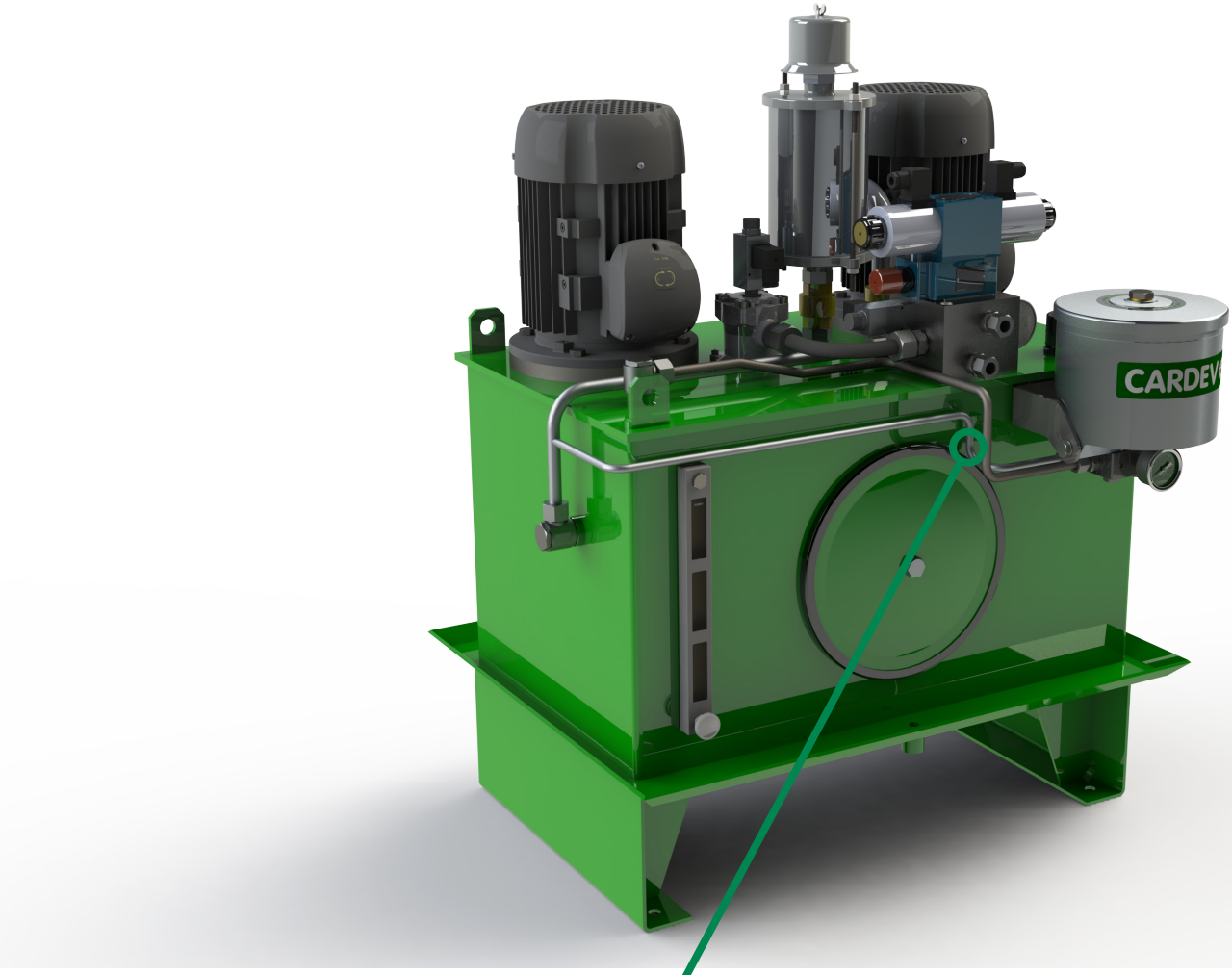
The HDU-H300 is a by-pass filter suitable for systems of up to 200 litres. Max feed pressure 300 Bar.

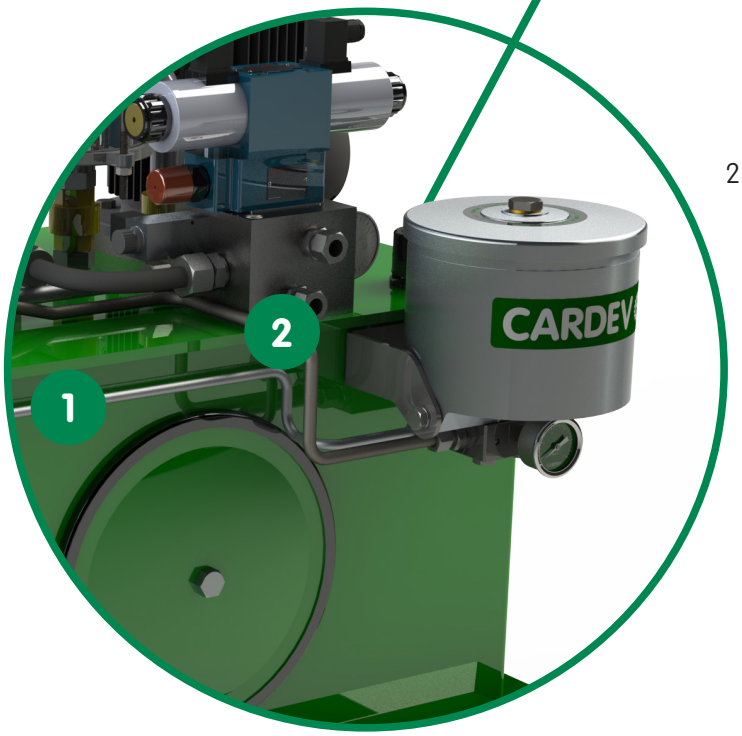
SDU-H350BM2
Bypass Oil Filter

The CARDEV SDU-H350BM2 is a by-pass filter suitable for systems of up to 400 litres. Max feed pressure 350 Bar. Flow rate restricted to 2 l/m.

SDU-H350RK-TWIN
Bypass Oil Filter

By-pass filter suitable for systems of up to 1000 litres. Max feed pressure 350 Bar. Flow rate restricted to 4 l/m.





1. Pressure feed taken from the in-line/feed to the oil cooler (permanent flow, constant pressure @ ~25 bar) using a T-connector and 1/4" high pressure rated hydraulic hose.

2. Short return line from outlet of SDU-H350BM2 to a dummy plug of the hydraulic tank (below oil level to prevent foaming) using 3/8" low pressure rated hydraulic hose.

Bypass Filtration For Larger Systems

2S-350-C4
Bypass Oil Filter

Fixed by-pass filter comprising 2x SDU filter housing. Recommended for systems up to 1000 litres. Max feed pressure 350 Bar.

4S-350-C8
Bypass Oil Filter

Fixed by-pass filter comprising 4x SDU filter housing. Recommended for systems up to 3000 litres. Max feed pressure 350 Bar.

6S-350-C12
Bypass Oil Filter

Fixed by-pass filter comprising 6x SDU filter housing. Recommended for systems over 3000 litres. Max feed pressure 350 Bar.

O&K RH 120 fitted with 4S-350-C8

Low Pressure Hydraulic Filtration (<8 Bar)

HYDRAULIC APPLICATIONS

LDU-H8
Bypass Oil Filter

FEED PRESSURE 2-6 BAR

FOR SYSTEMS UP TO 100 LTRS

HDU-H8
Bypass Oil Filter

FEED PRESSURE 2-6 BAR

FOR SYSTEMS UP TO 200 LTRS

SDU-H8
Bypass Oil Filter

FEED PRESSURE 2-6 BAR

FOR SYSTEMS UP TO 400 LTRS

Engine Oil Filtration

ENGINE APPLICATIONS

LDU-M8
Bypass Oil Filter

FEED PRESSURE 2-6 BAR

FOR SUMPS UP TO 150KW / <15 LTRS

HDU-M8
Bypass Oil Filter

FEED PRESSURE 2-6 BAR

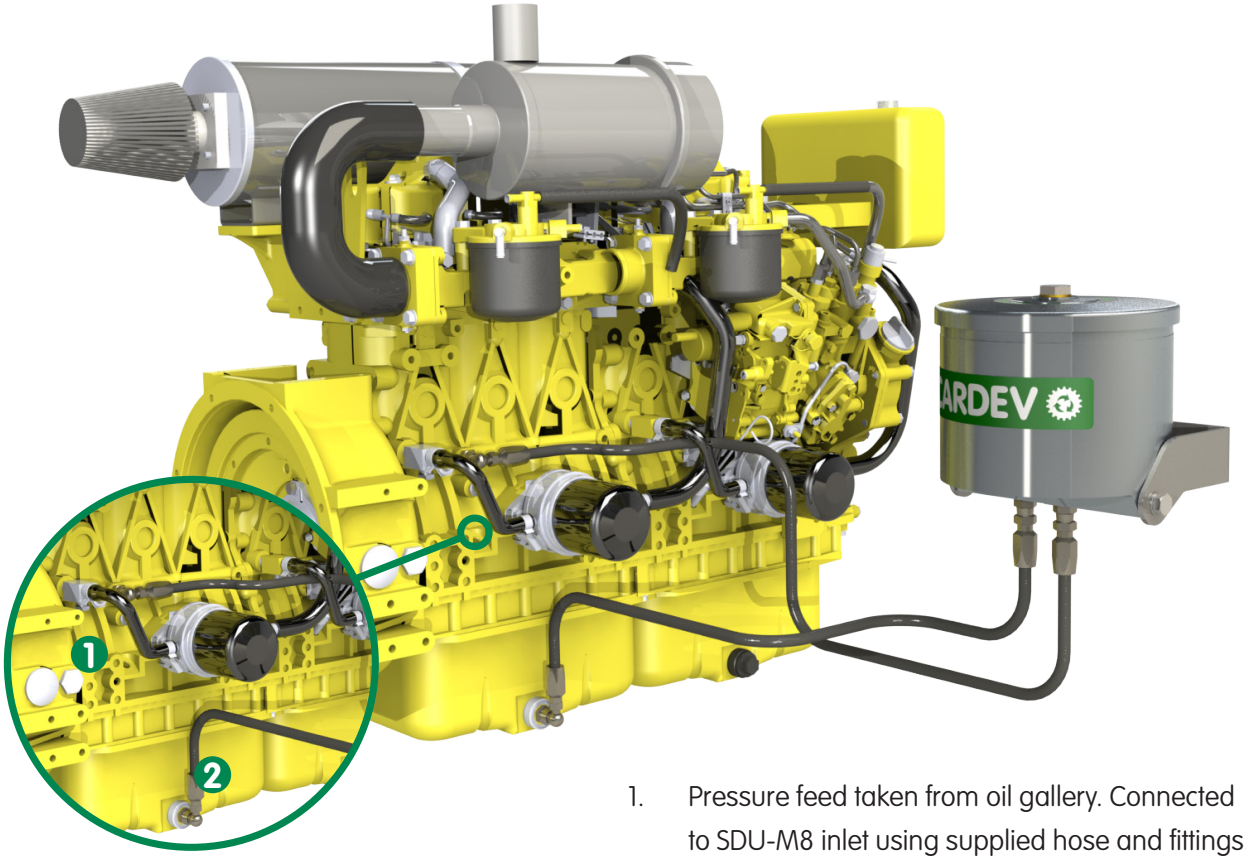
FOR SUMPS UP TO 300KW / <30 LTRS

SDU-M8
Bypass Oil Filter

FEED PRESSURE 2-6 BAR

FOR SUMPS UP TO 400KW / <40 LTRS

Installation Example - SDU-M8



1. Pressure feed taken from oil gallery. Connected to SDU-M8 inlet using supplied hose and fittings.
2. Short return line from outlet of SDU-M8 to sump.

KOMATSU excavator fitted with SDU H8

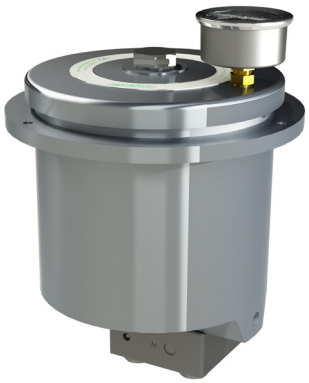
Bypass Oil Filtration For Fixed Tank Installation

Designed to be fitted flush in the top of a tank.

HDU-H8-FL
Bypass Oil Filter

By-pass filter suitable for systems of up to 200 litres. Max feed pressure 6 Bar.

HDU-H300-FL
Bypass Oil Filter



By-pass filter suitable for systems of up to 200 litres. Max feed pressure 300 Bar. Flow rate restricted to 2 l/m.

SDU-H8-FL
Bypass Oil Filter

By-pass filter suitable for systems of up to 400 litres. Max feed pressure 6 Bar.

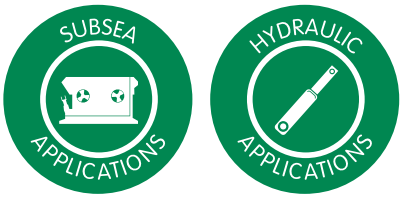
SDU-H350BM2-FL
Bypass Oil Filter

By-pass filter suitable for systems of up to 400 litres. Max feed pressure 350 Bar. Flow rate restricted to 2 l/m.

CARDEV

SDU-H8FL
installation example

Subsea/Offshore Filtration



A range of specialist filtration equipment designed specifically for use in Subsea and Offshore environments. Particles (including dissolved salt from sea water) and moisture are removed leaving oil "cleaner than new"*, whilst reducing downtime and component wear.

SDU-H8UW-S
Subsea Bypass Oil Filter

By-pass filter suitable for offshore installation on equipment such as HPUs and winches. Max feed pressure 6 Bar.

SDU-H350UW-S
Subsea Bypass Oil Filter

By-pass filter suitable for installation on ROV's, TMS and winches. Max feed pressure 350 Bar.

Work class ROV fitted with
2x SDU-H350UW-S

Offline Filtration Systems

Mobile or permanently installed offline filtration systems that work independently of the system being filtered, using integrated pumps to provide pressure and flow. Particles and moisture are removed leaving oil "cleaner than new"*, reducing downtime and component wear.

Mobile Offline Filtration Systems

1S
Static Offline Filtration System

The 1S is ideal for restricted-access applications where the system may need carrying by hand. Simple control, over pressure protection, powder coated frame.

FOR SYSTEMS UP TO 400 LTRS
TYPICAL FLOW RATE 140 LPH
VOLTAGE OPTIONS 110V 230V

2S-500B
Mobile Offline Filtration System

Simple control, high pressure protection, powder coated frame.

FOR SYSTEMS UP TO 1000 LTRS
TYPICAL FLOW RATE 220 LPH
VOLTAGE OPTIONS 110V 230V 400V

2S-500E
Mobile Offline Filtration System

Stainless steel construction with intelligent PLC control and filter element change timer.

FOR SYSTEMS UP TO 1000 LTRS
TYPICAL FLOW RATE 220 LPH
VOLTAGE OPTIONS 110V 230V

See page 22 for more information

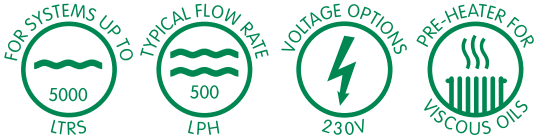
4S-B
Mobile Offline Filtration System

High / low pressure cut-off and filter element change timer. Mixed powder coated / stainless steel frame.

4S-E
Mobile Offline Filtration System

PLC controlled and pre-heater for viscous oils. Automatic pressure adjustment for maximum efficiency.

Filter element change timer. Mixed powder coated/stainless steel frame.



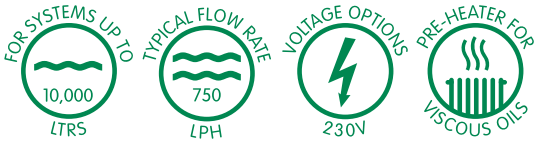
6S-B
Mobile Offline Filtration System

High / low pressure cut-off and filter element change timer. Mixed powder coated / stainless steel frame.

6S-E
Mobile Offline Filtration System

PLC controlled and pre-heater for viscous oils. Automatic pressure adjustment for maximum efficiency.

Filter element change timer. Mixed powder coated / stainless steel frame.



Static Offline Filtration Systems

1S
Static Offline
Filtration System

The 1S is ideal for restricted-access applications where the system may need carrying by hand. Simple control, over pressure protection, powder coated frame.

FOR SYSTEMS UP TO 400 LTRS
TYPICAL FLOW RATE 140 LPH
VOLTAGE OPTIONS 110V 230V

2S-500BS
Static Offline
Filtration System

The 2S-500BS Offline Static system for permanent / semi-permanent installation. Simple control, high pressure protection, powder coated frame.

FOR SYSTEMS UP TO 1000 LTRS
TYPICAL FLOW RATE 220 LPH
VOLTAGE OPTIONS 110V 230V 400V

4S-RS
Static Offline
Filtration System

Static filtration system. Simple control, high pressure protection, powder coated frame.
Flow rate 500 l/hr**

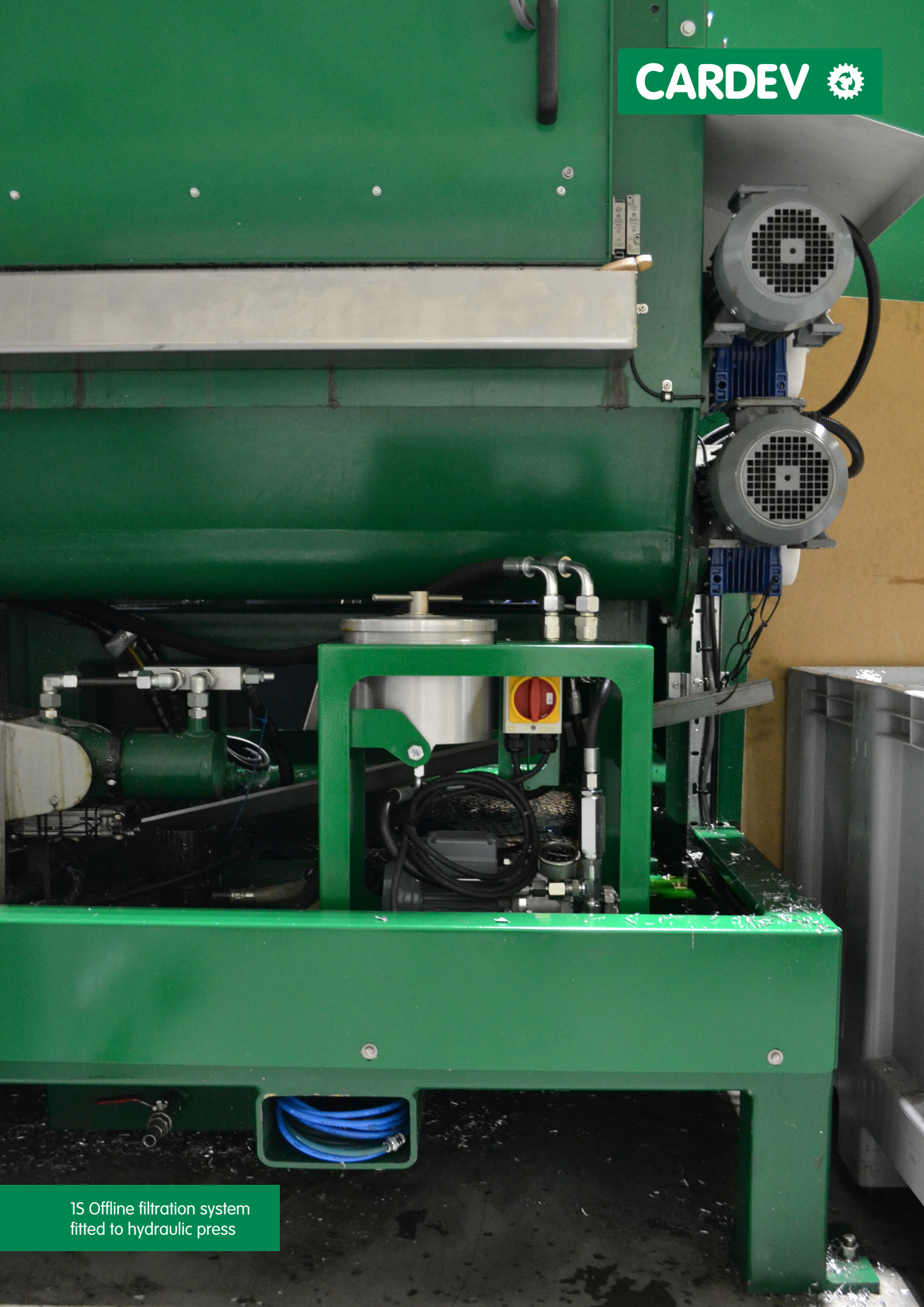
FOR SYSTEMS UP TO 5000 LTRS
TYPICAL FLOW RATE 500 LPH
VOLTAGE OPTIONS 110V 230V 400V

2S-24V
Static Offline
Filtration System

Temporary or permanent installation on plant with 12/24V DC power. Offline installation taking feed and return from Hydraulic reservoir / fuel tank.

FOR SYSTEMS UP TO 1500 LTRS
TYPICAL FLOW RATE 220 LPH
VOLTAGE OPTIONS 24V DC

See page 22 for more information



1S Offline filtration system fitted to hydraulic press

CARDEV Filter Elements

To ensure maximum performance from your CARDEV offline and by-pass filtration equipment, always observe the advice on filter element changes in your user guide. The CARDEV SDFC, CARDEV HDFC-N and CARDEV LDFC are designed to work with oil-based fluids, removing moisture and particles, leaving oil cleaner than new*. The CARDEV SDFC-P is designed to work with water-based fluids, removing particles and foreign oil content.

CARDEV SDFC
Depth Filter Element

The CARDEV SDFC filter element can be used on all oil-based fluids such as hydraulic, engine, gearbox oils and diesel fuels.

CARDEV SDFC-P
Polypropylene Depth Filter Element

The CARDEV SDFC-P filter element can be used on all water based mineral, semi-synthetic and synthetic coolants/lubricants such as metal working fluids.

CARDEV LDFC
Depth Filter Element

The CARDEV LDFC filter element can be used on all oil-based fluids such as hydraulic, engine, gearbox oils and diesel fuels.

CARDEV HDFC-N
Depth Filter Element

The CARDEV HDFC-N filter element can be used on all oil-based fluids such as hydraulic, engine, gearbox oils and diesel fuels.

Tramp oil contamination removed

Water contamination removed

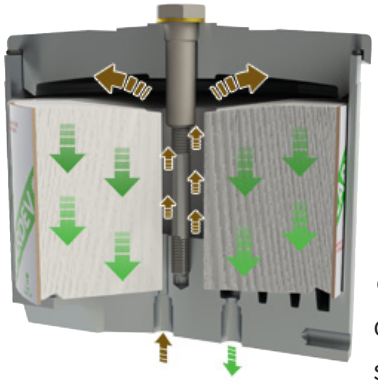
Particle contamination removed

SDFC Performance

The CARDEV SDFC is a depth filter element made of long fibre cellulose, with a full diameter polyester protection disc. The element can be used on all oil-based fluids such as hydraulic, engine, gearbox oils and diesel fuels.

The filter element acts by absorbing water and adsorbing particles in a continuous recycling process. The long cellulose fibres absorb water (both free and dissolved) formed either through the combustion process or by condensation / contamination. Larger oil molecules are forced to pass between the tight windings of the element.

Free and dissolved water is removed down to < 50ppm (0.005%), inhibiting production of acids (hydrolysis).



As the oil passes through the element, minute particles of carbon, wear metals and silicon are extracted from the oil by adhering to the many surfaces of the filter.

By continuously removing water and particle contamination the ageing effect of such catalysts is minimised. This enables the oil life to be extended whilst maintaining the oil within the specification laid down by the OEM.

Oil life extension is dependent on the operating conditions and maintenance programme applicable to the machine.

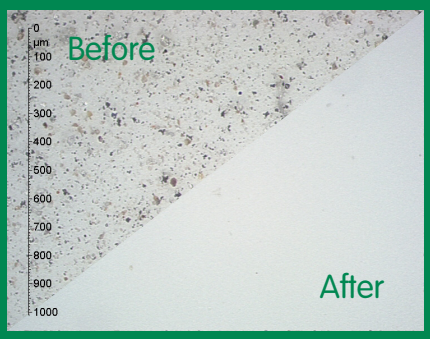
We recommend regular oil analysis during extended drain intervals.

The CARDEV SDFC has a 4 micron absolute rating (ISO 16889, 1999). In use particles of 1 micron or less in size are removed, achieving oil cleanliness levels which are "better than new" – as low as 13/11/8 (ISO 4406); Class 2 (NAS 1638).

IMPORTANT NOTE - ADDITIVES

In modern lubricants additives are dissolved in the base oil. Additive levels will therefore not be reduced by the CARDEV filter element. By removing contaminants that could otherwise act as catalysts, additive and oil life is extended.

Particles Removed



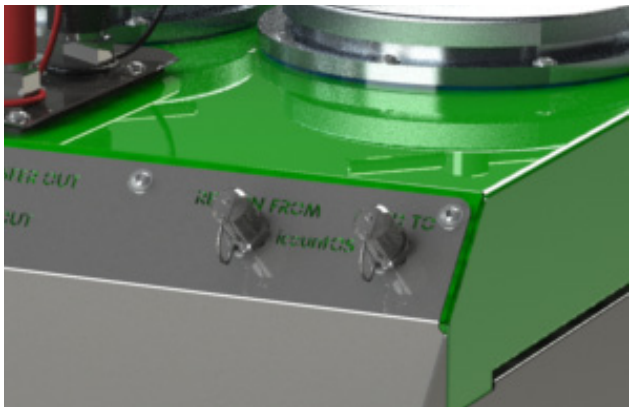
Oil cleanliness maintained at better than new levels
Down to 13/11/8 (ISO 4406: 1999) - Class 2 (NAS 1638)

Water Removed

Removes free and dissolved water down to < 50 ppm (0.005%)

Using A Portable Particle Counter With Offline Filtration

Each system is fitted with dedicated connection points to allow easy use of the ETL ConMon iCount Oil Sampler (IOS). The IOS is capable of measuring both moisture content and cleanliness class (ISO4406:1999) and data logging thousands of results.



icountOS
Portable Particle Detector

The icountOS (IOS) is an innovative solution to the challenge of measuring the quality of hydraulic oils and hydrocarbon fuels in many different applications: from renewable energy, marine and offshore, to manufacturing, mobile, agriculture, military and aerospace.

Compact, lightweight and robust, the truly portable IOS makes field analysis simple, quick and easy.

Able to sample directly from a hydraulic reservoir, barrel, vehicle fuel tank or from a high pressure online hydraulic system with the addition of a pressure reducing adaptor; the IOS is undoubtedly the most adaptable service tool available today.

The system is completely self contained, with laser detection particle counter, battery and pump plus memory with web page generator for data download storage onto any PC or laptop - combined into a single unit.

The IOS uses proven laser detection technology, which delivers precise, repeatable and consistent results, for real time detection of both particulates and moisture, down to 4 microns in size.

Just as importantly, the IOS has been developed to offer a wealth of features, combined with simplicity and ease of use, at a cost that is far lower than competing systems, and which fits within most maintenance budgets.

icountOS - WiFi
Wireless Portable Particle Detector

The icountOS (IOS) wireless is an innovative solution to the challenge of measuring the quality of hydraulic oils and hydrocarbon fuels in many different applications: from renewable energy, marine and offshore, to manufacturing, mobile, agriculture, military and aerospace.

The wifi utilizes the latest technology and can be used with devices such as, iPads, smart phones and laptops, in fact any device able to connect to wifi with a browser.

Now the IOS can be controlled from your phone; switch on, switch off and save data directly via the app on your device.

Coolant Handling Solutions

A comprehensive range of equipment to help manage your metalworking fluids - from mixing, cleaning and recycling, we can help you.

CARDEV coolant handling systems are used extensively by major oil companies as an integral part of their TFM (Total Fluid Management) services.

- Minimise coolant costs
- Reduce the environmental impact of your activities
- Increase tool life
- Improve health and safety issues

Coolant Mixing

Accurate concentration, strong emulsions and fast delivery; locally or through distribution pipework.

Coolant Transfer

Safe and efficient movement of fluids around the workshop.

Coolant Recycling

Extend coolant life, reduce disposal volumes & coolant costs, reduce H&S risks.

CARDEV

CARDEV CV3
Industrial Vacuum Cleaner

Coolant Mixing

Accurate and consistent coolant mixing is critical to ensure the performance and longevity of your metalworking fluid. Our SmartMix mixing stations can distribute over a pipework system to cover an entire production facility, or locally via the dispensing gun.

SmartMix 300 / 1000

Coolant Mixing Stations capable of delivering via distribution pipework systems or locally via dispensing gun. Fast delivery, accurate mixing.

Features

- 300 or 1000 litre stainless steel water tank
- Dispensing rate: 90 litres per minute
- Standard concentration range 1-12%. (higher concentrations available)
- 4 concentration pre-sets
- Low soluble oil / low water shut-off with warning light

SmartMix 300

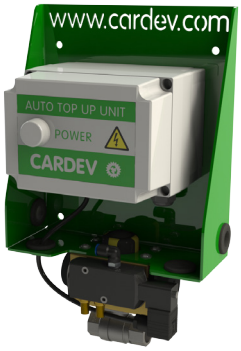
SmartMix 1000

Coolant Transfer

All too often, moving large volumes of fluid around a facility is still left to brute force and a collection of inappropriate containers! As well as being a health and safety liability this is also damaging to your efficiency. Our coolant transfer units make the movement of fluid quick, safe and convenient.

Auto Top Up - ATU

Automatic coolant top up unit.



Features

- Delivers maximum benefit when used in conjunction with CARDEV coolant mixing equipment
- Unattended operation
- Flexible installation to suit any machine

Coolant Bowser - CB-200

Mobile coolant bowser with air diaphragm pump for rapid delivery.

Features

- Powerful double diaphragm pump – air operated
- Low rolling resistance swivel castors with foot brake
- Robust construction
- Simple operation

Fluid Transfer Unit – FTU

Transfer pump with bag filter. Ideal for filling / draining sumps.

Features

- Self-priming air diaphragm pump
- Prefilter – range of reusable filter bags available
- Rugged construction
- Simple operation

CV3 Industrial Vacuum Cleaner

The CARDEV Industrial Vacuum Cleaner (CV3) is designed to remove coolant, swarf and oil from machine tool sumps. Particle contamination is removed and filtered coolant is returned for re-use.

Coolant Recycling

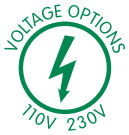
The best way to reduce coolant costs is to extend coolant life. By controlling tramp oil and bacteria your coolant will last longer, your operators will be happier and your downtime will be reduced. Disposal costs and purchase of new product will be minimised.

T700

Portable unit, removes tramp oil using coalescing technology. Stainless steel construction, built in alarms allow for unattended operation.

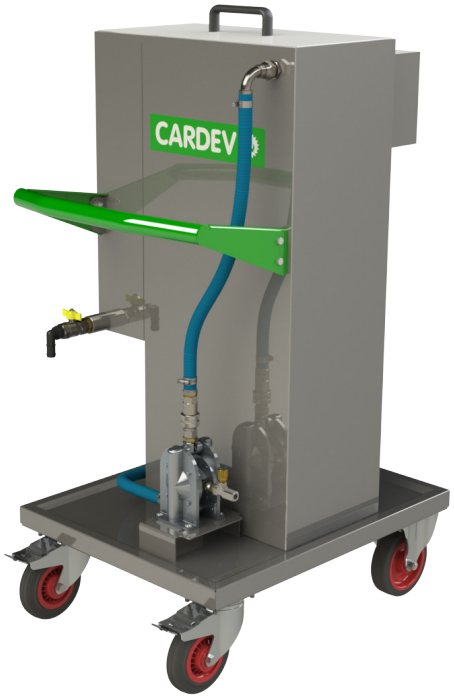
Features

- Stainless steel construction
- Portable
- Available in 110V, 230V
- Reusable bag filter
- Minimal servicing required - no consumable parts
- Unattended operation
- Easy to use – minimal setup and no "levelling" required
- Universal application – works on any coolant sump



T700 - AIR

An air powered version of our popular T700 mobile tramp oil removal unit. Stainless steel construction.



Features

- Powered by compressed air
- Stainless steel construction
- Portable
- Reusable bag filter
- Minimal servicing required – no consumable parts
- Unattended operation
- Easy to use – minimal setup and no "levelling" required
- Universal application – works on any coolant sump

"We are recovering and recycling in excess of 10,000 litres of coolant per week, which in turn is reducing our consumption of concentrate by 500 litres a week, delivering a significant cost saving."

Luke Butler
Senior Weston Aerospace

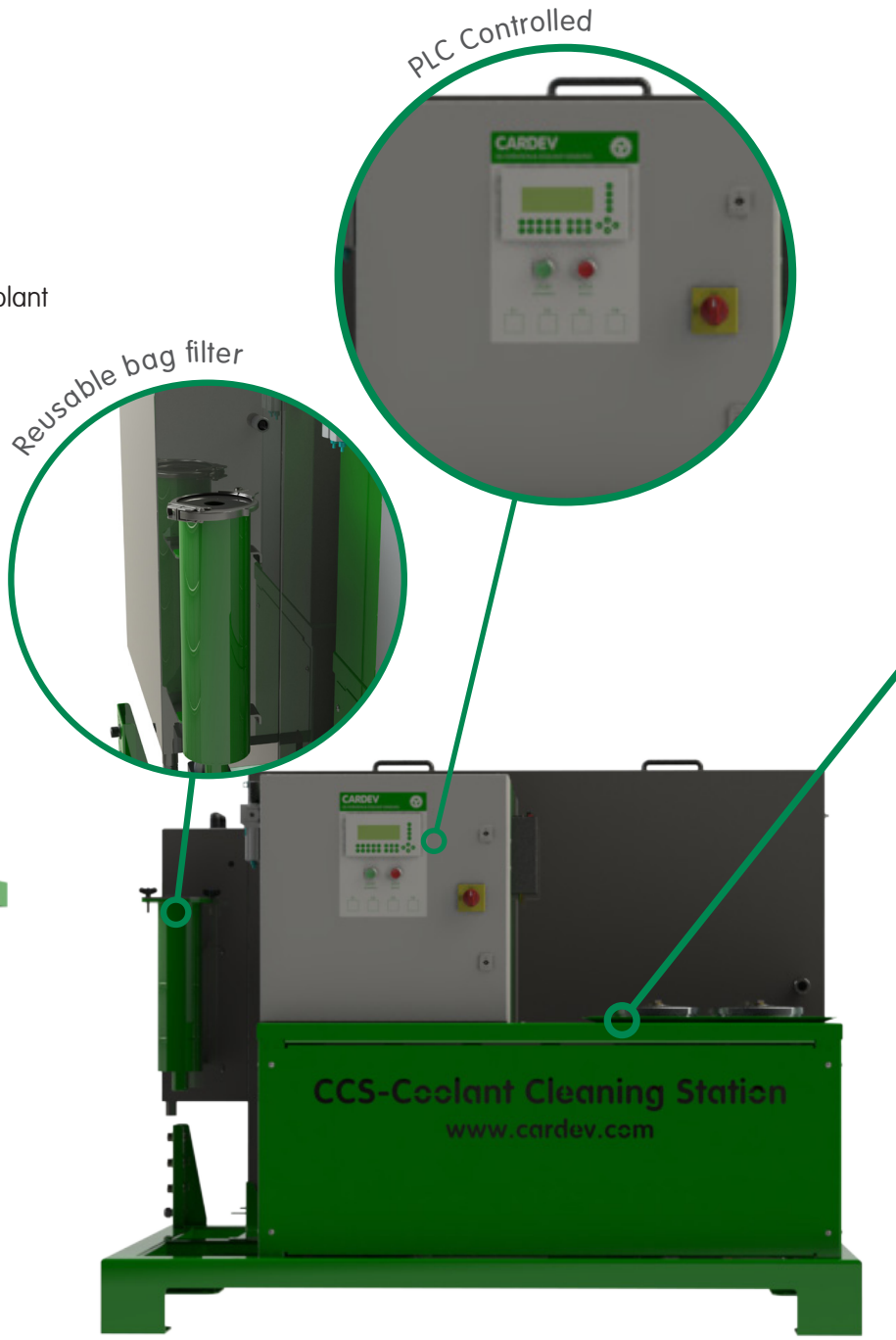
CCS - Senior Weston Aerospace

CCS
Coolant Cleaning Recycling Station

Central coolant recycling station capable of treating 500 liters of used coolant every 3 to 4 hours.

Features

- Recycles used coolant
- Significantly extends coolant life
- Removes particles and tramp oil
- Controls bacterial growth
- Provides a constant supply of recycled coolant
- Coolant costs (purchase and disposal) are significantly reduced
- Reduced carbon footprint
- Improved operator conditions - reduced oil mist, reduced bacterial growth, coolant odour reduced
- Increased productivity and profitability

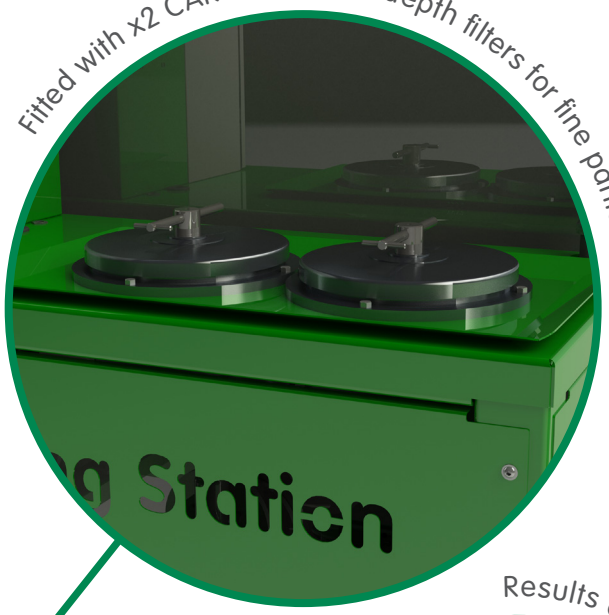


1.

Coolant from the workshop is collected in the CCS used coolant tank as sumps are emptied, or as a result of swarf handling / briquetting.

2.

Used coolant is transferred through a bag filter to the CCS process tank, where tramp oil is coalesced and removed. Ozone gas is infused to control bacteria levels.



3.

Recycled coolant is transferred through 2 x CARDEV SDFC-P depth filter elements, leaving the coolant ultra clean and in the CCS Recycled coolant tank, ready for use. This process will continue automatically under control of the PLC, assuming there is space in the recycled coolant tank and used coolant ready to recycle. Each 500 litre batch takes 4 hours to process.

4.

The CCS can be connected to a distribution pipework system as well as supplying coolant locally via a dispensing hose and gun. By integrating a CARDEV SmartMix coolant mixing station, the CCS can become the sole source of coolant in the workshop; the SmartMix will only mix new soluble product when there is not sufficient recycled coolant to meet demand.

Thank you for taking the time to review this brochure.
Other products from ETL Fluid Experts include:

CARDEV

OIL FILTRATION & COOLANT HANDLING

MOTOREX®

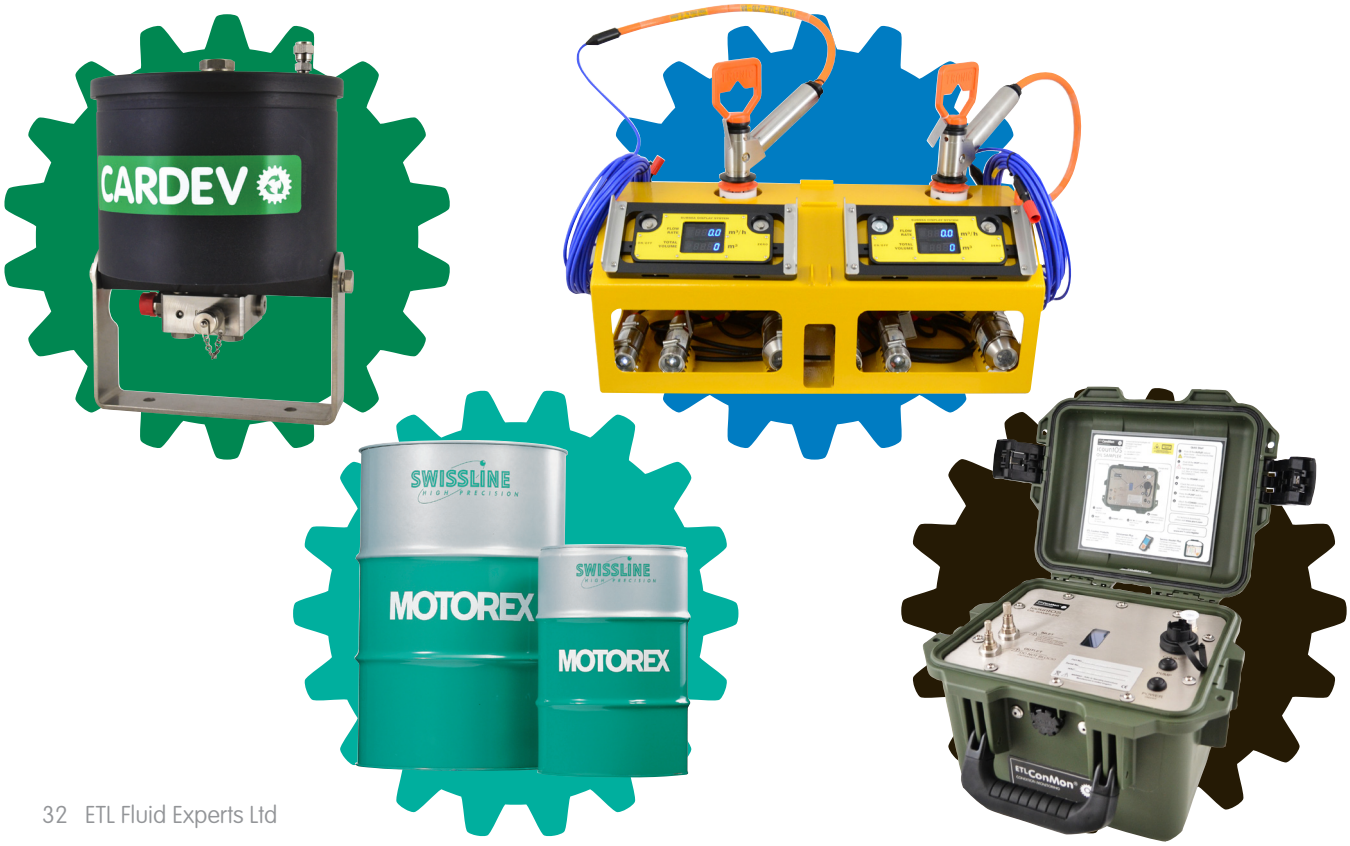
Oil of Switzerland

ETLFlow

FLOW METERS & INSTRUMENTATION

ETLConMon

CONDITION MONITORING

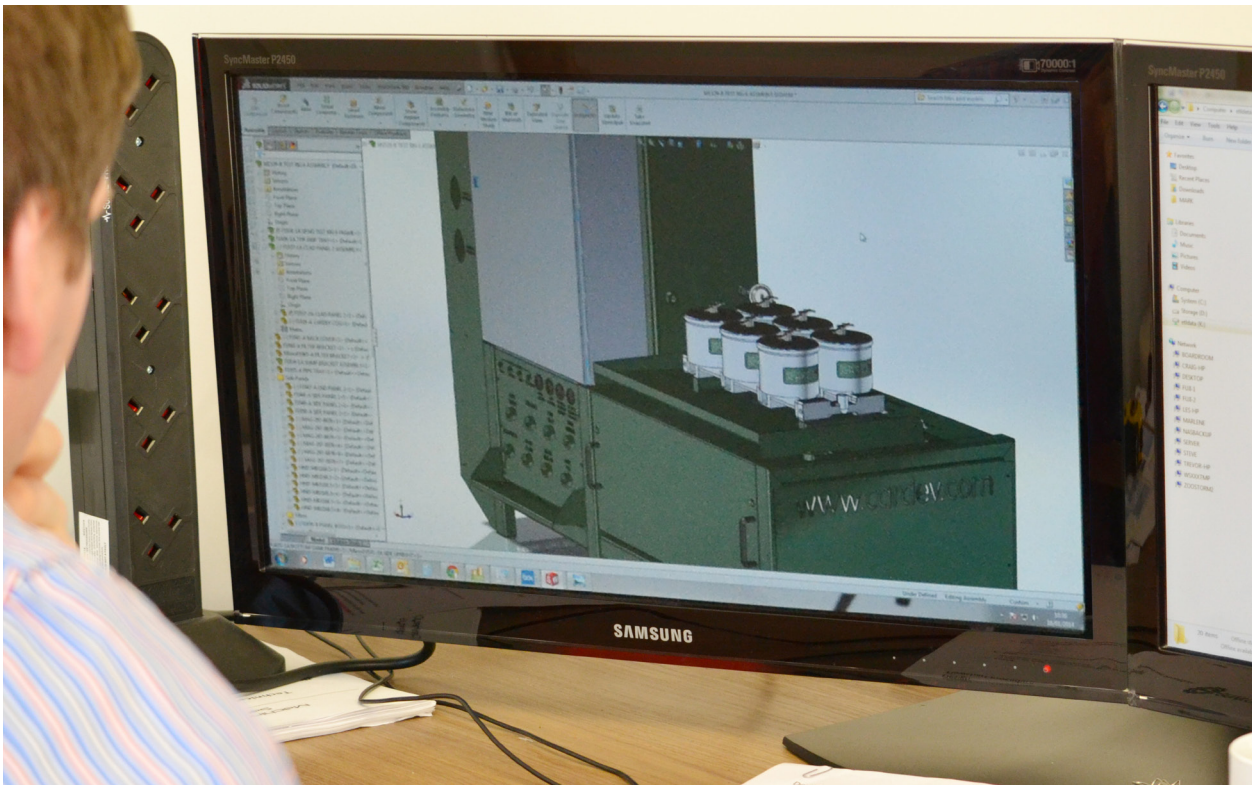



SmartMix
CARDEV
START
STOP
SWISSLINE
MOTOREX

Bespoke Design Service

We design and manufacture all of our equipment in-house, providing flexibility to meet your individual needs.

From OEM branding and special colour schemes to give the customer just what they want, through to large and complex one-off turnkey systems, we have the experience and capability to deliver outstanding bespoke equipment at very competitive rates. ETL Fluid Experts is a preferred supplier to several of the world's most prestigious OEMs for production line technology.



Critical Port Flushing Station

Hydraulic Motor Testing Station

Subsea Display System


environmental
TECHNOLOGIES

ETL FluidExperts

ETL Fluid Experts Ltd
Environmental Technologies Group
Grimbald Crag Road Knaresborough North Yorkshire HG5 8PY
T. +44 (0)1423 522911 F. +44 (0)1423 530043 E. sales@etlfe.com

www.etlfluidexperts.com