



Bypass Oil cleaners



- 1. Cost saving**
- 2. Improving production reliability**
- 3. Environmental responsibility**



3 rules that go hand-in-hand with Triple R.

Triple R - the original and still the best after 40 years continuous evolution.

Triple R began life by developing a unique bypass filter for engine oil in trucks and other vehicles. This revolutionary concept boosted engine oil lifespan to more than 100.000 km.

From inception, our mission has been to push back the boundaries through innovation and we soon extended the Triple R filter concept across a wide spectrum industries. Triple R oil cleaners were the first to allow 'total cleaning' of industrial hydraulic oil and lube oil, guaranteeing oil purity by removing everything from solid particles to water to sludge and oil oxidation residues.

Over the last 40 years we have continued to invest significantly in R&D, developing a wide range of new products to augment our initial oil cleaning systems.

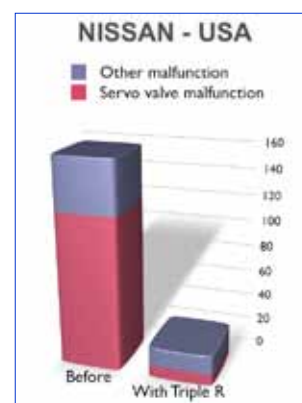
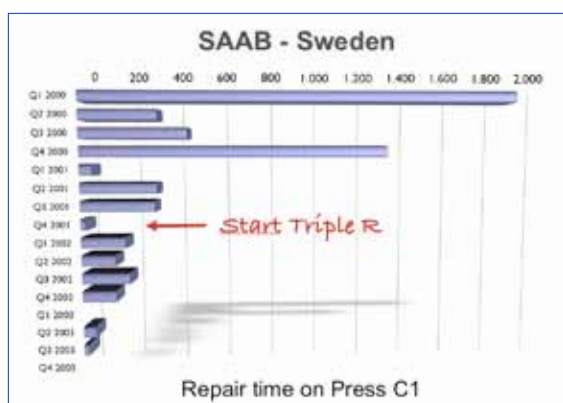
That's why no other company has been able to match Triple R for consistency and economy.

From water and oil separators to centrifuges and vacuum systems, our range of products means that Triple R can deal successfully with just about every modern industrial contamination issue.

Increased production reliability = increased production throughput

Dirty oil costs so much more than clean... .

It's a two-way equation. Increased machine reliability means increased throughput and consistent quality, while contaminated oils can damage more than throughput. Thanks to Triple R, the benefits of modern filtration can be delivered with a rapid return on investment - usually in a matter of weeks.



1. Dirty oil

Every hydraulic and lubrication system has a filter build in. Most of the time these filters are 3, 5 or 10 micron filters. So how comes the oil still gets dirty after a while?

Inline filters has to deal with high flow, high pressure and many flow and pressure pulsations. As a result, the promised micron rating of a full-flow filter is rarely achieved in practice.

But at Triple R we guarantee clean oil! And for Triple R cleaning oil is not just removing solid particles, but also removing water, sludge and oil oxidation residues, all-in-one.

Check out how our TR, BU and SE-series can solve all your contamination issues.

2. High dirt load

One of the biggest challenges in industry is to deal with fluids containing a high load of contamination.

Normal filters will block very quickly, a high cost to run your production.

At Triple R we have several solutions to overcome frequent filter changes.

1. SS and SU-series: cost efficient high capacity filter systems with a high dirt absorption capacity.
2. Centrifuges: Triple R centrifuges are a one time investment and remove particles down to 5 micron.
3. Backwashing filters: Triple R backwashing filters are selfcleaning systems from 10-100 micron; no consumables.

3. Water contamination

Many industries suffer from continuous water contamination; marine applications, metal industry, paper industry, windmill gearboxes and many other applications.

Removing water from oil has always been a big challenge, specially from a cost perspective.

Triple R offers you 3 solutions that can solve your water problems.

1. WE100 filter element. The WE100 filter element acts as a sponge and removes water down to less than 90 ppm in one single pass.
2. WS-series. Triple R water separators are highly effective in removing free water from oil.
3. Vacuum dehydrating systems. Triple R's TRVS-series are very efficient and very fast in removing high concentrations of water from oil.



Protecting the environment.

Saving resources, while cutting costs.

In industry, saving resources, while cutting costs, is paramount. We are proud of our contribution: continually developing advanced filtration & separation technology to do just that. Therefore all our products are aimed to provide solutions that reflect the essentials: to Reduce, to Reuse and to Recycle. Our brand says it all - Triple R.

The Triple R philosophy is a winner on so many fronts because ultimately, Reducing, Reusing and Recycling go hand-in-hand with:

- Optimizing production expenditures and delivering cost savings.
- Improving machine reliability and increasing production capacity.
- Contributing to environmental conservation.

01 Aviation



02 Hydraulic machinery



03 Electric power



04 Automobile



05 Steel & Iron



06 Railway



07 Paper mill



08 Construction



09 Generators



10 Marine














11 Transportation



02+ Petrochemical



	Application	Fluid type	Purpose & merits	Triple R
	Aviation Service lifter Flight simulators	Hydraulic oil Phosphate ether Skydrol	<ul style="list-style-type: none"> Prevent servo valve failure. Extend oil life and reduce waste oil, contribute to ISO 14000 	BU & SE-series OSCA-series
	Hydraulic machines Hydraulic systems Machine tools CNC machines, grinders	Hydraulic oil Lubricating oil Water glycol Coolant Washing fluid	<ul style="list-style-type: none"> Reduce breakdown and failure of hydraulic systems. Extend oil life and reduce waste oil, contribute to ISO 14000 	BU & SE-series WS-series OSCA-series Centrifuge Magnet series
	Electric power Dam gate system Generator turbine - gearbox Insulating oil	Hydraulic oil Turbine oil Insulating oil	<ul style="list-style-type: none"> Remove the causes for oil oxidation and deterioration. Prevent valve failure. Extend oil life and reduce waste oil, contribute to ISO 14000 	OSCA-series Vacuum system
	Automobile industry Press, stamping, tester line Machine tools, special machines Diecasting machines	Hydraulic oil Lubricating oil Coolant Torque converter oil	<ul style="list-style-type: none"> Control NAS grade. Prevent hydraulic system failure. Extend oil life and reduce waste oil, contribute to ISO 14000 	BU & SE-series OSCA-series Centrifuges Magnet series PREDATOR
	Steel & Iron mills Continuous casting Rolling mills Special machines	Hydraulic oil Lubricating oil Water glycol Coolant Washing fluid	<ul style="list-style-type: none"> Prevent breakdowns of automatic lines and quality damage due to hydraulic trouble. Extend oil life and reduce waste oil, contribute to ISO 14000 	OSCA-series Centrifuges WS-series Magnets series PREDATOR
	Railway Hydraulic system Car assembling Wheel press fitting	Hydraulic oil Lubricating oil Washing fluid	<ul style="list-style-type: none"> Reduce short term breakdowns and downtime. Extend oil life and reduce waste oil, contribute to ISO 14000 	BU-series OSCA-series
	Paper mills Hydraulic system Driers	Hydraulic oil Lubricating oil Water glycol	<ul style="list-style-type: none"> Prevent breakdowns of automatic lines and quality damage due to hydraulic trouble. Remove moisture. Extend oil life and reduce waste oil, contribute to ISO 14000 	OSCA-series WS-series Vacuum system
	Construction machines Hydraulic system for construction machines, forrest, container lift, drilling & tunnel excavators	Hydraulic oil Lubricating oil	<ul style="list-style-type: none"> Remove contaminants entering from outside and stabilize operation of hydraulic equipment. Extend oil life and reduce waste oil, contribute to ISO 14000 	BU-series TR-series
	Generators Diesel generators Turbine generators Wind power generators	Engine oil Fuel oil (light, heavy oil) Lubricating oil Turbine oil	<ul style="list-style-type: none"> Maintain stable operation by cleaning fuel & lubricating oil. Extend oil life. 	OSCA-series GF-series (combined model) TR-series
	Marine Main engines Generators Hydraulic systems	Engine oil Fuel oil (light, heavy oil) Lubricating oil	<ul style="list-style-type: none"> Maintain stable operation by cleaning fuel & lubricating oil. Prevent hydraulic problems. Extend oil life and reduce waste oil 	BU & SE-series SS-series GF-series (combined model)
	Transportation Engines	Engine oil	<ul style="list-style-type: none"> Extend the life of the engine oil. Avoid sludge build up and engine breakdown when using bio fuel. 	TR-series



ELEMENT series

01 02 03 04 05 06 07 08 09 10 11



Features:

- High performance micro filter element range.
- A unique 3-stage build, combining axial filtration with cellulose filter media assures removal of:
 - Solid particles
 - Water
 - Sludge and oxidation products
- Applicable for hydraulic oil, lube oil (up to 400 cSt), fuel oil, water glycol, phosphate ether, as water remover and water absorber.
- All elements are Multipass tested; available micron ratings: $\beta_2 > 400$, $\beta_3 > 75$, $\beta_5 > 75$, $\beta_{10} > 75$
- 6 sizes per filter type to meet every specific requirement and oil volume.
- See our Element series brochures for detailed information.

BU series

01 02 04 06 08 10



Features:

- Very compact build bypass oil cleaners, filter housings are made of die-casted aluminium or stainless steel.
- Effectively removes all the particles that are usually very difficult to remove with conventional filters.
- Designed for hydraulic systems up to 450 bar system pressure.
- Connects directly to the high pressure line.
- With built in pressure and flow control valve, safety check valve and pressure gauge to check element change.
- Available for systems with an oil content up to 3.000 litres.
- Low running cost, easy maintenance.
- Also available for water glycol fluids with coated housing and WG element.

SE • SS series

01 02 04 10



Features:

- Compact build off-line bypass oil cleaners, filter housings are made of die-casted aluminium.
- Built around a very compact power pack, they can easily be connected to the oil reservoir.
- The standard version comes with a metal suction strainer and a Moeller on/off switch box with thermo-protection. All units have a mounting bracket for quick installation and a pressure gauge to check the element contamination level.
- Effectively removes all the particles that are usually very difficult to remove with conventional filters.
- Standard units are suitable for systems with an oil tank capacity up to 6.000 litres.
- Low running cost, easy maintenance.
- Also available for water glycol fluids with coated housing and WG element.



Features:

- Compact build off-line bypass oil cleaners, made of die-casted aluminium, for engines and lubrication systems (or for all other oil systems with a pressure of < 6 bar).
- Installed on engines they extend the oil life up to 150.000 km.
- An absolute necessity for engines running on bio-fuel. It avoids oxidation and sludge build-up created by the mix of the bio-fuel with the engine oil.
- The individual housings can be used for assembling into bigger filter rigs (see OSCA-series).



Features:

- Compact build stainless steel housings, containing 1 to 6 filter elements.
- The series includes washable suction filters, pre-filter housings and the micro depth filter housings.
- The housings are meant to be used in combination with the BU-, SE- and OSCA-series.
- Ideal for cleaning water based fluids (like water glycol) or for water removal filter systems.



Features:

- Compact build carbon steel housings, containing 2, 3, 4, 5 or 6 filter elements.
- The housings have a strong lid and can handle pressure up to 15 bar system pressure.
- Available in 4 sizes and can be fitted with all the different Triple R element series.
- Ideal for high flow filter rigs. Flow rates up to 60 l/m (3.600 l/hour).
- Typical filter housings for marine applications.
- In combination with the X-series elements suitable for high viscosity up to 600 cSt.



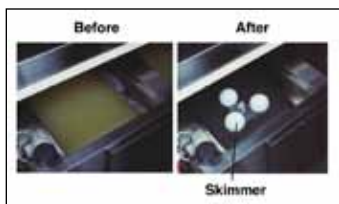
Features:

- Off-line bypass oil cleaners using the AL100 and combined with a suction filter, pre-filters and SU housings.
- Ideal for:
 - Maintenance service activities (rental).
 - Large oil volumes.
- All systems are fully equipped and come with a washable metal suction filter, pressure control gauges, a control panel with on/off switch and a drain function.
- Standard units are suitable for systems with an oil tank capacity up to 7.000 litres.
- Optional equipment: timer, automatic drain function, Quicktoron air removal.



Features:

- Off-line bypass oil cleaners for high flow rates. Based on the SS-series filter housings.
- Ideal for:
 - Maintenance service activities (rental).
 - Very large oil volumes up to 50.000 litres
 - High viscosity oil
- All systems are fully equipped and come with a washable metal suction filter, pressure control gauges, a control panel with on/off switch and a drain function.
- Standard units have a flow range from 6 lit/min up to >60 lit/min, and can be suitable for very large oil volumes (>50.000 litres).
- Optional equipment: timer, automatic drain function, Quicktoron air removal.



Features:

- Off-line oil removing device separating oil and capturing contaminants simultaneously.
- Based on our 2-stage coalescent oil removal principle, it collects all the floating oil from water based fluids.
- Typical use for removing oil from washing fluids and compressor drainage.
- The units are equipped with automatic oil sensor and oil drain function.
- Maintains the NAS grade of the fluid.
- Reduces the amount of waste fluid dramatically.



Features:

- Off-line water removing device separating the water and capturing contaminants simultaneously.
- Based on our 2-stage coalescent water removal principle.
- The units have a plexiglass container for a visual check of the water separation.
- The water can easily be drained from the tap.



The water will settle at the bottom and can be tapped off easily.



Features:

- Very fast and highly effective water removing device, meant for high duty applications.
- Removes water, moisture and air bubbles:
 - Dissolved water: 80%
 - Free water: 100%
 - Air bubbles: 100%
- Low running cost, only few disposables.
- Dramatically reduces the waste oil & treatment cost.



Features:

- Quicktron is a device to remove air bubbles from liquids.
- It's based on the cyclone principle, and very efficiently eliminates all the fine air bubbles trapped and mixed inside the fluid.
- It helps to retain the filtration performance of filter elements. Most air bubbles have a larger sizes than solid contaminants. When these air bubbles go through the filter elements, they create big channels, allowing contaminants to pass through without being captured, and dropping filtration performance of the oil filters.
- Quicktron devices are very compact, easy to install, and offer a very economical solution to remove air bubbles quickly and efficiently.
- Quicktron benefits: extends oil life, improves machine reliability and component life, allows the use of smaller oil reservoirs. Improves coolers efficiency, power transmission and saves on energy costs.



Features:

- High capacity solid and sludge removal, for water based fluids and oil based fluids up to max 20 cSt.
- Highly efficient centrifuges with up to 3000 RPM, also removes micron sized particles.
- Available with manual operation or full automatic with touch screen control panel.
- Open conic bowl concept allows easy cleaning and removal of the separated dirt.
- Flow rates up to 200 lit/min.
- Easy system to separate fine particles such as aluminium and steel dust, carbon, glass dust, stone dust and mud.
- No consumables, one-time investment.
- Reduces oil consumption and prevents deterioration of the fluid. Additives will not be separated.



Features:

- Combined system: centrifuge + Triple R oil cleaner.
- Suitable for highly contaminated fluids. Removes the high dirt load in the centrifuge and then purifies and cleans the fluid in the SS filter housings.
- Ideal to purify fuel oil and lubricants for large diesel engines.



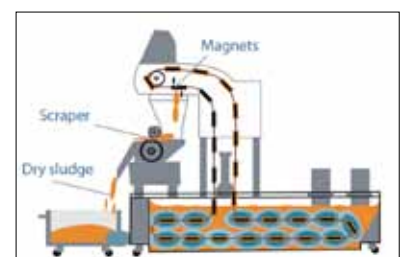
CUBE-system:

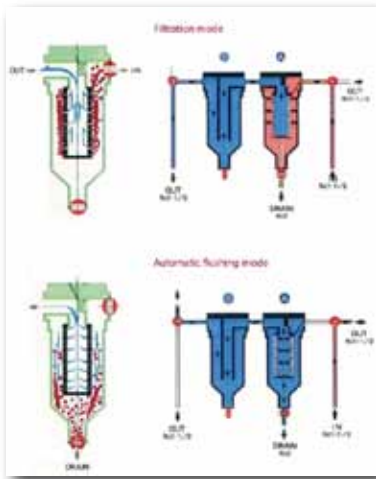
*TRS-30 centrifuge
+
SU200 micro-filter housing*



Features:

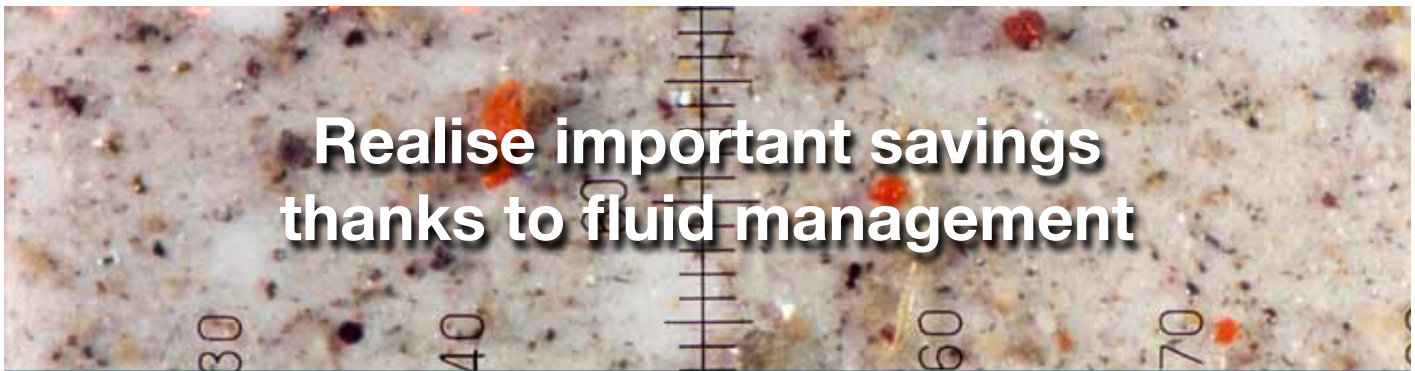
- Removes magnetic material from water and oil based fluids.
- Typical applications: grinders, rolling machines, shaving machines.
- Reduces the running cost and maintenance cost.
- Integrates to central treatment, or can be applied individually.
- Flexible depending on the space and machine conditions.





Features:

- Full automatic and high capacity solid particle removal, for water based fluids and oil based fluids.
- Perfect to apply on higher viscosity oil.
- Filter cartridge available from 10 to 100 micron.
- 2 models with maximum flow rates of 100 lit/min or up to 200 lit/min.
- Easy system to separate fine particles such as aluminium and steel dust, carbon, glass dust, stone dust and mud.
- Reduces oil consumption and prevents deterioration of the fluid. Additives will not be separated.
- No consumables, low running cost, one-time investment.



Realise important savings thanks to fluid management

Typical example	No. of machines	20	
	Operating hours / year	5.000 h	
	Machine costs / year	40 €	
	Current availability % ~ Downtime %	90,00% ~ 10,00%	
DOWNTIME / h		10.000 h	
Downtime costs	Downtime caused by hydraulic faults = 35%	35% of 10.000 h =	3.500 h
	of which 80% caused by contaminated fluid	80% of 3.500 h =	2.800 h
	➤ Fluid-related downtime	2.800 h x 40 € =	112.000 €
	➤ Labour costs for repair	2.800 h x 35 € =	98.000 €
	Total of downtime costs	112.000 € + 84.000 € =	210.000
Savings	Fluid management can prevent 90% of the fluid-related costs	Remains: 2.800 h -90% =	280 h
	➤ Remaining downtime after fluid management	(280 h x 40 €) + (280 h x 35 €) =	21.000
	Cost savings	210.000 € - 21.000 € =	189.000
Increased machine availability to 93,08%!		10.000 h - (2800 h + 280 h) = 6.920 h	93,08% ~ 6,92%

TRIPLE R WORLDWIDE

Asia, Oceania:

TRIPLE R Overseas Corp. Ltd.

5-11-7 Towa 5-Chome Adachi-Ku

Tokyo 120-0003 • **Japan**

Tel. +81 3 3620 3232 • Fax +81 3 3620 0005

e-mail: info@triple-r.co.jp • www.triple-r.co.jp

Europe, Africa, Middle East:

TRIPLE R EUROPE N.V.

Fotografelaan 43

2610 Antwerpen-Wilrijk • **Belgium**

Tel. +32-3-825 4647 • Fax +32-3-825 5924

e-mail: info@triple-r-europe.com • www.triple-r-europe.com

North & South America, Australia:

TRIPLE R USA

040/60 Industrial Parkway

Cheektowaga, NY 14120 • **USA**

Tel. +1 (800) 668 8671 • Fax +1 (416) 413 9387

e-mail: info@triple-rrr.com • www.triple-rrr.com

