

# Aqua Clean solutions for rolling stock maintenance operations



# Aqua clean solutions

Cleaners engineered specifically for railway maintenance operations

- bogie cleaners
- wheelset cleaners
- bearing cleaners
- small parts cleaners
- traction motor cleaning and drying
- See video of Aqua Clean cleaning process from Youtube: [Aqua Clean Ltd ACV animation](#)



# REFERENCES

# Aqua Clean references in rail segment

- ✓ Adana LRTS, Turkey
- ✓ Alstom, Israel
- ✓ Bangkok Purple and red line, Thailand
- ✓ Beijing Subway, China
- ✓ Cairo metroline 3 depot, Egypt
- ✓ Cairo metroline 4 depot, Egypt
- ✓ Alexandria - Abu Qir rail depot, Cairo Egypt
- ✓ Depok, Indonesia
- ✓ DSB, Denmark
- ✓ Dubai Metro, U.A.E
- ✓ ERMAS Cairo, Egypt
- ✓ Euskotren, Vitoria, Spain
- ✓ EuroMaint, Sweden
- ✓ HCMC Line 1, Vietnam
- ✓ HTM Rail Fleet, Den Haag
- ✓ Israel Railways
- ✓ LTA, Singapore
- ✓ Lucchini, Italy
- ✓ Lucchini, Sweden
- ✓ Metropolitano De Lisboa, Portugal
- ✓ MTR, HongKong
- ✓ MTR, Stockholm
- ✓ Renfe, Spain
- ✓ SweMaint, Sweden
- ✓ SBB, Switzerland
- ✓ TMB Barcelona, Spain
- ✓ Tashkent rail way, Uzbekistan
- ✓ VR Pitäjämäki, Finland
- ✓ VR Fleet Care, Finland
- ✓ ÖBB, Austria

# Bogie cleaners

Bogie cleaners for 2- or 3-axle bogies

- Cleaner can be installed part of customer tracks or equipped with load carrier
- With load carrier can clean smaller parts with same machine
- Typically 2-stage cleaning process
- Wide range accessories which increase the productivity
- See the bogie cleaner [video](#) in Youtube

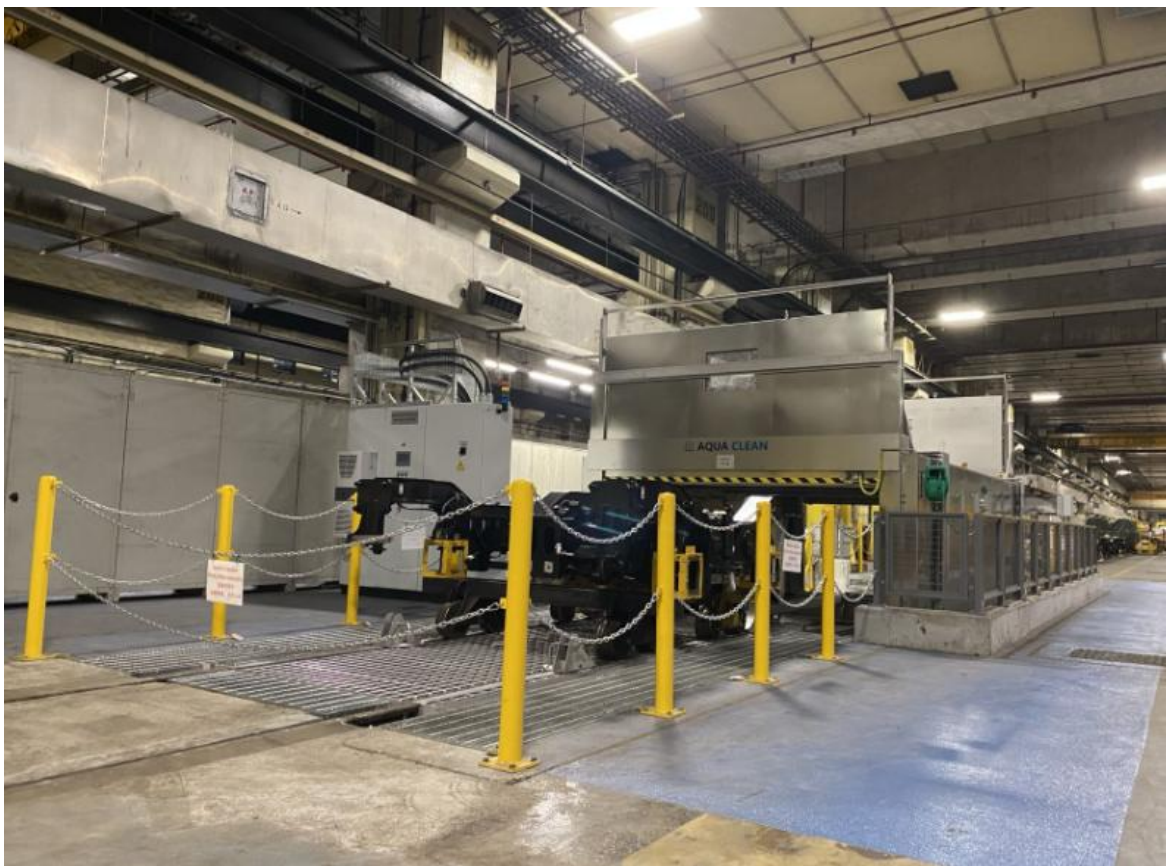


With rails and load carriage



With rails

# Bogie cleaner



Hong Kong depot



Cairo depot

# Bogie cleaner



Singapore depot

# Bogie cleaner



Before cleaning



After cleaning

# Bogie cleaner



Before cleaning



After cleaning

# Bogie cleaner

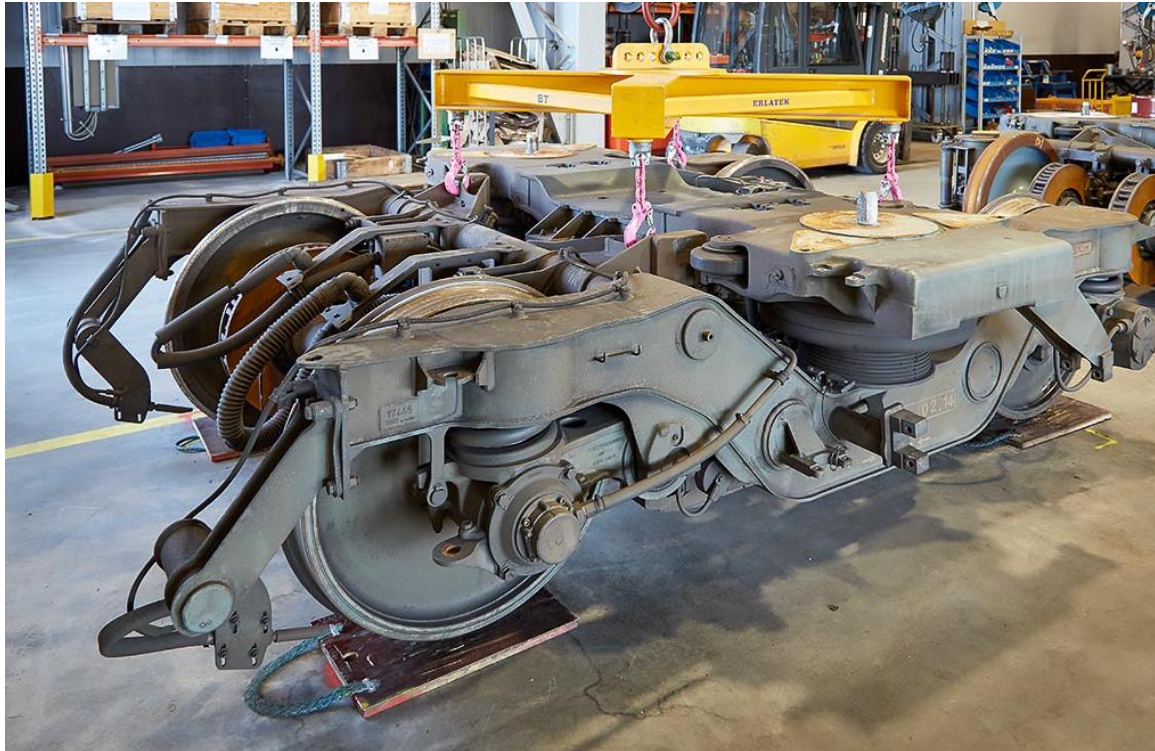


Before cleaning



After cleaning

# Bogie cleaner



Before cleaning



After cleaning

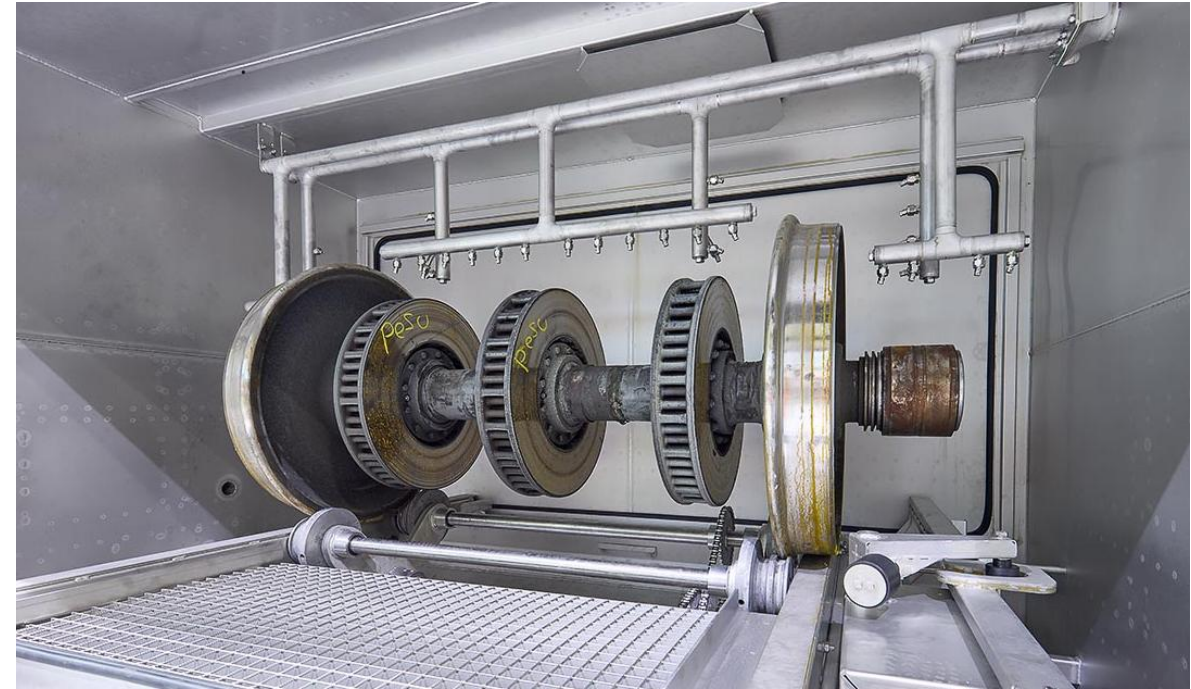
# Wheelset cleaner

Wheelset cleaner is engineered for railway wheelset cleaning prior maintenance

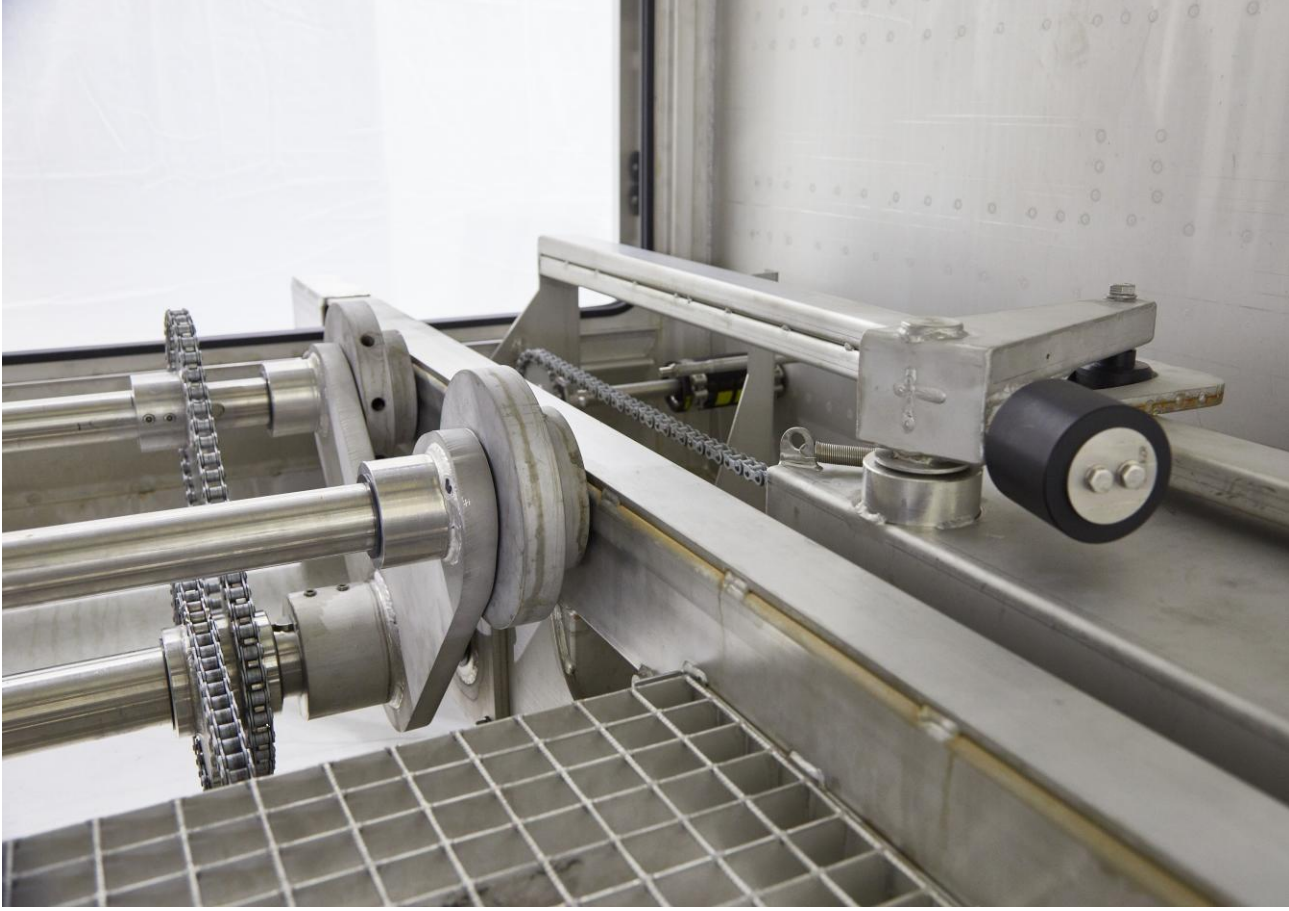
- Typically cleaner is installed as part of the customer's rail network
- Smart lifting and rotating system, which guarantee excellent cleaning results
- Typically 1- or 2-stage cleaning process
- Wide range accessories which increase the productivity
- See the [video](#) in Youtube
- See the [animation](#) in Youtube



# Wheelset cleaner



# Wheelset cleaner



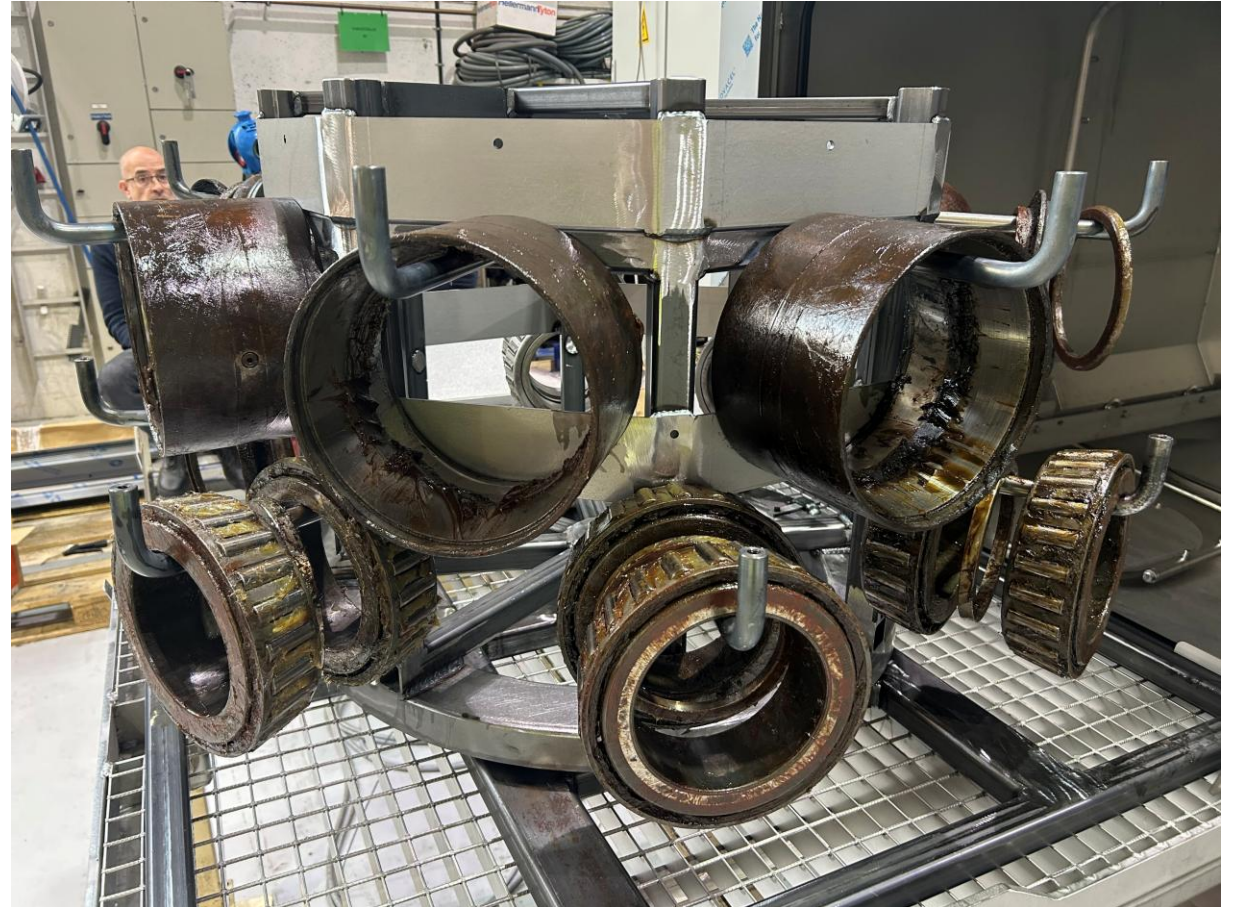
# Bearing cleaner

- 2-stage cleaning machine, with cleaning and rinsing
- Possible use special nozzles for the inside cleaning
- Requires Aqua Clean grease separator
- See the [video](#) in Youtube



# Bearings cleaner

- Special jigs and fixture for axel boxes and bearings
- Possible use special nozzles for the inside cleaning

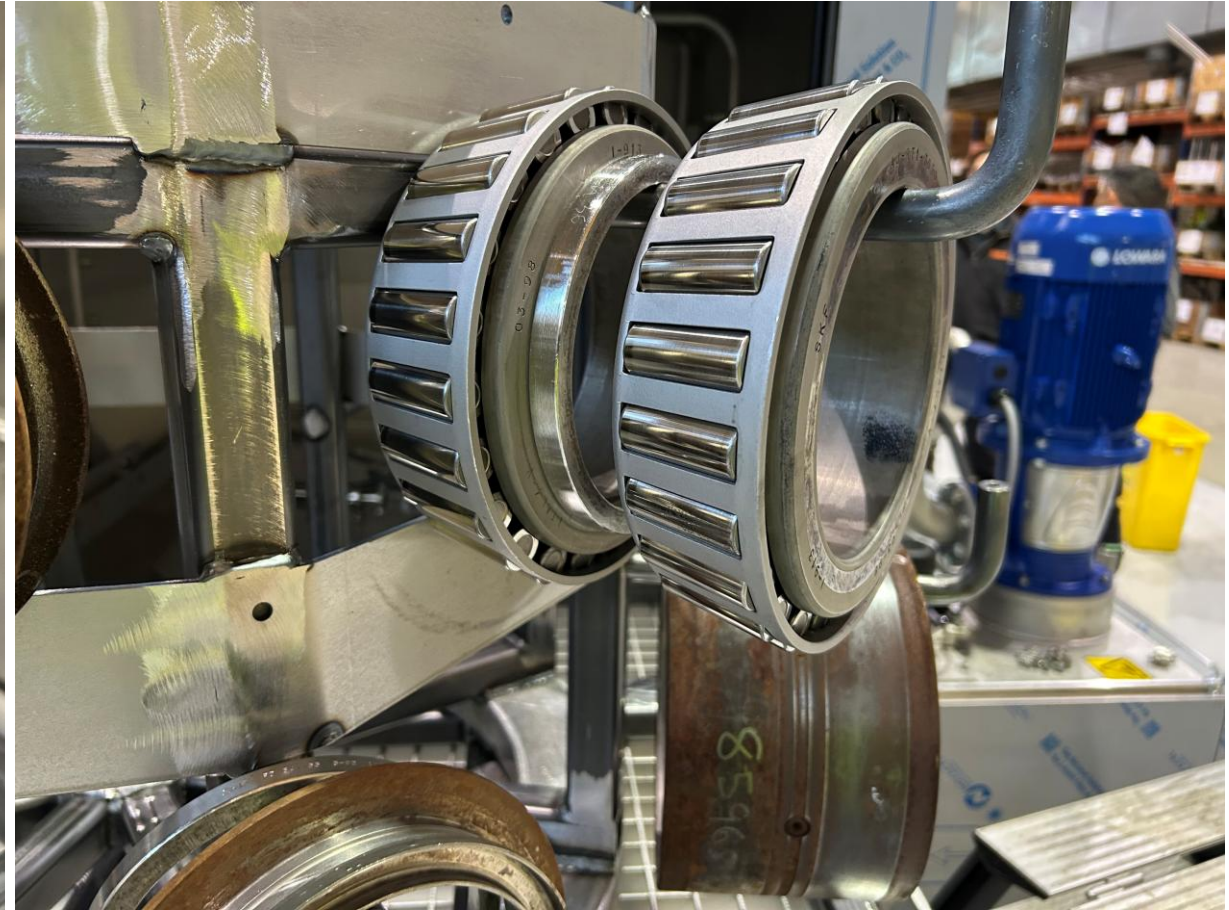


# Bearings cleaner

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Before cleaning



After cleaning

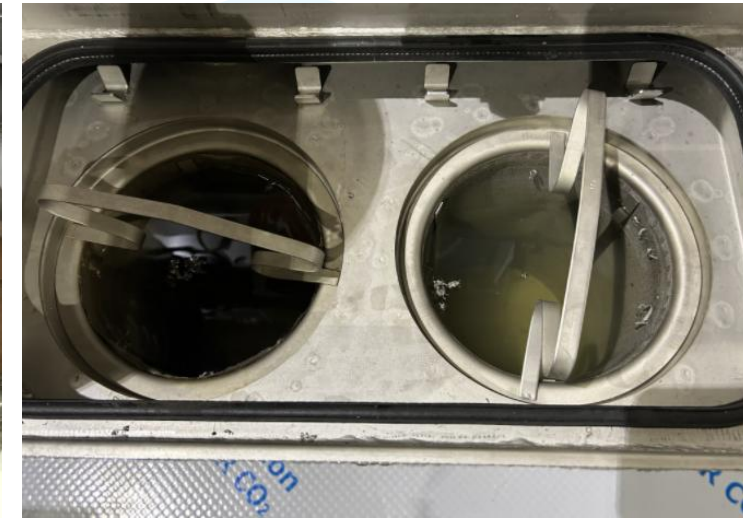
# Axle cleaners

- ✓ Typically for new parts manufacturing to remove rust protection oil as Tectyl
- ✓ Custom-made cleaning machines for heavy railway axles
- ✓ Access from long side or short side of the machine
- ✓ Oscillating machines due to geometry of axles



# Filtering systems

- Aqua Clean basic filtration through the basket filters and tank one (dirty) bottom spraying system
- Aqua Clean offer several solutions for increase cleaning liquid lifecycle and reduce liquid costs
  - Oil Separator systems
  - Grease separator systems
  - By-Bass filtration system
  - Fine Filter system
  - Lakos separators



# Lakos separator

- Lakos separator effectively removes solids from liquid using centrifugal action by way of unique separator design
- no moving parts, requires very little maintenance
- The liquid-solids separator system consists of:
  - circulation pump,
  - separator,
  - spray system with nozzles in the tank,
  - automatic valve system
  - all functions integrated to Aqua Clean automation
- See the video in Youtube: [Industrial Filtration - Removing Dirt and Sand From Process Cooling Systems - LAKOS](#)



# Oil separator

- The AQUA CLEAN oil separator is a powerful unit for removing oil from the liquid
- Simple construction with easy maintenance
- Increases liquid lifetime in the process
- Robust construction from AISI material and high-quality pump technology
- Ask the animation of oil separator from the sales or our representative



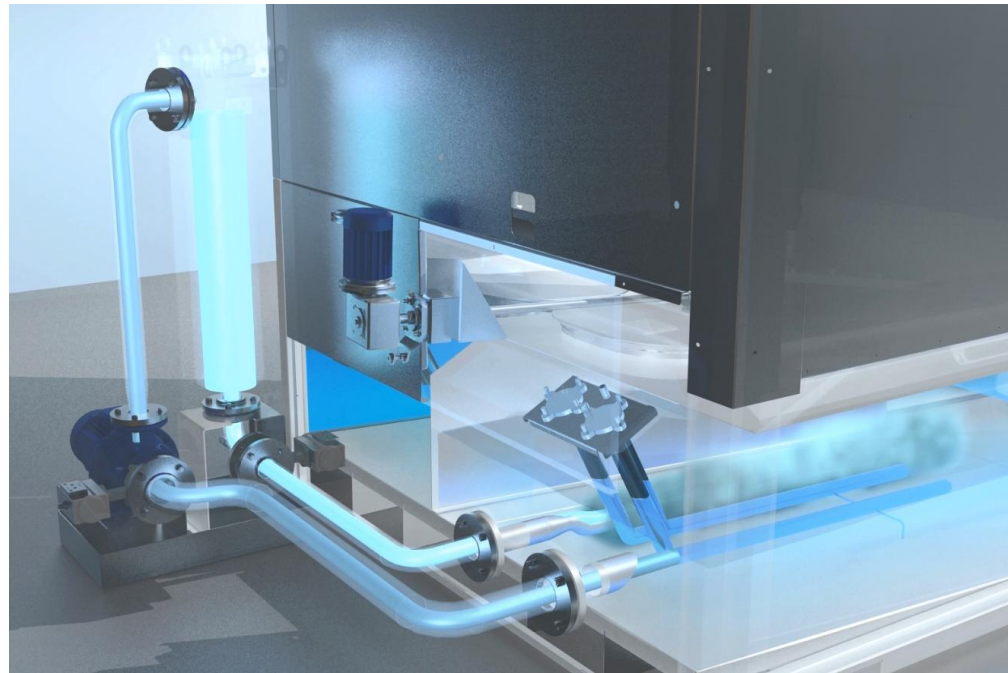
# Grease separator

- The AQUA CLEAN grease separator is a powerful unit for removing grease from the liquid
- Typically used for bearing maintenance cleaners
- Simple construction with easy maintenance
- Increases liquid lifetime in the process
- Robust construction from AISI material and high-quality pump technology



# By-pass filtering

- Aqua Clean by-bass filtration keeps cleaning liquid in constant circulation by pumping water through the filter unit
- Removes down to 50-200 $\mu\text{m}$  particles from the cleaning liquid and increases liquid life significantly



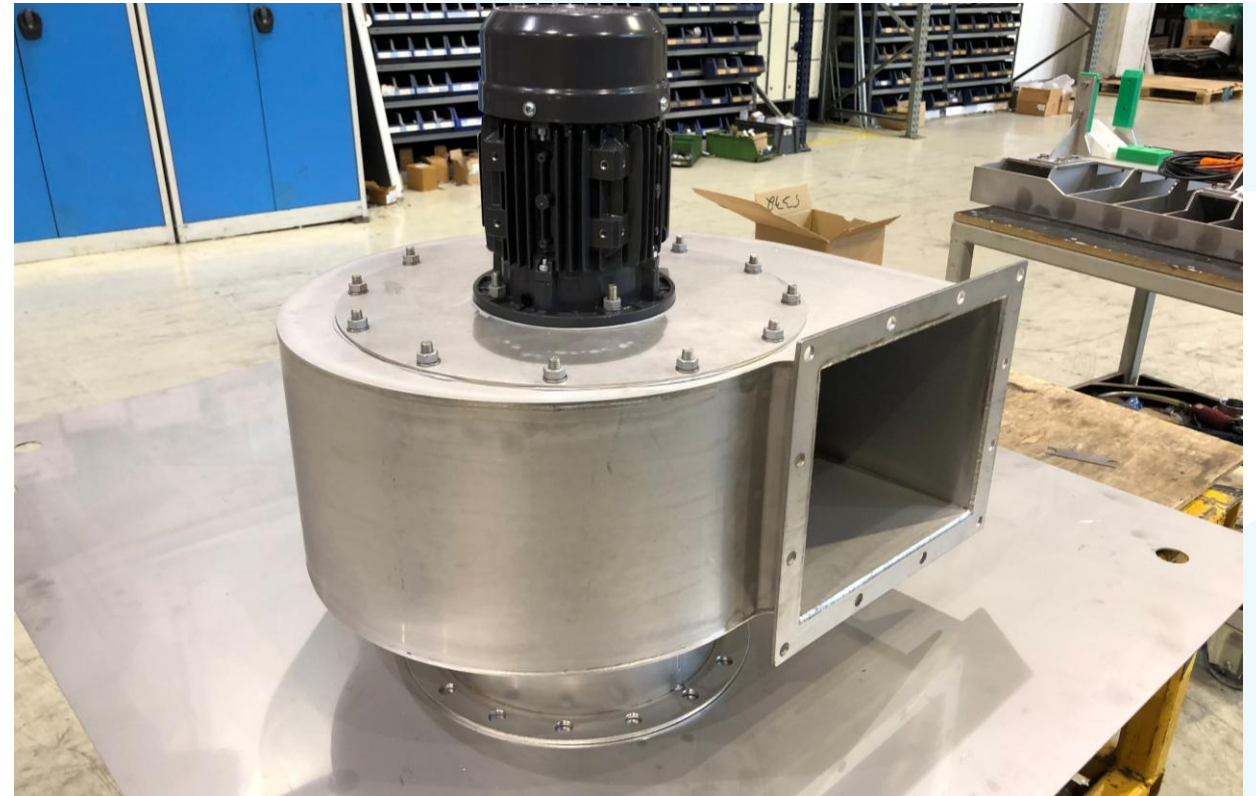
# Fine filtering

- Aqua Clean fine filter are installed after pump to the pressure side of rinsing stage.
- Filter will be removing small solid particles from liquid after pump
- Removes down to 25-200 $\mu$ m particles from the cleaning liquid and increases liquid life significantly
- The filtration guarantees, that no solid particles, bigger than informed filtration, are sprayed on the components



# Steam fan AF

- Steam fan removes steam out through the ventilation tubes
- Economical solution but loose of liquid need to be taken care



# Steam condenser FX

- The steam condenser cool down steam back to water
- Water will be draining back to cleaning tank (mimimal loss of liquid)
- Steam condenser save a energy and water



# Steam condenser LKP

- The cabinet is equipped with a steam condenser intended to remove water steam from the cleaning cabinet after the process
- The condensed water is drained back to the washing tank



# Hand pre-cleaning system SL-1HR

- Pre-cleaning with manual operations by operator
- Own pressure pump
- Hose with reel



# Customized cleaners

- ✓ Custom-made cleaning machine for high capacity
- ✓ Cleaning machine with rotating load carrier
- ✓ The parts to be cleaning move between the stages using the revolver principle
- ✓ Machine provide cleaning, rinsing and drying with short working time
- ✓ Can be integrated as part of automatic robot cell



# Drying solutions

- ✓ Several drying solutions available depending from application and requirements of dryness
- ✓ Drying solutions integrated to cleaners
- ✓ Separate hot-air drying oven (top right)
- ✓ Separate vacuum drying oven (lower left)



# Automation solutions

- ✓ Manual conveyor systems
- ✓ Automatic conveyor systems
- ✓ Robotized cleaning cells
- ✓ Connection to AGV (Auto Guided Vehicle) solutions
- ✓ Connections to AMR (Autonomous Mobile Robot) solutions





# ENVIROMENTAL ASPECTS

# Environmental friendly solutions

- ✓ **Water and Energy Efficiency**
  - Machines are designed to reuse and filter process water, reducing overall water consumption.
  - Heat recovery systems and energy-efficient heating minimize energy use.
- ✓ **Reduced Chemical Usage**
  - Cleaning processes use eco-friendly detergents and optimized dosing to limit harmful substances.
  - Ultrasonic cleaning achieves high performance with less chemical input.
- ✓ **Waste and Emission Control**
  - Integrated oil separators and chip conveyors prevent contaminants from entering wastewater.
  - Closed washing systems reduce vapor and chemical emissions to the environment.
- ✓ **Durable Design and Long Lifecycle**
  - Built from stainless steel, ensuring decades of use and reducing the need for frequent replacements.
  - Spare parts availability and maintenance services extend equipment life, lowering environmental impact.
- ✓ **Certified Environmental Management**
  - ISO 14001 certification guarantees compliance with strict environmental standards.

# Customers benefits

- ✓ Lower Operating Costs
  - Reduced water and energy consumption means lower utility bills.
  - Less chemical usage decreases purchasing and disposal costs.
- ✓ Compliance and Risk Reduction
  - Eco-friendly systems help customers meet environmental regulations and avoid fines.
  - ISO-certified processes make audits and certifications easier.
- ✓ Improved Corporate Image
  - Using sustainable technology strengthens brand reputation and appeals to environmentally conscious clients.
  - Demonstrates commitment to ESG (Environmental, Social, Governance) goals.
- ✓ Safer Work Environment
  - Fewer harsh chemicals and closed systems reduce health risks for employees.
  - Cleaner processes mean less exposure to harmful substances.
- ✓ Long-Term Sustainability
  - Durable machines with extended lifecycles reduce waste and replacement costs.
  - Supports customers' green initiatives and long-term sustainability strategies.

# Thank you for your interest!

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