Industrial Revolution
Filtration Technology and Condition Monitoring
For more than 50 years, Parker Filtration has been designing and manufacturing hydraulic filtration solutions to a wide variety of industrial market sectors including pulp & paper, metal processing, machinery & tooling and energy & power generation.

Parker’s Hydraulic Filter Division looks beyond the customary solutions to a flexible approach in preventing breakdowns and extending the life time of components in hydraulic, lubrication, process and fuel systems.

Together, with our customers, we break new ground to provide innovative design, reducing costs in various areas such as new build system maintenance, energy consumption, disposal and weight.

Our patented filter solutions and innovations are adopted by leading global equipment manufacturers and end users.

Parker’s technology development closely follows the future demand of mankind. Environmental responsibility towards society implicates providing components and systems reducing the impact of operation in public and industrial places, maximizing safety and reliability.

<table>
<thead>
<tr>
<th>Parker Filtration Solutions</th>
<th>Filtration Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtration for working hydraulic and control systems</td>
<td>Full flow filtration (Fibre type and metal mesh media)</td>
</tr>
<tr>
<td>Drive train filtration system</td>
<td>Off-line &amp; Bypass filtration</td>
</tr>
<tr>
<td>Energy transfer systems</td>
<td>Electrostatic fluid conditioning</td>
</tr>
<tr>
<td>Lubrication systems</td>
<td>Oil Purifiers</td>
</tr>
<tr>
<td>System fluid &amp; filter condition monitoring</td>
<td>Back Flush Filtration</td>
</tr>
<tr>
<td>Process filtration</td>
<td>Magnetic Filtration</td>
</tr>
</tbody>
</table>
Our principles and internal structures are based on dedicated market teams to provide demanding markets, customers and partners with maximum values, tailormade solutions and innovations. In Parker, we call it “Engineering your success”.

Our solutions focus on value areas:

1. **System design & manufacturing**
   - System matched filtration
   - Compact solutions through component integration
   - System design & manufacturing support
   - Cleanliness management control
   - System & fluid condition monitoring

2. **System performance**
   Improvement of systems;
   - Productivity
   - Controllability
   - Reliability
   - Safety

3. **System sustainability**
   - Life cycle cost
   - Predictable maintenance
   - Extended service intervals
   - Oil lifetime extension
   - Component lifetime extension

4. **Sustainable environment**
   Impact of equipment to environment
   - Minimise waste of oil and filter elements
   - Reduce number of leakage points
   - Noise & vibration reduction

5. **Energy control**
   - Reduction of energy consumption
   - Energy recovery

6. **Recycling**
   - Disposal cost and material management

7. **Aftermarket**
   - Protected OEM spare element market
   - Training and technical back-up
   - Global spare parts back-up
   - Extended warranty

With courtesy of Wärtsilä Corporation
Quality products reduce downtime in industrial markets

Our philosophy is to improve the productivity, controllability and reliability of industrial equipment without sacrificing safety.

Modern industrial application calls for solutions often capable of remote operation without the need for servicing between scheduled maintenance events. At the same time, the demands for improved overall productivity puts forward more stringent demand related to filtration.

It is not only the higher level of productivity that counts. As equipment more often operates in hazardous or unmanned areas, higher levels of reliability are needed to improve safety.

This is directly influenced by system contamination proven to be responsible typically for over 80% of downtime or malfunction of systems. In this respect, filtration and condition monitoring fulfil a vital role.

Parker Filtration continues to develop high quality filtration solutions. A core competence is to develop dedicated technology to condition the fluid. Parker’s Microglass filter media sets the benchmark for the industry.
Important aspects of our filtration solutions are:

Improve system productivity & controllability
- Stable removal efficiency of the filter media during flow & pressure fluctuations
- Low pressure drop across the filter media & housing for improved system response

Ecology & Economy
- Reduction of pressure lost across the filter saves energy & fuel
- Parker green elements reduce waste by over 50% compared to conventional solutions
- System-matched filter element lifetime

Reliability & Safety
- Guaranteed quality of filtration
- System-matched filter element lifetime

Energy efficiency and savings
Contaminated fluid reduces overall system efficiency. Parker’s engineered solutions focus on system requirements, reliability and safety.

Magnetic pre-filtration has proven to be an effective method to remove Fe-particles from hydraulic and lubrication fluids. Parker’s magnetic pre-filtration removes Fe-particles smaller than 2 micron plus extends the life time of the filter element by an average of 20%.

Lower pressure lost during element lifetime
Extended element lifetime
Parker
Conventional
Energy saving
Saving energy
Pressure lost across filter element
Time
Requirements with regard to hydraulic and oil lubrication systems emphasise reliability, safety, long lifetime and reduced energy. Depending on the circumstances, over 80% of system failures are due to contamination levels. System monitoring is essential to prevent reduced performance, equipment failure, downtime costs and negative quality perception by end users.

Catastrophic failures
Occurring suddenly and without warning, catastrophic failures are typically of a permanent nature. They are often caused by larger particles obstructing the relative movement between surfaces, resulting in seizure of the component. Real-time condition monitoring is advisable for applications where catastrophic failures can affect the safety of operation. Trend analysis allows Parker to provide a dedicated package of pre-warnings to ensure that predictive corrective actions can be taken.

Transient failures
This type of failure is short-lived and goes unnoticed, although the consequences rarely do. It is caused by particles that momentarily lodge in a critical clearance between matching parts, only to be washed away during the next operation cycle. As a result components become less predictable and potentially unsafe.

Degradation failures
This failure is caused by the effect of wear induced by contamination. Additional generated contamination can lead to catastrophic failure and necessity to repair and replacement of the component.
Monitoring critical systems is essential.

The extended package of Parker’s Fluid Condition Monitoring equipment is based on a modular architecture, enabling designers to select the sensors needed for real-time analysis of important system and fluid parameters.

Parker’s integrated solutions include diagnostics and smart decision making processes, communication status reports or warnings to the machine operator or service organisation.

### Monitoring critical systems

<table>
<thead>
<tr>
<th>Predictable maintenance</th>
<th>Fluid conditioning</th>
<th>Fluid condition monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element pressure drop measurement</td>
<td>Guaranteed oil cleanliness</td>
<td>Quality index of system oil and system condition</td>
</tr>
<tr>
<td>Temperature measurement</td>
<td>Oil lifetime extension</td>
<td>Intelligent interface with vehicle operator</td>
</tr>
<tr>
<td>Fluid cleanliness level measurement</td>
<td>Component lifetime extension</td>
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<tr>
<td>Fluid viscosity measurement</td>
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<tr>
<td>Other fluid system parameters</td>
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**Productivity & Controllability**

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Reducing costs by innovative system integration

Solutions for the future require a different approach.
Parker’s philosophy underlines our ability to support our customers with the design and realisation of new generation equipment.

Parker offers the unique possibility to integrate various system functions into single components. This can result in cost reduction of the application in manufacturing and maintenance; can realise more compact solutions and lower impact for the environment by means of reduced leakage points. In addition to the integrated patented filters, this guarantees the quality of filtration for maximum protection of the system components.

As a complete supplier of motion & control solutions, Parker is able to support extended warranty; a valuable proposal to OEM’s providing long term reliability and safety towards their customers in the market.

Parker’s experience in industrial markets for more than five decades is focused for our customers through the dedicated Industrial System Team and divisional engineering staff.

Application and system specialists for hydraulic and lubrication filtration systems are available “at your service”.

System Knowledge + Standard Filters Customised + Standard System Condition Monitoring Customised + Standard Pumps Customised + Standard Valves Customised
Parker’s back-flush technology is based on the usage of cleanable metal or plastic mesh filter elements. The ParTrap filter family includes filters for both lube and fuel oil applications and ensures continuous filtration of heavy fuel oil for ships and powerplants. Self-actuated continuous back-flushing filters meet the latest demands of diesel engine manufacturers. This technology is also to reduce the load of main filtration on heavy contaminated systems like tooling machine cooling liquids.

Parker designs and manufactures complete turn-key system solutions.
A partnership in ecology and economy

Our aim is always to develop long term relationships with our customers. As partners we can work together to provide the most effective solutions for hydraulic filtration. But our aim is not only to provide low cost, extended reliability and performance.

Today’s markets call for environmentally friendly solutions. We call that Ecology & Economy and we often step beyond traditional conventions to take responsibility for society and take the environment into account.

Dedicated support is implicit in a good partnership: for example, making quality spare parts available to our partners and end users. Direct or through dedicated distribution networks. Complete sub-systems or other aftermarket parts like filter elements are provided by Parker, in many cases from Parker’s own central distribution warehouses the EDCs.

Guaranteed filtration quality, improved connection with end users, extended warranty provision and transparency in the aftermarket are basics in any Parker partnership.

Ecology & Economy and LEIF® and Ecoglass III

Parker provides complete sub-systems or other aftermarket parts like filter elements such as the eco-friendly LEIF® and Ecoglass III, making spare parts available to our customers and end users direct or
A partnership in ecology and economy through a dedicated distribution network via our Europe-wide Sales Companies operating on a country by country basis.

**Benefits of Parker’s patented elements:**

- OEM protected aftermarket excludes piracy
- Guaranteed quality of filtration
- System user fits genuine (Parker) OEM spare parts
- Typically, a reduction of warranty claims
- Extended warranty provision
- OEM contact with end users and service organisations is improved
- Improved aftermarket share and revenue

Parker patented green elements reduce the waste typically by over 50%.

![Market performance patented vs non patented elements]

- **Sales quantity development**
- **Sales turnover development**
- **Profit development**
- **Element market price development**

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<thead>
<tr>
<th>Year</th>
<th>Year 2</th>
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<tbody>
<tr>
<td>Patented element</td>
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