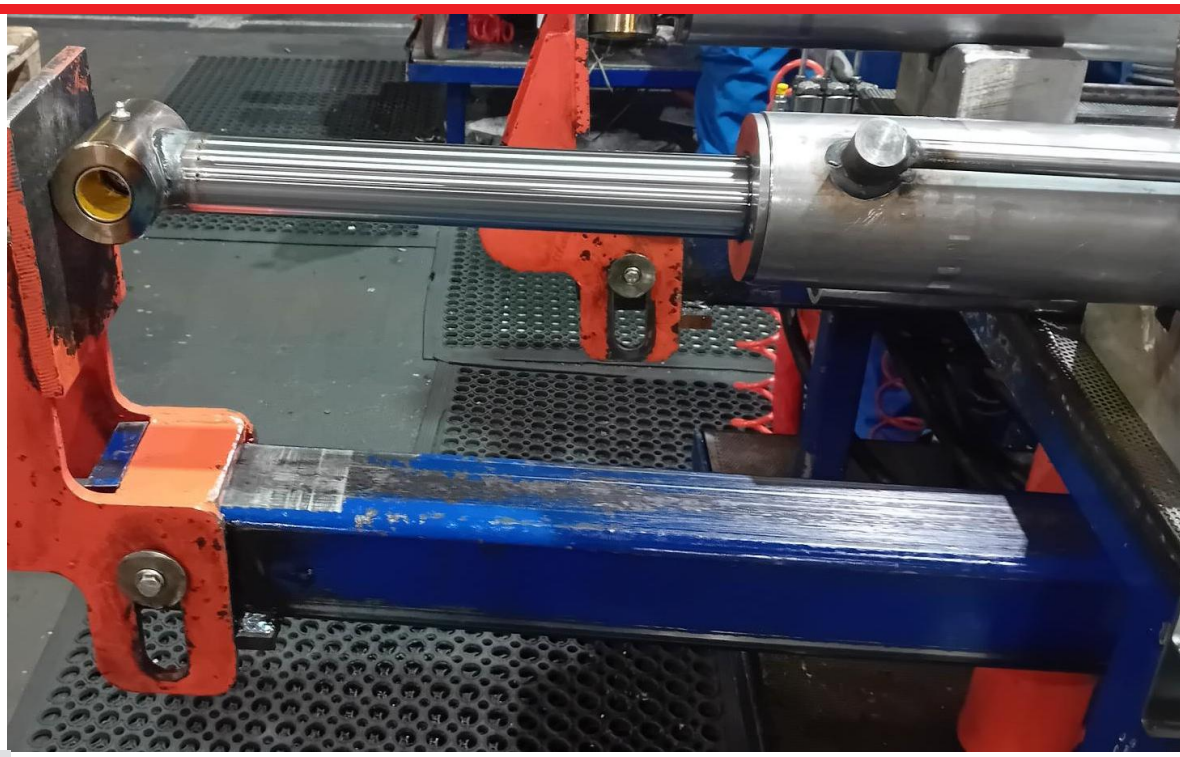
CASE STUDY

SITA CleanoSpector
Handheld Metal Cleanliness Test Instrument



Our customer

Burnside Hydracyl

Customer benefits

- Reduced servicing frequency of hydraulic washing machines
- Extended cleaning fluid lifetime
- Reduced annual operating costs

How cleanliness testing saved thousands of euros while ensuring quality

In many production environments, cleaning processes are run conservatively because cleanliness may be hard to verify. The result is frequent cleaning fluid changes, unnecessary downtime, and higher operating costs, all justified in the name of risk reduction. Hydraulic cylinder manufacturer Burnside Hydracyl worked with Dyne Testing, an Intertronics brand, to replace assumption with measurement in its cylinder washing process. By introducing quantitative cleanliness verification using the SITA CleanoSpector, Burnside reduced washer servicing frequency, extended fluid life, and cut costs by around €7,500 per washer per year, while maintaining product performance, quality levels, and operational safety.

Burnside Hydracyl, of Ballymoon, Country Carlow, Ireland, has designed and manufactured hydraulic cylinders for sectors from agriculture to industrial maintenance for almost four decades. Hydraulic cylinders can use up to 400 bar of pressure. Cleanliness of components during manufacture is an essential safeguard for cylinder integrity and safety in use, as contamination can cause internal damage, leakage, and in severe cases structural failure under pressure.

Quality Engineer JJ Ryan is responsible for maintaining and improving Burnside's systems and processes in line with established standards.

"The industry is moving forward in its expectations of cleanliness, but also of the quality framework and documentation around that cleanliness," explained Ryan. Recent conversation with an important customer highlighted this and he saw an opportunity to reassess Burnside's cleaning process.

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At the time, Burnside was replacing the washer fluid in its cylinder washing machines monthly. Ryan suspected this was over-cautious, but knew that contamination, even by microscopic fine particles, can damage the cylinders and cause serious issues during operation.

“Pollution in hydraulic systems can lead to misalignment, blocked valves, and even uncontrolled failures caused by the pressure,” said Ryan. “These health and safety risks aren’t acceptable, so I wanted to keep the peace of mind that our cylinders were optimally clean while also reducing maintenance costs and eliminating disposal of usable washer fluid.”

Burnside was spending around €1,500 per international bulk container (IBC) of cleaning fluid. Across its fleet of washers, that added up to hundreds of thousands of euros each year. Managing Director Brendan Byrne asked Ryan to find a way to measure the cleanliness of cylinder components after washing, so the business could reduce waste and bring better control to a set of running costs that were largely unquantified, without compromising quality or introducing additional process risk.

By verifying cleanliness levels, Burnside would be able to make evidence-based decisions on washer fluid change frequency and gain full visibility of its washer maintenance strategy. Enquiries with industry partners pointed Burnside towards Intertronics and Dyne Testing.

Understanding the industrial washing process

Ryan contacted Dyne Sales Manager Alison Fox in early 2025, who first arranged cylinder surface cleanliness testing of different examples, from a series of washers: a known dirty component, one washed with old washing fluid, and one washed the day the fluid was changed.

Dyne Testing used the SITA CleanoSpector to assess the samples. It works by illuminating a metal surface with UV light and measuring the fluorescence from residual organic oils and contaminants, giving an immediate, quantitative indication of surface cleanliness without damaging the part. Cleanliness is expressed in relative fluorescence units (RFU), giving an objective numerical measure that can be tracked, compared, and controlled over time.

The samples revealed an issue right away: one side of the components from a specific washer all returned high RFU values, too high to have been cleaned properly. Upon inspection of that washer, Burnside found a broken arm inside the washing chamber and immediately repaired it.

“This sort of insight was exactly what we were looking for,” recalled Ryan. “We’d seen the CleanoSpector on Dyne Testing’s website during research, so this demonstration convinced us that it could help achieve our quality and traceability goals.”

Confidence through visibility

Burnside purchased the CleanoSpector in March 2025. Fox and Dyne Testing Technical Sales Executive Conor Kelly provided training for the quality team, demonstrating best practice tips for use and discussing how the instrument could best be integrated into the production line.

“Conor explained it brilliantly; he kept everything simple and precise. Dyne are great communicators and teachers,” said Ryan.

Equipped with the CleanoSpector and the training, Ryan began to collect cleanliness data on cylinders across Burnside’s fleet of washing machines. A year on, he has amassed RFU data points across all machines and calculated a baseline cleanliness value. This enabled Burnside to reduce the average number of washer fluid changes per year from 12 down to seven, with plans for further reductions in 2026.

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This change saves around €7,500 per washer annually and ensures that hundreds of litres of viable cleaning fluid are used to the end of their service life, while hydraulic cylinder performance is unaffected, quality standards remain high, and customer safety is maintained. The CleanoSpector has paid for itself in a matter of months.

Cylinder stroke count

Cylinder stroking is another dimension of the post-manufacturing quality process. Once built, Burnside connects cylinders to a test rig and cycles them, before testing the hydraulic oil from the system. This stroking process flushes out any internal contaminants and fine particles, circulates fresh oil through, and confirms pressure integrity and seal performance.

Technicians would stroke cylinders up to 30 times to ensure that oil cleanliness results fell within customer requirements; usually Class 7 or Class 8 from ISO 4406:2021 Hydraulic fluid power — Fluids — Method for coding the level of contamination by solid particles. If it was found to be marginally above tolerance, operators would resume the stroking process to remove more contaminants.

This increased stroking time slowed production timescales, taking up to 30 minutes per cylinder. By increasing upstream cleanliness assurance with the CleanoSpector, Ryan knew he could improve throughput on this process.

Confidence, fuelled by clarity in the washing process, has enabled Burnside to reduce stroking cycles from 30 strokes down to 20 or even 15, saving around ten minutes per batch. For Ryan, the quality framework and the adherence to ISO 4406 provides the consistency and customer reassurance that he searched for after the traceability conversation that began the upgrade process.

“Dyne Testing made my week when I could go back to that customer and tell them we had the exact documentation to put their fears to rest,” said Burnside MD Brendan Byrne.

“Having Alison and Conor at our disposal to answer questions with great technical knowledge and communication skills has been great,” concluded Ryan. “This technology has opened up lots of opportunities for us at Burnside.”

SITA CleanoSpector Handheld Metal Cleanliness Test Instrument

The SITA CleanoSpector is an inexpensive, easy-to-use handheld non-destructive metal cleanliness test instrument used for measuring organic contamination such as oil, grease, coolants, release agents and cleaning fluid on metal surfaces.

- Non-contact and non-destructive cleanliness inspection of metal surfaces – at the push of button
- Works on metals and ceramics
- Can detect contamination on parts with various geometries – flat, round, curved, in grooves

Applications include: Cleanliness inspection of metal parts after machining or before welding, detecting residues on bond pads before wire bonding electronics, controlling layer thickness of anti-corrosive agents, oils, or waxes.