



Preparation & Protection for Steel Structures

An innovative service for hydroblasting
and protective coatings application



GIVING WATER THE CUTTING EDGE

RGL



Steel decks



Hand held surface preparation nozzle

CORROSION PROTECTION OF STEEL STRUCTURES

Overview

As water jetting experts, RGL provides a complete hydroblasting and coatings application service for the corrosion protection of large steel structures.

We offer a unique combination of specialist skills, technical knowledge, good working practices and excellent project management capabilities. From thorough site surveys right through to the application of high quality coating systems via our approved sub-contract painting partners, RGL ensure that each stage of the process is subject to the highest quality standards.

This full end-to-end capability provides clients with major advantages in project planning/cost control and quality management – ensuring that projects meet all specifications and are completed on time, within budget.

Advantages of working with RGL

- A complete turnkey hydroblasting and coatings application service
- Simple procurement
- Total project management for the complete process
- Adherence to Institute of Corrosion guidelines
- High level technical know-how and expertise
- Industry leading technology
- Highly competent, multi-disciplined crews
- Assured quality
- Efficient processes
- Very cost effective
- Vertical guarantee on both surface preparation and coating application

Surface preparation by UHP hydroblasting

The most common cause of premature coating failure on steel structures - such as bridges, storage tanks and vessels - is poor surface preparation.

UHP water blasting is ideal for removing; rust, paint, lead primers, oil, grease, bitumen, epoxies, salts and other non-visual contaminants to provide long lasting corrosion protection.

Benefits of UHP hydroblasting

- Hydroblasting using clean water without abrasive is now accepted as a highly versatile and effective method for the removal of coatings and corrosion to produce a clean surface for immediate re-painting.
- An ultra high pressure water jet creates microscopic pockets on the steel surface to which protective coatings readily adhere.
- A hydroblasted surface that complies with BS EN ISO 8501-4, water jetting standard Wa2½ meets the technical requirements of coating manufacturers for most maintenance and painting application.
- It is environmentally friendly, cost-effective and is rapidly replacing open abrasive blast cleaning methods as a cheaper and more effective alternative.

Advantages include:

- It leaves a warm surface from which traces of residual water quickly dry.
- It's highly effective at removing most of the soluble salts and other non-visual chemical contaminants from the steel surface – which can effect the durability of the coating system.
- Ultra high pressure means relatively low volumes of water are used and this keeps treatment costs to a minimum.
- It has the advantage of not generating any spent abrasive therefore not incurring the cost of abrasive disposal.
- No abrasive is used (abrasive blasting uses in the region of 25 KG of abrasive to blast each square metre).

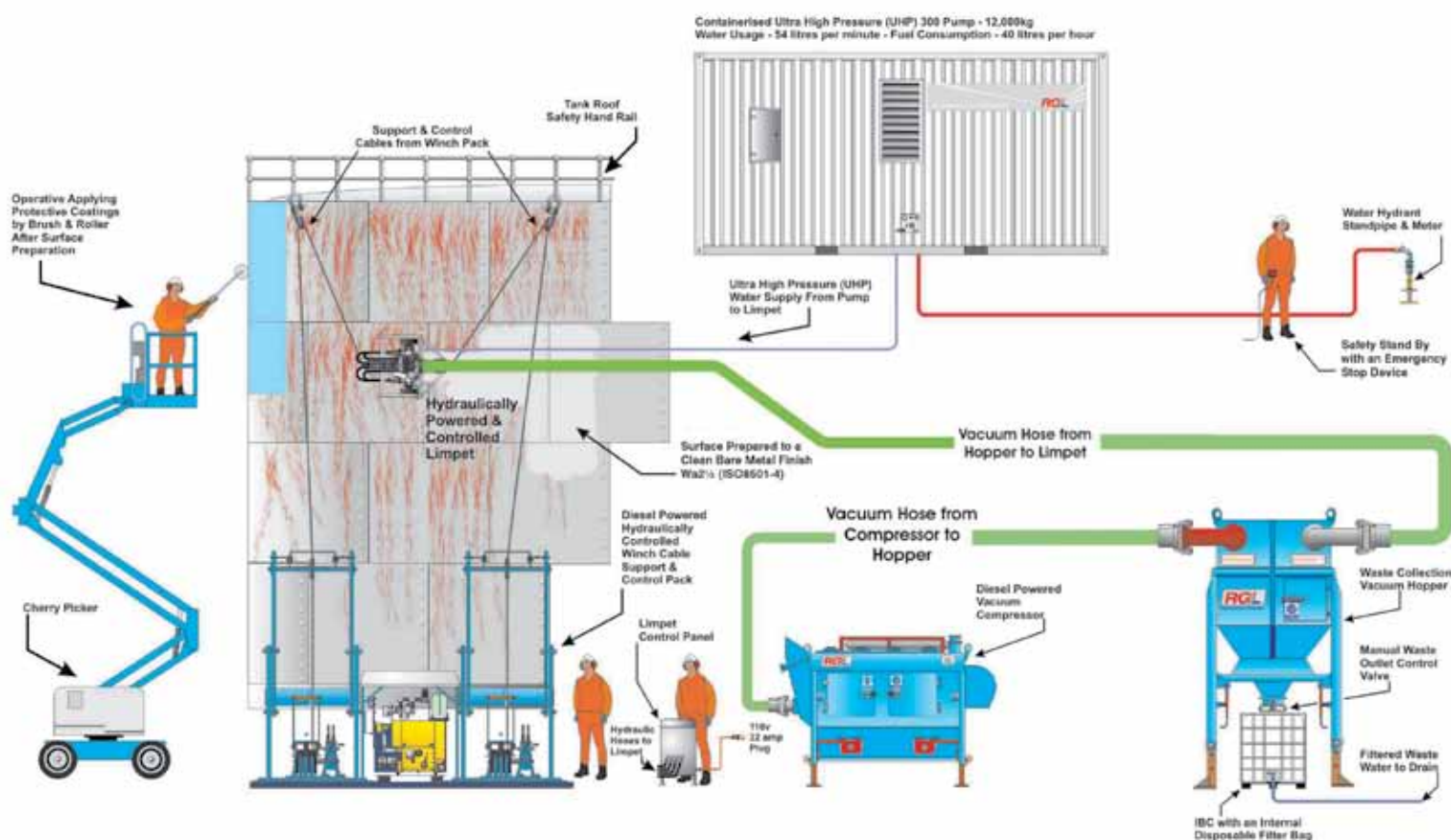


Access via MEWP for spotting & paint application

Limpet used at height

Process Illustration - Steel Storage Tank - Surface Preparation

Ultra high pressure (UHP) Limpet Surface Preparation, Vacuum Waste Product Recovery and Coating Application





Surface preparation of floating tank roof



Tank lining removal



Thick coatings & insulation removal

The RGL Process

Site surveys:

A site survey of the steel structure is usually required to determine:

- The suitability for RGL's Limpet Crawler system (see below).
- Areas suitable for blasting by a hand held water jetting lance.
- The condition of the existing surface profile and whether corrosion pitting has occurred. This will determine the hydroblasting pressure required to prepare the surface to the desired standard.
- Measures that will be required to protect services such as electric cables, plastic pipes, conduits, or other soft materials such as brick or wood.
- Establish access to water supply, containment of waste water and disposal of water to surface water drain/foul sewer or by tanker to a licensed site.
- Access to the work face and whether powered access or scaffolding is required.
- A site survey also provides the opportunity to discuss with the customer the specification of the protective system to be used – this will be determined by the required life of the new coating system according to the type of structure, the corrosive environment and the anticipated

surface profile following hydroblasting (see below **Coating application & Inspection**).

- Once the customer has specified the coating system and the method of application, RGL can then determine the optimum method of deploying crews for hydroblasting and coating application to minimise any flash rusting.
- Where appropriate, customers can be provided with guarantees covering the longevity of the protection system. This will specify 'life to first maintenance' and the number of years that the system is expected to last.

RGL's Limpet Crawler system

RGL offers an innovative UHP remote control crawler system – the "Limpet" – designed in-house and refined over the past ten years. The Limpet is mainly used for large surface areas such as the roof and sides of circular steel bulk storage tanks and has a climbing capability up to 30 metres.

It clings to steel structures by a powerful vacuum and can then be controlled remotely to cover the whole surface more quickly and efficiently than operatives with handheld lances - and without the need for scaffolding.

The vacuum used to secure the Limpet

includes a recovery system that captures and removes all UHP water spray, rust, paint, contaminants and debris via a filtration system. This leaves the surface clean and ready to be re-coated.

Other features include:

- Remote controlled operation.
- Powerful vacuum holds the blast head onto the structure which enables the system to be self-propelled and crawl vertically to 30 metres.
- It copes with rivets, welded joints and lapped plates of up to 15-20mm.
- Ultra high pressure water delivered via portable diesel driven, zone rated jetting units with working pressure up to 3000 bar – requiring no external power source.
- Operated by a three person crew.
- Winch system deploys Limpet to high level quickly and safely and provides safety fall arrest in the event of vacuum failure.
- The system can be deployed while storage tanks are in use. No heat or sparks are created so it is perfectly suited for use in hazardous environments where there is a risk of fire or explosion.
- Coating removal rates vary but typically the Limpet Crawler prepares 20m²/ hour.



Limpet held inverted by powerful vacuum

RGL's Limpet Crawler system (cont).

Hand held safety lances

Hand held safety lances are particularly suited to the removal of small areas of coating, such as edges, brackets, braces and pipes (where the Limpet Crawler system cannot access).

Almost all types of coatings and corrosion can be removed by a hand held safety lance operating at pressures of between 2500 bar and 3000 bar.

Hand held lances use a rotary head with multiple nozzles. The head spins at high speed to deliver high levels of productivity and a high quality finish.

The use of low flow jetting pumps means that risks associated with high nozzle reaction forces are minimised and operator fatigue is reduced – thus improving safety and increasing productivity.

Coating application and inspection

Protective coatings are applied using airless spray, roller or brush.

Quality control is undertaken in-house or through a client specified/RGL managed QA system. Typical quality control includes: blast profile measurement, chloride levels, blast standard reference and flash rusting limits. Coating application controls include wet and dry film thickness, holiday detection, environment temperature and humidity.

Expert crews

One of the major benefits of choosing RGL for your maintenance painting project is that we have our own multi-disciplined technicians and supervisors.

Using ICAT trained crews we have the capability to ensure that coatings are applied correctly and within the specified time period following the completion of the hydroblasting process.

It also enables them to control the working environment to minimise contamination or other adverse environmental factors.

This approach ensures that we can be confident in providing our customers with a highly controlled, quality process which underpins our 'vertical' guarantees for both surface preparation and coating application.

All site crews are suitably equipped with PPE/RPE and our management team is trained to undertake COSHH assessments and evaluate all hazards and environmental concerns. This ensures effective methodology and risk assessment are produced in advance of work beginning on site.

RGL are also members of the Water Jetting Association and the Institute of Corrosion and our crews abide by their codes of best practice.

RGL project experience:

- Tank lining removal
- Heavy oil storage tanks, roofs, sides and floors
- Flood defence, barriers, gates and gate arms
- Surface ships/aircraft carriers
- Railway bridges
- Pressure vessels and spheres
- Sheet piling and marine structures
- Oil and gas pipelines



Tank side sheet preparation

Marine applications



“What we say
....we do”

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