PROCESS AND PIPELINE SERVICES

hydratight.com
Company profile

Our services:
- Oil flushing
- Chemical cleaning
- Nitrogen services
- Air blowing
- Steam blowing
- Pipeline pigging and testing
- Hydro-testing
- Hydro-milling
- Fluid pumping
- Filtration
- Degassing and decontamination
- Engineering and procedure writing

Because we have the people, the products, the global network and the experience

Company
Hydratight pioneered the establishment of a Joint Integrity Assurance offering that combines services such as bolting, machining and flange data management to deliver leak-free start-up and operation at client facilities through integrity management of bolted joints. Today, Hydratight has added Process and Pipeline Services to the legacy Joint Integrity Assurance offering to deliver industry leading process and pipeline cleaning, testing, verification, and integrity management services.

The integrated services platform coupled with a thorough understanding of client’s facilities and their unmet needs enables Hydratight to deliver safe and efficient plant start-ups, maintenance and shutdown programs every time, no matter how complex the process. This expertise, know how and problem solving ability puts Hydratight at the forefront of providing cleaning, testing, and integrity solutions for our clients in the pre-commissioning and turnaround sector.

Health, Safety and Environment
Safety remains the number one priority. Care has to be taken at every stage. We adhere to the highest standards of health, safety and environmental performance, and if we think improvement can be made, we’ll implement our own guidelines. We conduct all of our operations in a manner that promotes safe working practices and avoids undue risk to our employees, clients and the environment.

Process and Pipeline Services
The Process and Pipeline Services described in this brochure offer a comprehensive range of offerings to ensure the successful completion of a pre-commissioning project. In addition, Hydratight has standardised these services to ensure the delivery of the same highest standards to our customers irrespective of their global location.

Hydratight’s commitment to superior and innovative service offerings is backed by our technical competency. By applying our experience and knowledge, we deliver innovative solutions tailored to our client’s facilities that minimise the impact of pre-commissioning and shutdown events on facility operations and prevent unnecessary delays and costs prior to start-up.
**Personnel**

Hydratight’s high quality services depend on our people. From the initial stages we make sure we become part of your business. We endeavour to understand your processes and deliver accurate and thorough outcomes to problems.

Extensive training of all Hydratight field staff ensures that every pre-commissioning or shutdown project will be executed safely, accurately and professionally. Hydratight is an industry leading provider of training and competence assurance and actively participates in the development of global standards pertaining to service execution. These include standards developed by the American Society of Mechanical Engineers (ASME) and the Engineering Construction Industry Training Board (ECITB). This expertise is shared with our clients through the knowledge and capability of our personnel.

Hydratight ultimately improves safety, raises operational efficiency and increases uptime; no matter what industry sector we’re serving, or where we are in the world.
Oil flushing

Hydratight utilises in-house designed flushing skids (FS), which are self-contained units that include an onboard pump, heater, mixing tank, reverse flow manifold, and filtration system to capture insoluble matter.

Flushing of hydraulic and lubrication oil systems is used to ensure that new rotating and hydraulic equipment will start up and operate as designed, significantly reducing the potential for premature failure.

Maintenance and downtime on equipment can be minimised by performing an effective system cleaning during commissioning and following periodic maintenance and repair services. Any facility that has a low tolerance for system failures will find this service to be a pillar in their preventative maintenance program. Contaminants such as water, rust, loose scale, weld slag, sand, dirt and oils are removed from the system with a proper pre-operational cleaning.

Applications within the energy industry for lubrication and hydraulic oil flushing include:

• Cleaning of hydraulic control systems (e.g., systems controlling large isolation valves on coker drums and jacking systems for offshore equipment)
• Rotating equipment lubrication oil system cleaning (e.g. steam turbines, compressors, large pumps, and gas turbine systems)
Chemical cleaning covers a wide range of services from new construction to ongoing maintenance activities.

New construction facilities are often subjected to a cleaning process prior to start-up. Piping and vessels may contain a variety of debris, scale, oxides and oil, which must be removed if the plant is to run effectively.

To continue to operate at peak efficiency, process systems, vessels, and pipelines must be kept as clean as possible. Some of the normal by-products of operating processes create deposits ranging from scales to sludge, precipitates and even metal deposits. These types of build-up foul the vessels and piping and can significantly reduce system efficiency, eventually causing plugging and failure of the unit. Applications of chemical cleaning can be utilised to remove these contaminants and restore systems to optimum operating efficiency.

Our chemical cleaning methods include:

- The fill and soak method
- Fill and circulate method
- Cascading cleaning method
- Two phase flow cleaning method
- Slug flow cleaning method
- Vapour phase method
- Boiler boil outs
- Foam cleaning method
- Nozzle cleaning method
Nitrogen services

Your first call nitrogen service provider.

Nitrogen, a naturally occurring inert gas, is one of the primary products of the oil and gas industry, and can safely be used for a wide range of services including: oxygen and L.E.L. freeing, drying, heating, accelerated cool downs on vessels, pipe freezing, pressure testing and leak testing.

In addition to being inert, nitrogen has several ideal properties: it is non-reactive, non-toxic, and non-corrosive. Application temperatures for nitrogen gas range from -150°C to +400°C at pressures starting from atmospheric up to 1034 bar (15,000 psi). Nitrogen services can be delivered to the clients’ site in a variety of methods: as a cryogenic liquid, in compressed dry gas bottles, or filtered from the atmosphere at site using a nitrogen membrane unit. Our engineers will determine the best application method for you.

Applications within the energy industry

- Purging and displacement (L.E.L. and oxygen freeing)
- Hot nitrogen services and catalyst regeneration
- Nitrogen/helium and sonic leak detection
- Accelerated cool-downs
- Pneumatic testing
- Nitrogen membrane units
- Nitrogen drying and preservation
- Nitrogen freeze plug isolations (pipe freezing)
Air blowing

Engineered air blowing is an efficient way to remove construction debris, loose rust, liquids and other contaminants from process piping.

Every air blow procedure is specifically engineered for the individual system being cleaned. This approach provides numerous benefits for our clients, including time effective execution by efficiently sequencing the blows, thorough cleaning guaranteed by achieving an optimal cleaning force ratio of at least 1.5 (CFR > 1.5) and safe field execution through following the best industry practices.

Compressed air can be used for system dehydrating and de-watering. Compressor spreads can provide large volumes of -60°C dew point air, which, combined with foam pigs and brush pigs can clean and dry pipelines to a very high standard. This service can be used in conjunction with air blowing.

Applications within the energy industry

- Removal of construction debris and velocity cleaning
- Pre-heating, heating, and cooling of process vessels, reactors and systems
- De-watering and drying
- Pigging and drying pipelines
- Pipeline pre-packing
- Pneumatic pressure testing
- Leak testing
- Pre-tensioning pipelines
Steam blowing

For pre-commissioning, a continuous low-pressure steam blow technique has become the standard practice for cleaning most steam system circuits.

Pipe is fabricated under hot working conditions, which leads to a heavy oxide layer forming on its surfaces. This layer is known as mill scale and must be removed from critical systems before putting them into service.

Over time, enhancements have been made in plant start-up techniques to perform engineered steam blows, which remove mill scale. During a steam blow, the piping is blown with sufficient boiler pressure to ensure that enough dynamic pressure will be experienced in the pipe to provide adequate cleaning. Typically, boiler pressures used in steam blowing provide a dynamic pressure throughout the piping that is at least 20% higher than would be experienced in normal operating conditions (CFR ≥ 1.2).

Any potentially damaging particles will be blown out of the piping prior to plant operation ensuring a flawless start-up.

Applications within the energy industry

- Removal of residual post-construction debris
- Unseating mill-scale magnetite layer deposits and welding slag through thermal pipe shocking
- Purging high, medium and low pressure steam lines leading to end users, such as well pad injection points, steam traps, etc.
- Commissioning of steam supply and distribution piping, including lines originating from traditional boiler and OTSG systems
- Cleaning of critical system piping leading to crucial components, such as steam turbine generators on co-generation units
- Precautionary maintenance on older steam systems where contamination is suspected or major critical repairs have been conducted
Pigging and testing

Pigging is completed to increase efficiency and avoid potential problems on existing pipelines, as well as to remove new construction debris and assist during hydrostatic testing.

Upon completion of pipeline construction, the line is required to be tested to prove its integrity. This testing can be completed pneumatically with air or nitrogen, alternatively it can be completed with fluids such as water or glycol.

Hydratight is not only capable of completing all forms of testing, but also has the global experience to complete testing effectively. For every test to be completed, we provide an engineered procedure to be executed, as well as engineering support throughout.

Applications within the energy industry

- Pipeline pre-commissioning
- Pipeline maintenance
- Boiler maintenance
- Line de-watering
- Line drying
- Product batching
Nitrogen is used in many upstream services, the most common being displacement/stimulation and hydrostatic column reduction.

Displacement/stimulation services range from well displacements to fracturing or acid stimulations. While being used in fracturing services, nitrogen is typically used to assist in carrying the sand and fluid into formation, as well as providing energy during flow back operations to remove the fluid from the well. The same is true for nitrified acid or chemical treatments in which nitrogen is used to aid in formation penetration, and to help spent acid or stimulation chemistry flow back to the surface.

In hydrostatic reduction services, nitrogen is used to lighten the column weight to prevent formation damage, as can happen in under-balanced drilling, nitrified cementing, or freeing differentially stuck drill pipes. It can also be used to assist in lifting produced fluids to the surface of the well.
Hydro-milling

Hydro-milling, also known as water jetting, retro-jetting or hydro-jetting, is an efficient method of cleaning industrial piping through the implementation of high pressure water nozzles and jets.

Newly installed process piping typically contains amounts of foreign debris. These residual deposits can potentially compromise system reliability and lead to premature system degradation and catastrophic failure during plant operation. In order to help preserve the long-term integrity of these process piping systems, hydro-milling can be used to remove all undesirable foreign contaminants and particulate matter.

Benefits of hydro-milling

- Reduced commissioning durations (i.e., steam blows) on boiler feedwater and steam systems
- High degree of cleanliness on non-critical and critical systems
- Can be completed in a variety of conditions, including sub zero climates
- Removes both fine and large particles
- Lower water requirements compared to conventional water flushes
- Water recycling capability with minimal waste disposal requirements

Applications within the energy industry

- Boiler feedwater systems
- Steam systems
- Water systems
- Removal of internal pipe corrosion
Fluid pumping

One of the basic equipment requirements in all sectors of the energy industry is the use of pumping services to circulate or transport fluids into or through systems, vessels, pipelines or wells.

Hydratight has extensive experience with fluid transport solutions. Pumping services can be used to provide an efficient method of removing debris from pipelines and new build facilities by exceeding the cleaning force ratio and abrading debris and scale from the internal surfaces of the vessel and pipe walls. The debris-laden fluid can then be filtered and re-injected to remove additional debris. Other applications include high pressure water injection into under-pressured formations to enhance oil recovery, water disposal and injecting large volumes of water into pipelines, process units, or storage vessels for hydrostatic testing.

Applications within the energy industry

- Tank hydrostatic testing
- Flushing of vessels and piping
- Hydrostatic testing
- Standby services
- Startup fluid transfer
Filtration

Hydratight provides a large range of fluid filtration services, from ensuring large particulate is filtered out of testing water to providing reverse osmosis filtration for boiler feed water.

Bag filtration is an economical filtration method consisting of three components: a pressure vessel, micron-rated filter bags and a filter bag retainer basket. Filter bags vary from 1 micron absolute to 100 micron nominal, depending on client request specification. The filter bags are highly efficient at 99% for absolute filter bags and above 80% for nominal bags. If required, we can perform laboratory analysis to ensure particulate filtration results meet specific cleanliness standards (ISO 4406 or NAS 1638).

Our reverse osmosis skid provides a high quality water purification solution. It is commonly used in plants for de-mineralising water for boiler feed water applications. We provide boiler feed quality water before a permanent treatment plant is operational, which helps to kick start the operation of the plant’s water treatment facilities.

Hydratight’s coalescing filters are specifically designed for removal of emulsified water from hydrocarbons. Mechanical coalescers employ filter media to make droplets coalesce. This technology is ideal for separating hydrocarbons from water and vice versa.

Applications within the energy industry

- Providing filtration for cooling water systems start-up and circulation
- Meeting requirements for product cleanliness
- Maintaining cleanliness of water for testing
- De-mineralising water for boiler feed water applications
- Oil removal from produced water
Degassing and decontamination is a single step process designed for fast and efficient—and therefore economical—process plant cleaning.

Using an enhanced steaming technique in which chemicals are injected into the steam flow, we are able to clean large process vessels, reactors, exchangers and interconnecting piping. Degassing and decontamination is most often used for post-operational cleaning to remove H2S, benzene, L.E.L.s, pyrophoric iron, mercaptans and ammonia.

Specially designed chemicals can provide a safe environment for vessel maintenance. This process reduces both the amount of waste and human exposure to dangerous substances during cleaning and maintenance work.

Steam phase (degassing) cleaning requires a preparatory injection of plant steam into the vessels to bring the system temperature up to a sufficient level (~90°C) in order to increase the effect of the chemistry and ensure that the maximum amount of organic material will be removed. The higher temperature helps loosen any of the system contaminants and expedite their removal. The chemistry, mixed with the steam, travels upward through the vessels before condensing and cascading down the vessel walls. In order to confirm proper chemical distribution, the chemistry should be exiting from both the top of the vessel with the steam, and from the bottom of the vessel as condensate.

The precise steam flow rates and combined chemical injection rates that are required are determined during the detailed engineering and procedure generation process. Steam phase cleaning can target the removal of L.E.L.s, H2S, iron sulphide, ammonia and mercaptans.

Applications within the energy industry

- Large process vessels
- Reactors
- Exchangers
- Interconnecting piping
We believe that each of our clients face their own unique set of challenges and that their needs can be best met by providing innovative engineering solutions to these challenges.

Hydratight engineers are knowledgeable and respected specialists within the industry. We have engineered and managed numerous projects around the world. Our engineers join the owner’s team at the front end to define the pre-commissioning scope and responsibility matrix and then develop procedures and packages for field execution. This can be extended to the construction contractor either in the bid or construction phase.

Our engineers can work with your planners to gain a better understanding of the project’s scope and to help improve scheduling.

We provide expertise in numerous areas of engineering and procedure writing, including:

- Pre-commissioning cleaning
- Commissioning cleaning and testing
- Unit shutdown cleaning and inerting
- Hydrotest limits and drains/vents
- Piping turnover systems scope demarcation
- Reinstatement sequencing
Hydratight provides support through service centres (●) and authorised representatives (▲)

Our global network means that you can rely on the right people, products, and services wherever you are in the world.

Email us at: solutions@hydratight.com
Or find your local representative at: hydratight.com/contact