

# CALDER

*OIL & GAS SOLUTIONS WORLDWIDE*



*HIGH PRESSURE PACKAGED EQUIPMENT*

INNOVATION THROUGH EXPERIENCE >>

[www.calderltd.com](http://www.calderltd.com)

## CALDER

### APPLICATIONS:

#### OIL & GAS PROCESS

- Methanol & Glycol (MEG) Injection
- Chemical Injection
- Scale Squeeze
- Condensate Injection
- Glycol HPUs
- Water Soluble Hydraulics
- Desalination Reverse Osmosis
- Glycol Circulation
- Power Fluid Pumps
- Produced and Seawater Injection

#### WELL SERVICE & DRILLING

- Acidising
- Cementing
- Coil Tubing
- Cuttings Re-injection/Waste Disposal
- Fracturing Pumps & Well Kill Pumps
- Mud Pumps
- Pipeline Fill and Pressure Test
- Hot Oil

#### HIGH PRESSURE WATER JETTING

- High Pressure Water Blast 4,000 bar (58,000 psi)
- Abrasive Cutting, Coating Removal
- Full range of high pressure water-jetting accessories



### QUALITY HIGH PRESSURE PUMPS FOR HAZARDOUS AREAS

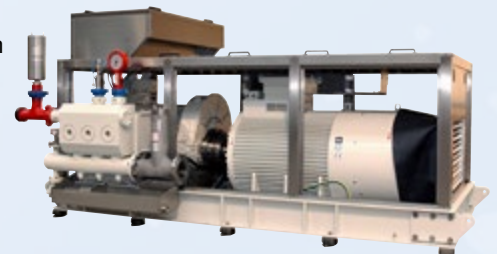
We design and manufacture high pressure solutions for the oil & gas industry. Our range of equipment is suitable for pumping most liquids, from heavy muds to liquid butane. Founded in 1981, our commitment to product quality and engineering excellence has enabled our equipment to operate successfully in some of the harshest conditions on the planet. The Calder range of high pressure pump units are designed and built for operation in hazardous and non-hazardous locations; Onshore fields from the Siberian Arctic to the Kuwaiti desert; Offshore facilities from northern Norwegian waters to Asian and African tropical oceans. The pump packages are designed to deliver fixed or variable flows up to 333m<sup>3</sup>/hr at a range of pressures up to 4,000 bar to meet the most challenging field conditions.

### ACCREDITATIONS AND MEMBERSHIPS:

- ISO 9001
- ISO 14001
- OHSAS 18001
- BSI PED Module H/H1
- Achilles & First Point Assessment
- Investors in People
- Water Jetting Association
- British Safety Council
- CE Marking



### HAZARDOUS AREA SOLUTIONS



### FLUID TYPES

Calder high pressure equipment will pump almost any liquid ranging from potable water to liquid butane, light hydrocarbon, LNG, methanol, MEG, condensates, corrosion inhibitors, heavy mud and drill cuttings. If zero leakage is your requirement, we can incorporate the unique zero leakage Calder process pump with monitoring systems. For highly corrosive duties we offer a wide range of materials for wetted parts, which include nickel aluminium bronze, Hastelloy, Inconel, and 316, duplex and super duplex stainless steels.



### WELL SERVICE AND WASTE INJECTION (CRI)

Full range of pump units for well service and waste injection duties, with electric, hydraulic or diesel-engine drives; containerised or skid mounted from 40kW Scale Squeeze to 1,800kW Frac Pumps.

## HYDRO-TEST AND PIPELINE SERVICES

With variable pump output control through automatic transmission, this unit is ideally suited for flushing, pigging and hydro-testing of pipelines.



## CALDER MULTIAIR COMPRESSOR

Our new range of stackable diesel-engine-powered Zone 2 ATEX & NORSOK compliant offshore compressors incorporate many of the unique Calder design features which have established our high pressure units as the industry standard for operators and contractors who demand the highest levels of reliability. Calder MultiAir compressors are designed to be moved around the world to operate in ambient temperatures up to 45°C.



## WATER JETTING

Our range of Calder MultiJet High Pressure Water Blast units is extensive – from 20kW to 1,100kW and pressures up to 4,000 bar (58,000 psi). Applications include large- or small-scale coating removal, tank cleaning, NORM scale removal from tanks and pipelines, decommissioning and abrasive cutting. Whether skid mounted, containerized, diesel-powered or electric, we have the solution for you.



## HOTJET

The Calder HotJet units are ideal for high-temperature washdown in Zone I hazardous areas. There are two standard models: the inline heater unit provides rapid water heat-up times, and the immersion heater unit is designed for use where the site water supply is less than 1 bar or intermittent. Both units deliver 15 lpm at 210 bar at operating temperatures up to 70°C.



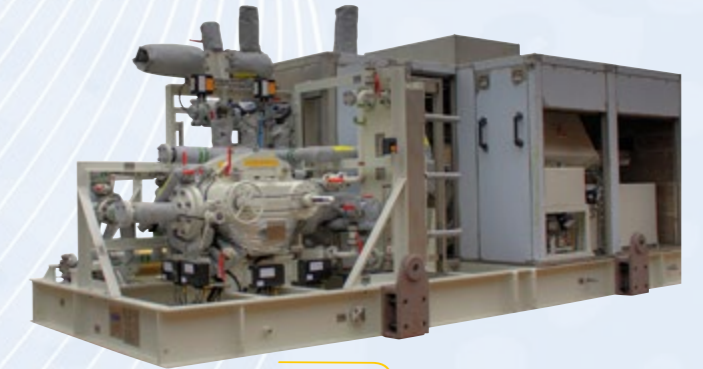
## INTEGRATED CONTROL SYSTEMS

Systems controls are developed in-house to provide accurate control of all parameters with data acquisition and storage options.



## VARIABLE SPEED DRIVES

Our variable speed drive units incorporate the latest HMI technology for data collection and remote control capability with full monitoring of flow, pressure etc. AC or DC up to 1,800kW (2,400 HP).



## WATER & LNG INJECTION

Our compact electric or diesel-engine-driven units are designed for the injection of seawater, brine, produced water, LNG, water condensate and corrosion inhibitors. Skid mounted, crash frame mounted, or containerized and with a range of flows and pressures to meet most small to medium injection projects around the world.

## HIGH FLOW/HIGH PRESSURE MULTISTAGE MACHINES

Our range of mobile or fixed diesel-engine-driven high pressure multistage centrifugal pump units are in service delivering flows up to 333m<sup>3</sup>/hr at pressures up to 220 bar.



## ELECTRIC POWERED

Electric powered pump units are suitable for operation in Safe, Zone 2 or Zone 1 areas in accordance with ATEX Group II, Cat 2, Gas Group B, T3 hazardous areas.

## DIESEL POWERED

Diesel pump packages suitable for use in Zone 2, ATEX Group II, Cat 3, Gas Group B, T3 hazardous environments are fully compliant with current EU legislation.



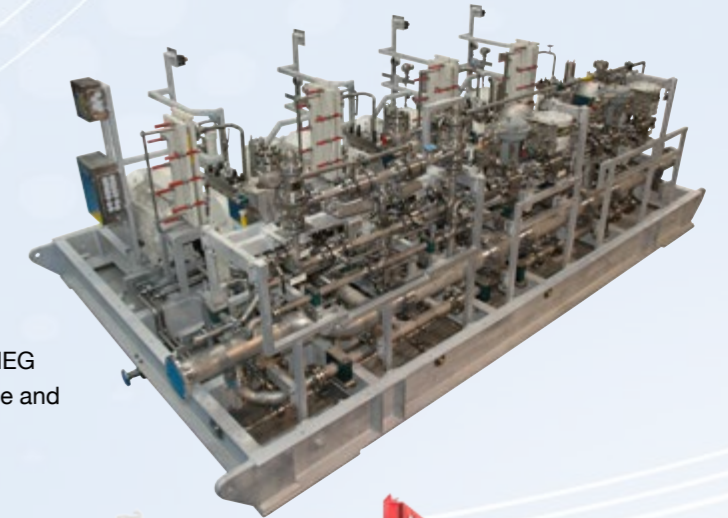
## NOISE ATTENUATION

Calder acoustic enclosures are designed by Calder to meet the most demanding noise requirements specified by our customers. Either containerized or bespoke stainless enclosures are also available to meet stringent 'blast case' requirements, which are demonstrated by FEA.



## HIGH PRESSURE PROCESS & INJECTION

Applications include methanol, MEG injection & circulation, condensate and general chemical injection.



## MANAGED PRESSURE DRILLING

For the circulation of high pressure oil-based and water-based drilling muds weighted with barite slurries for MPD duty in Zone 1 hazardous areas. We can incorporate an optional boost pump when required.



## VACUUM

Our Zone II hazardous area vacuum units are used for a multitude of applications including material/waste removal, chemical/liquid recovery from banded areas, pigging support operations, and online/offline de-sanding. Our versatile vacuum units, both liquid ring and blower technologies, can be container or crash frame mounted.



**WHATEVER YOUR HIGH PRESSURE REQUIREMENTS, WE HAVE THE RIGHT PUMP FOR THE APPLICATION.**

**MUD PUMPS**

Calder mud pump packages offer unrivalled quality and reliability for drilling applications. Piston diameters from 4.5" to 7" are available with power ratings up to 746kW (1,000 HP). We will also package your preferred mud pump into a fully compliant ATEX & Norsok package.



**HAMMELMANN®**

The unique range of Hammelmann high pressure process pumps has changed the way we think of and apply reciprocating plunger pumps (API 674 and API 675). Incorporating the well proven 'labyrinth seal' technology takes high pressure pumping into a new dimension of reliability giving >12,000 hrs operation between HP seal and plunger change and providing zero emissions of pumped liquid to atmosphere. Calder process packages incorporating

Hammelmann pumps up to 1,100kW capable of 4,000 bar discharge pressure manufactured in duplex or super duplex stainless steel save; weight, capital cost, footprint and operate more reliably than any other pump on the market today.

**ZERO EMISSIONS**

Our range of zero emissions high pressure process pumps are Clean Air Certified to VDI 2440.



**CALDER HIGH PRESSURE SPECIALISTS**

Our product line includes continuous and intermittent duty pumps available in single-acting and double-acting and multistage centrifugal models. Input power ranges from 1kW-2,250kW (2 to 3,015 HP).



**CALDER**

Our clients include:

- Aker Solutions
- Amec
- BP
- British Gas
- Cape
- Chevron
- Conoco Phillips
- ENI
- Exxon Mobil
- Gazprom
- Halliburton
- Helix Well Ops
- Huntsman
- KCA
- KOC
- Maersk
- MI Swaco
- Mustang Engineering
- NOV
- Occidental
- Odfjell
- Petrofac
- Reinertsen
- Sasol
- Schlumberger
- Seadrill
- SEIC
- Shell
- Songa Offshore
- Statoil
- Step Offshore
- Talisman
- Tengizchevroil
- Transocean
- Wood Group
- Worley Parsons

**BESPOKE SOLUTIONS**

**• HELIPORTABLE WASTE INJECTION UNITS**

For a remote location accessible only by helicopter, Calder was tasked with the design and build of two modular pump packages – each section to weigh a maximum of 3500 kg. Using creative techniques of design and manufacture, two pump units were built and delivered in a configuration that allows separate air lifts but can be easily and quickly assembled on the remote jobsite ensuring swift deployment.



**• HAZARDOUS AREA HIGH TEMPERATURE WASHDOWN UNIT**

The requirement to clean three decks simultaneously with high pressure hot water led to the design of this bespoke NORSOK and Zone II compliant unit. Two-storey construction with access platform ensures a minimum footprint with easy access to components. The noise-attenuating, lightweight acoustic panels also provide protection from the weather.



**• WASTE GAS-DRIVEN PUMP PACKAGE FOR UNMANNED PLATFORM**

With reliability paramount, Calder was tasked with the design and manufacture of a produced water feed pump package for use on an unmanned platform for the Samarang Redevelopment Phase 2 Project in the South China Sea. This light-weight unit will achieve a flow of 168 m<sup>3</sup>/hour and 27m head and the electric start has a hydraulic start back-up system. The unit is suitable for use in Zone II hazardous areas and has a T3 (<200°C) temperature rating.

**| Standards & Specifications:**

Calder pump packages can comply with most international standards and specifications including:

ATEX | IEC | GOST | EN | DNV | API | ANSI | PED | AS/NZ | NORSOK | NACE

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