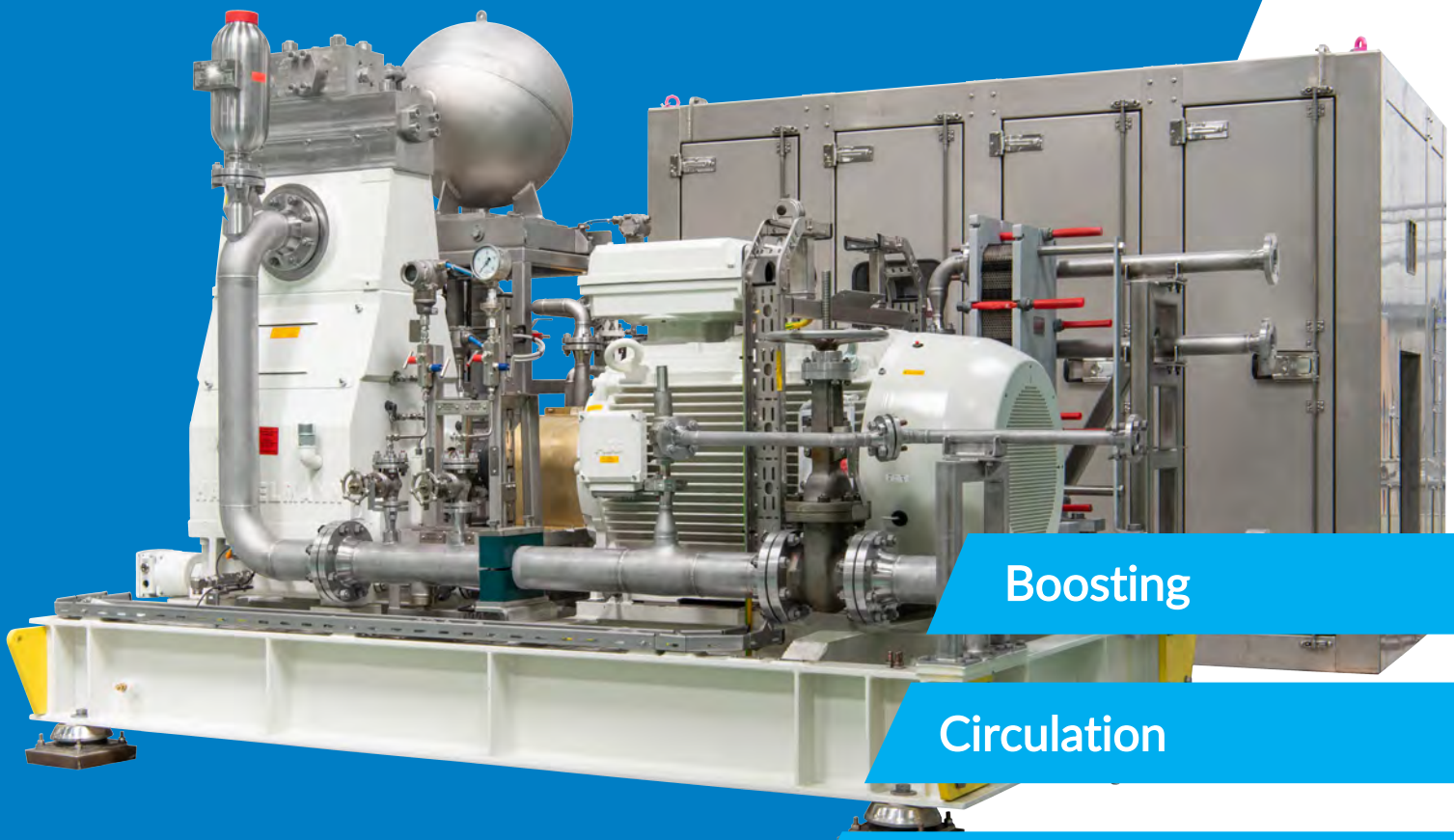
CALDER

# Process

Pump Skid Packages and Systems



Boosting

Circulation

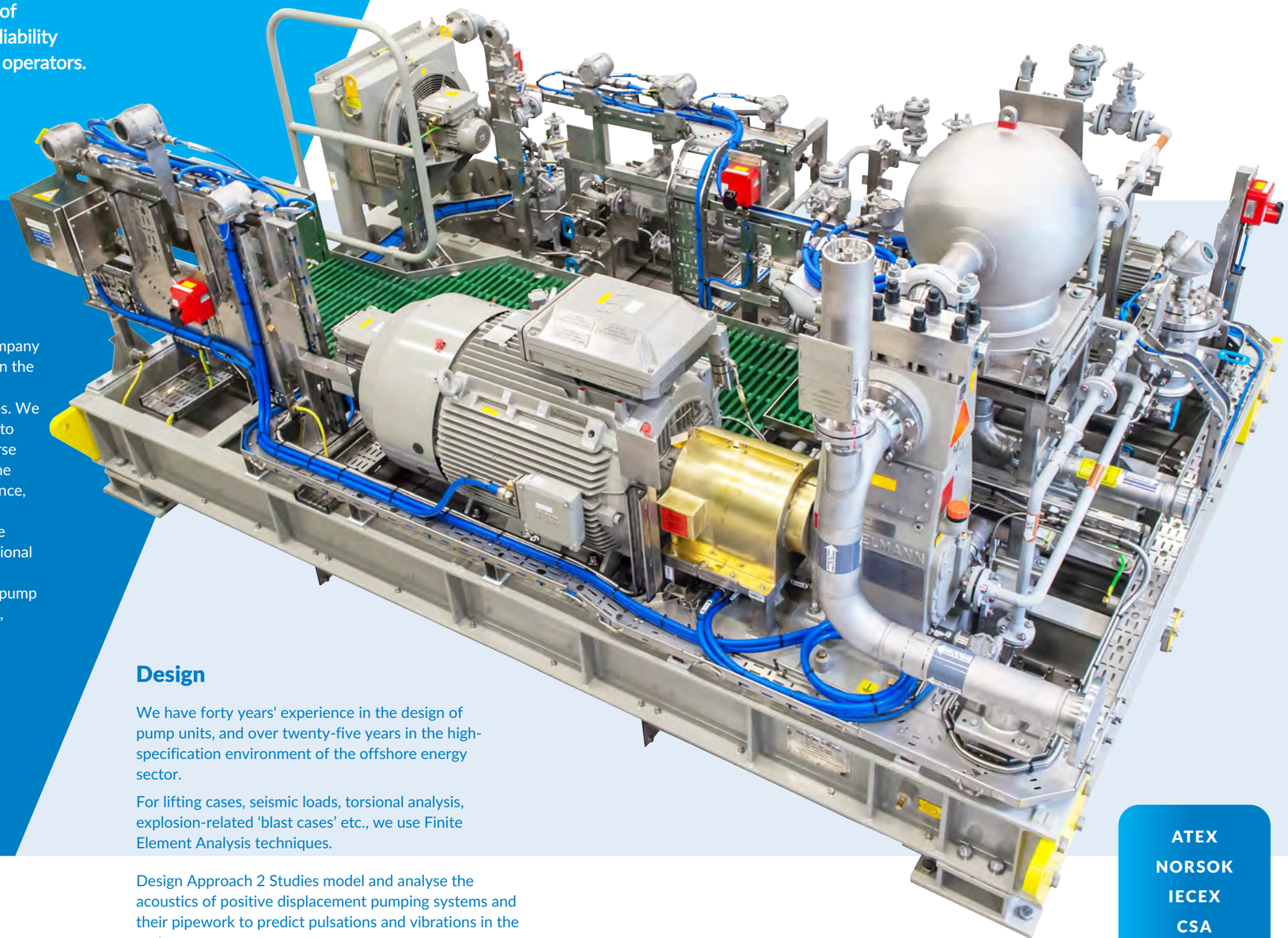
Cooling

Injection

STANDARD UNITS | BESPOKE DESIGN | HAZARDOUS AREAS | HIGH PRESSURES | HIGH FLOWS | SPECIFICATION COMPLIANT

# Process

**From basic chemical injection skids to complex, bespoke pump packages, our process pump systems are trusted to meet the high standards of specification, quality and reliability required by hazardous area operators.**



## Hazardous Areas

Much of the success of our company has been due to our expertise in the design and manufacture of hazardous area pumps packages. We took the decision in the 1990s to invest time and effort to immerse ourselves in the standards of the offshore energy sector. In essence, we sought to understand and assimilate the regulations. Since then we have built our international reputation designing and manufacturing hazardous area pump packages for high-specification, high-compliance industries.

## Design

We have forty years' experience in the design of pump units, and over twenty-five years in the high-specification environment of the offshore energy sector.

For lifting cases, seismic loads, torsional analysis, explosion-related 'blast cases' etc., we use Finite Element Analysis techniques.

Design Approach 2 Studies model and analyse the acoustics of positive displacement pumping systems and their pipework to predict pulsations and vibrations in the system.

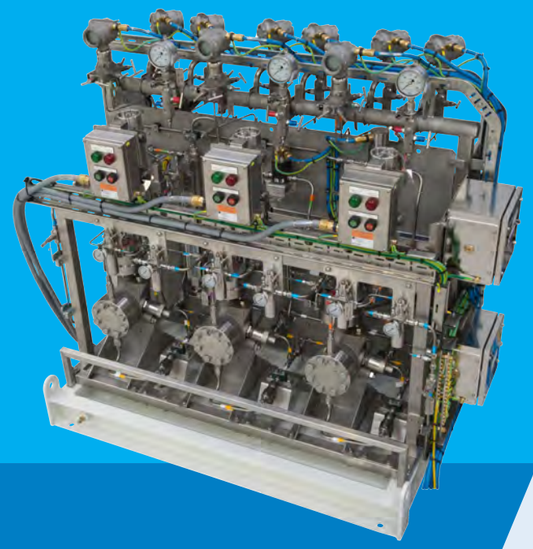
**DESIGN | BUILD | TEST | COMMISSION**

## What can be pumped - Overview

Amine Solutions
Antifoaming Agents
Asphaltene Inhibitors
Biocides
Caustic Soda
Citric Acid
Condensate
Cooling Water
Corrosion Inhibitors
Demulsifiers
Desalination Brine
Ethylene Glycol
Hydrate Inhibitors
Hydrochloric Acid
Hydrogen Sulfide Scavengers
Injection Water
Methanol
Monoethylene Glycol (MEG)
Oxygen Scavengers
Paraffin Inhibitors
Polyacrylamides
Produced Water
Scale Inhibitors
Seawater
Surfactants
Triethylene Glycol (TEG)
Xylene

**ATEX**
**NORSOK**
**IECEX**
**CSA**

# Process



Our engineers specialise in bespoke pump packages for challenging applications and operating locations.

We like a challenge!



## Modular and Compact

Space and access are often an issue on platforms and vessels, particularly when they are being re-purposed. The requirement for units with small footprints has been with us for a long time and it is something in which we excel. However, there has been a large increase in demand for modular pump packages over the last decade. Where access is limited, we design units to be dis-assembled at our factory,  and re-assembled on site.



## Enclosures

Options for our environmental enclosures include internal lighting, internal heating, noise attenuation, fire suppression systems, and design to account for explosion/ blast loads. Many enclosures are skid mounted, others mounted on the floor.

Whether onshore or offshore, a good quality environmental enclosure offers your operators and equipment significant levels of protection and increases equipment longevity.

**DESIGN | BUILD | TEST | COMMISSION**

## API

For high pressure applications, API 674 pumps are the cost-effective solution. These reciprocating plunger pumps typically are lighter and, with their vertical plunger configuration, occupy a smaller footprint than equivalent API 675 double diaphragm pumps. Our API 675 double diaphragm pumps are a cost-effective solution for our customers' low flow rate or low pressure injection applications.

We also supply pump packages to API 610, API 682, API 676, and API 685.

**ATEX**
**NORSOK**
**IECEX**
**CSA**

## Controls

Our in-house electrical & instrumentation team ensure you have the control and monitoring capabilities to suit your needs.

We manufacture everything from basic pump package control systems for incorporation into the customer's existing system, to complete turnkey systems with full control, data logging and system monitoring facilities.

## uHPHT

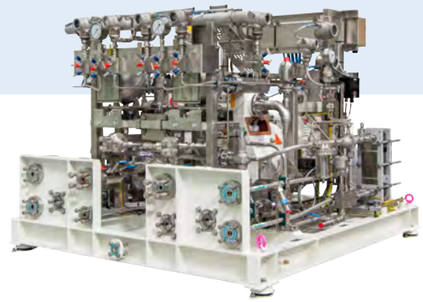
Operating conditions in uHPHT developments require equipment capable of achieving higher pressures and dealing with higher temperatures.

These projects have presented our engineering teams with many new engineering challenges, resulting in units which are currently operating successfully in these extreme conditions.

## Features

Typical features can include:

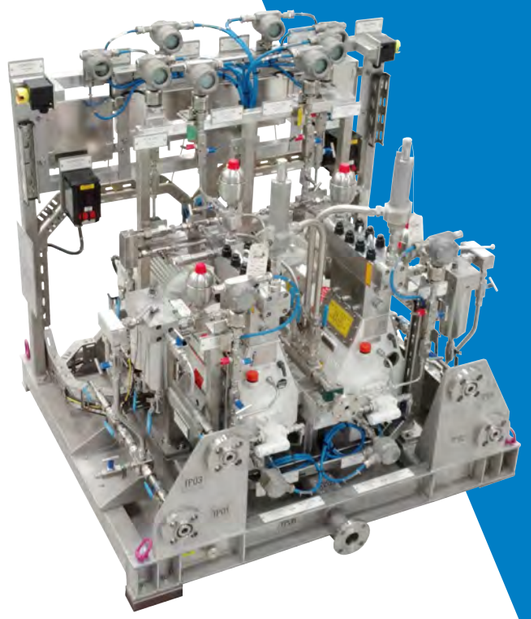
- Suction pulsation damper.
- Discharge pulsation damper.
- Dual language equipment tags.
- 316 SS, 6mo, or Duplex pipework and fittings.
- Lube oil temperature and pressure transmitters.
- Separate power end lubrication for low speed efficiency.
- Packing seal oil system to reduce maintenance requirements.



**STANDARD UNITS | BESPOKE DESIGN | HAZARDOUS AREAS | HIGH PRESSURES | HIGH FLOWS | SPECIFICATION COMPLIANT**

www.calderltd.com | sales@calder.co.uk | +44 1905 751790

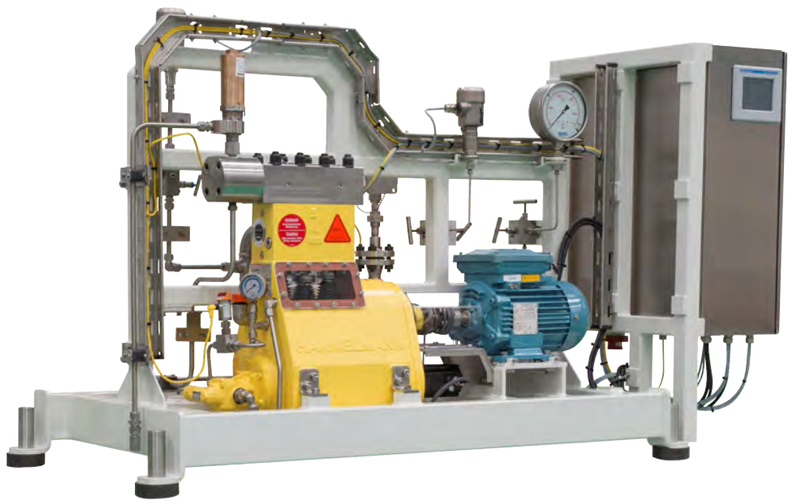
CALDER



# Variable Stroke, Variable Flow

Our variable stroke pump (VSP) allows a variable flow rate (0-100%) via adjustable stroke control, which removes the need for a VSD. The stroke adjustment can be made automatically or manually, and while the pump is on or off load. The pump range offers low to high flow rates and pressures up to 3,270 bar.

These versatile units are frequently used where the pump skid is installed in an ATEX hazardous area. Our VSP technology eliminates the need for a VSD, thus offering a considerable cost saving in both hardware and site cable installation costs.



www.calderltd.com | sales@calder.co.uk | +44 1905 751790

## Compliance

We back up our expertise in design, manufacturing and documentation with a rigid adherence to the ISO9001, ISO14001, and ISO45001 regulations.

## Standards

**ATEX**
Our experience of supplying ATEX pump packages for both Zone 1 and Zone 2 is extensive. With our design and manufacturing facilities based in Worcester, UK, it is only natural that these European standards feature heavily in our supply history.

**NORSOK**
The standards of the Norwegian petroleum industry are, as far as possible, intended to replace oil company specifications. However, for many of our projects our equipment has to comply not only with NORSOK regulations, but also the very demanding requirements of customers operating in hostile and potentially dangerous environments.

**CSA**
We have designed many pump systems for operation in offshore Canadian waters. These units comply with the regulations of the CSA Group (formerly the Canadian Standards Association).

**IECEx**
We manufacture units to International Electrotechnical Commission System standards for operation around the globe. Australia was an early adopter of these standards and we have supplied many units to the Australasian markets over the years.

## Documentation

For Calder, documentation plays a vital role in providing supporting evidence that our systems comply with contract requirements. Without doubt, as important as the engineering design and the build.

Offshore and hazardous area projects are subject to the most stringent requirements for safety and quality. We must demonstrate our adherence to the plethora of rules and regulations from both industry and customer specifications.

Calder - Your passport to a compliant package

**STANDARD UNITS | BESPOKE DESIGN | HAZARDOUS AREAS | HIGH PRESSURES | HIGH FLOWS | SPECIFICATION COMPLIANT**



## *We are* **Calder**

A team of skilled, dedicated people striving to build the best at our base in Worcester, UK. From design to build, from installation to commissioning, we are there with you from start to finish.



## *We* **Design**

In addition to our standard units, we have in-house design teams producing bespoke fluid-handling products from scratch.



## *We* **Build**

Our pump units are built by our own engineers at our factory in Worcester, UK - and they have been for over 40 years.



## *We* **Test**

We have two substantial, fully equipped test bays which allows us to ensure all units receive comprehensive testing before despatch. Customer witness testing of unit performance, vibration and noise is available due to our state-of-the-art facilities.

CALDER

**www.calderltd.com | sales@calder.co.uk | +44 1905 751790**
Calder Ltd, Prescott Drive, Warndon, Worcester, WR4 9NE, United Kingdom.