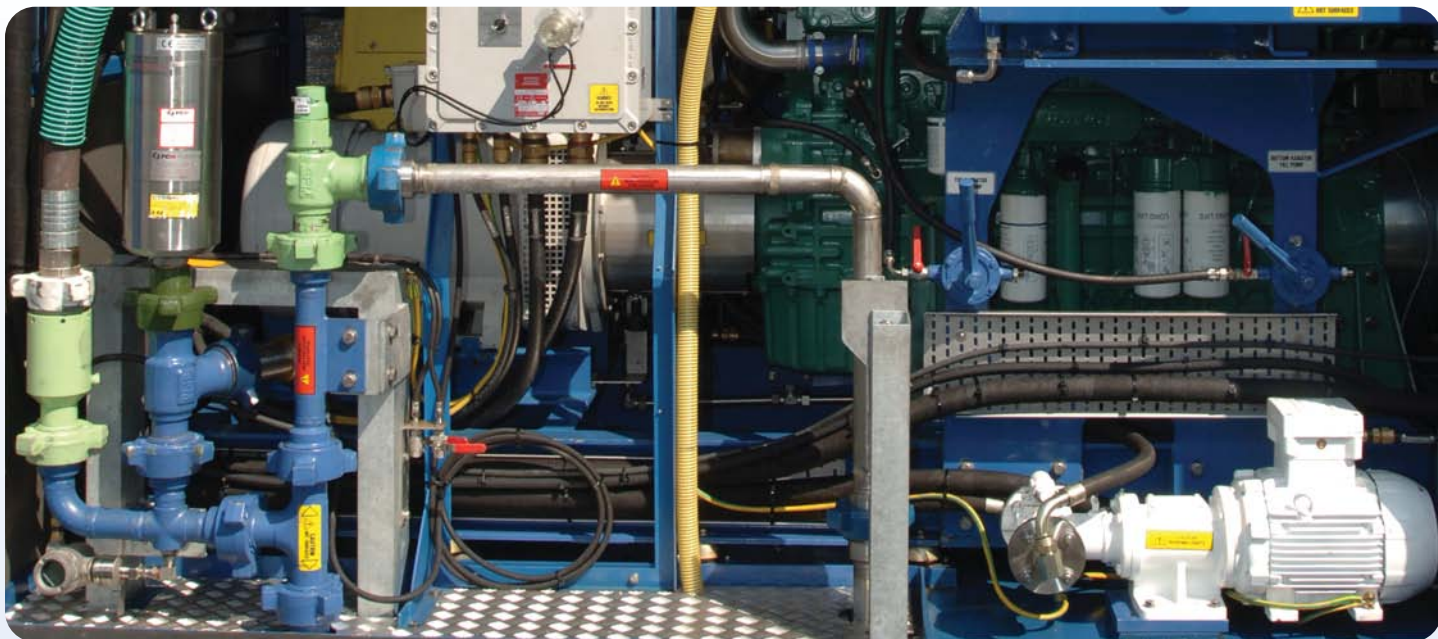


DATA SHEET

Well Service Pump Units

CALDER
 A PG FLOW SOLUTIONS COMPANY


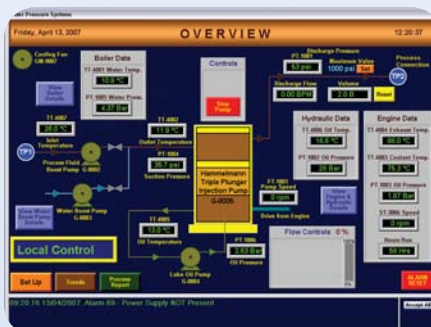
Well Service Pump Units

Well and Pipeline Services

Calder Limited design and build High Pressure pump packages for a wide range of industries including Oil and Gas Exploration and Production and has been doing so since 1981. Within the Oil & Gas business we build a wide variety of pump units for what can be grouped together as 'Well and Pipeline Services'.

For each application a suitable pump is chosen; be it a Reciprocating Plunger Pump or Centrifugal. Reciprocating plunger pumps range from traditional horizontal well service pumps to the advanced vertical design of the Hammelmann. Pumps can be mated to a variety of drives, e.g. electric, diesel, or hydraulic combinations.

Pump Control systems can be elaborate or straightforward; from a Variable Speed Drive System, remotely controlled by a PLC for use in a Zone 1 hazardous environment, to the simplicity of a start-and-stop button. Diesel engine drive pumps for Zone 2 hazardous areas are built with semi-automatic drive, hydraulic drive or direct drive.



Zone 2 touch screen control and logging control system with USB connection for download of data.

Typical Applications & Fluids

- » Drilling Cuttings Injection
- » Slurry
- » Cementing
- » Pressure Testing
- » Fracturing
- » Well Stimulation
- » Acidising
- » Coiled Tubing
- » Scale Squeeze
- » Methanol Injection
- » Pipeline Filling
- » Pipeline Pressure Testing
- » Power Fluid
- » Water Injection

Service Level

Once we have installed and commissioned the system, we offer service contracts that give peace of mind to the most critical of processes.

Skid and Container Unit Sound Proofing

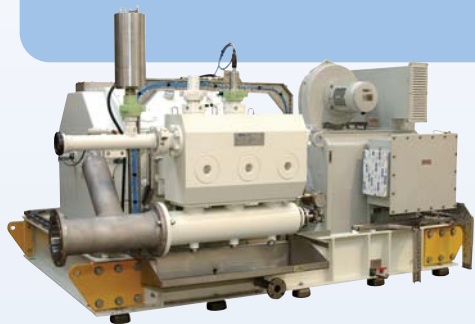
Pump Units can be supplied on a skid with or without a stainless steel sound attenuation enclosure, inside a crash frame or mounted inside a container or onto a truck/trailer, again with sound attenuation if desired. When partially or fully containerised, the machines are afforded a high level of protection from transport collisions and from the weather. All major components are easily removable as they are skid mounted within the container. For land based applications, the pump units can be truck mounted.

Performance Range

Power	3 kW to 2,000 kW
Pressure	50 bar (700psi) to 4,000 bar (58,000psi)
Flow Rate	up to 3,000 m³/hr

Semi-Solids / Slurries

We are experienced in building multi-purpose pump units that can be used for semi-solids slurry. Typically, these applications require pressures to be relatively low and the flows reasonably high. We employ traditional horizontal pump designs that can withstand the rigours for Drilling Cuttings Re-Injection, Cementing, Pressure Test, Formation Fracturing and Acidising operations.



Zone 1 & 2 ATEX Electric Drive

Power 2,250 hp
Flow up to 18 bpm
Pressure up to 15,000 psi



Rig Safe Trailer mounted, Diesel driven

Power 600 hp
Flow up to 10 bpm
Pressure up to 15,000 psi



Zone 2 ATEX 20 Foot container

Power 600 to 1,200 hp
Noise Level 83 dba
Flow up to 18 bpm
Pressures up to 15,000 psi

Well Stimulation Activities & Pipeline Pressure Testing

Many of the jobs that come under the Well Stimulation banner require the use of higher pressures with lower flows, necessitating the use of a different kind of pump. Often it is the technically advanced Hammelmann pump that is employed. These pumps also lend themselves to Pipeline Pressure testing as well as Scale Squeeze, Coiled Tubing, Acidising and Methanol Injection.



Zone 2 ATEX Scale Squeeze

Drive Diesel / Hydraulic Drive
Power 100 to 330 hp
Flow up to 6 bpm
Pressure up to 55,000 psi



Zone 1 ATEX Scale squeeze

Drive Electric Drive
Power 100 to 300 hp
Flow 6 bpm
Pressure up to 55,000 psi

Well Service Pump Units

INNOVATION THROUGH EXPERIENCE

CALDER
A PG FLOW SOLUTIONS COMPANY

Power Fluid Pumping & Water Injection

The following example was built for a client who required high pressure with reasonable flows but had the constraint of little space availability on an FPSO. Diesel Driven Hammelmann pumps were used.

Pictured Unit:

Zone 2 ATEX Diesel Drive

Power 1,000 hp (750 kW)

Flow up to 100 m³/hr (10.48 bpm)

Pressure up to 1,500 bar (22,000 psi)



Pipeline Testing & Pigging

For the application of filling a pipeline for pressure testing and/or pigging, we implement low pressure (35 bar / 500 psi) high flow centrifugal pumps driven by Diesel engines, or electric motors for safe area or hazardous area operation.



Zone 2 ATEX

Multistage Centrifugal, Diesel Drive
30 Foot container

Power 600 hp (400 kW)

Flow up to 2,060 gpm (7.8 m³/hr)

Noise Level 83 dBa

Pressures up to 580 psi (40 bar)



Zone 2 ATEX

Multistage Centrifugal, Diesel Drive

Power 350 hp (262 kW)

Flow up to 3,000 gpm

Pressure up to 435 psi

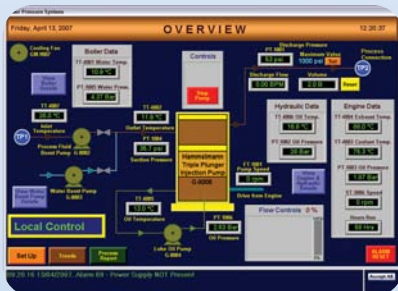
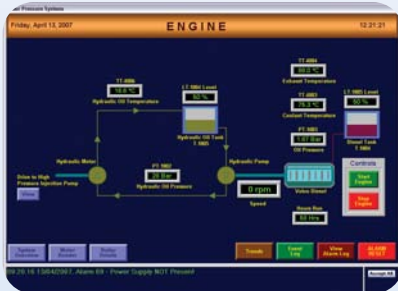
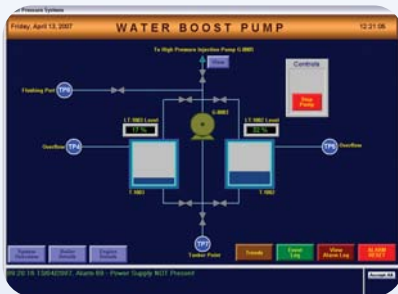
Well Service Pump Units

INNOVATION THROUGH EXPERIENCE

CALDER
A PG FLOW SOLUTIONS COMPANY

Well Service & Hot Oil

Mobile Pump Unit for general onshore well service applications and Hot Oil service in a Zone 2 Hazardous Environment.



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