

Cementing Services

Primary Cementing

Casing Cementing , Liner Cementing, Heavy and Light weight cementing applications,
Multi-Stage cementing

Remedial Cementing

Well abandonment, Kick-off plugs, Lost circulation plugs, Squeeze jobs, Water shut-off
Gas shut-off, Well control

Miscellaneous Pumping

Integrity testing, Well clean, circulation, Pressure test

Romp petrol Well Services pumping equipment is designed and constructed to operate and render services under oil field conditions.

Each unit is thoroughly tested before being assigned to the field.

Before each job, cement slurries or other fluids are tested in RWS own laboratory.



TMTP - 1000 /C-TPU-T 717 Cementing Pump Truck

The TMTP-10000 cementing unit is a high horsepower twin triplex pump cementing unit that is equipped to operate at the work site independent of other equipment. The unit is fabricated on a MAN 6x6 truck chassis. Deck mounted equipment consist of two main diesel engines, automatic transmissions, triplex down hole pumps, displacement tank, centrifugal pump pressurizing the triplex pump suction, displacement tanks and complete operator station and control systems.

Hydraulic systems driven from the chassis engine provide power for driving the centrifugal pumps. Data recording equipment and instrumentation provide for measurement of pump rate, pressure and fluid density versus time.

Maximum hydraulic power: 600BHP
 Maximum Working Pressure: 15,000psi
 Maximum Flow Rate: 16.60 BPM

Triplex Pump

Type: HD – 500
 Plunger stroke: 8”
 Gear Ratio: 8:1

or

Type: TWS 600S
 Plunger stroke: 6”
 Gear Ratio: 8:1

Engine

Type: Deutz 2015 Series
 Maximum power: 540 HP
 Maximum RPM: 2,100
 or

Type: Caterpillar C15
 Maximum power: 717 HP
 Maximum RPM: 2,100

Transmission

Type: Allison 4700 OFS
 Maximum torque: 1,939 Nm
 Number of gears: 5 + 1

CUSTMAN 001072 Truck Mounted Single Line Pumping Unit



CUSTMAN 001072 Single cementing unit is suitable for a variety of fluid pumping and mixing operations in the oilfield. Typical operations include well cementing , well acidizing treatments, hydro-jet perforating, solvent pumping, pressure testing and miscellaneous fluid pumping at large range of Density (Range 9 – 19 PPG / 1,078 – 2,276 kg/cm² and flow rate (Range 1 – 7 BPM / 0 – 0.83 m³/min). The cementing Unit is capable of operating during extended pumping operations in rough oilfield environments with ambient temperatures ranges of -30° C to + 50° C.

PERFORMANCE SPECIFICATION

MSI 600HP Hybrid Triplex Pump with 4” Plungers
 Maximum Working Pressure 8,438 PSI
 Maximum Flow Rate dependent on line size

Cementing Services

Main Components

- Caterpillar Industrial Engine C13, Rated 475 HP
- Allison 4700 OFS transmission with integral pumps
- 3 m³ displacement tank partitioned to create 1.5 m³ compartments
- MSI T1-600 Hybrid pump ATEX certified triplex 600 HP equipped with 4" plunger.
- 2 x Garden Denver 6" x 5" Centrifugal Pumps driven with hydraulic motor for boost and re-circulating.
- 1 x Garden Denver 6" x 5" Centrifugal Pumps driven with hydraulic motor for mixing system.
- High Pressure Release Manifold
- One Mixing Tank of 2 m³ with a split compartment of 0.5 m³. The tank opened and reinforced to mix slurry at density up to 19 PPG / 2,276 kg/cm³.



Recirculating Mixer

The Recirculating Mixer consists of a 5,000 l capacity tank for cement slurry preparation equipped with ServaHEMY High Energy Mixing Injector, water, recirculating and booster C-pumps hydraulically actuated agitator and 6 parameters Data logger

Bulk Trucks

Romp petrol Well Services bulk trucks are designed to transport cement to the well site as well as to feed it during the job into the system. They can also be used for other powder like material (i.e. sand, additives, etc.).



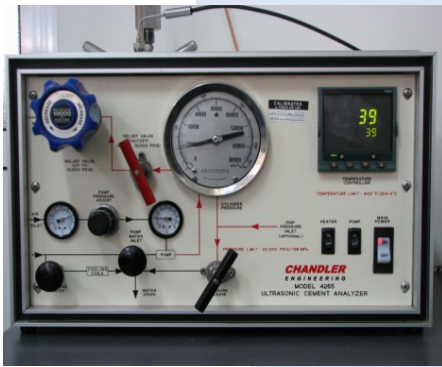
Cement Lab Equipment

RWS Cement Laboratory is capable to perform all API Spec 10A tests at downhole conditions



Pressurized Consistometer

Chandler Model 7722 Dual Pressurized Consistometer – designed to measure the thickening time of cement slurries. With its wide pressure and temperature operating range – up to 22,000 psi (150 Mpa) and 400°F (205°C) it is possible to simulate virtually all down-hole well cementing conditions. Two Slurry cups – rotation 150 rpm
Viscosity Range: 0 – 100 Bc (Bearden Units)



Ultrasonic Cement Analyzer

Chandler Model 4265 Single Cell Ultrasonic Cement Analyzer (UCA) – provides a determination of the strength development of a cement sample while it is being cured under downhole temperature and pressure conditions.
Max. pressure: 20,000 psi (138 MPa)
Max. temperature: 400 °F (200 °C).

Viscometer

Chandler Model 3500 Chan 35 Direct Indicating Viscometer – used to determine rheological properties of the fluid samples (drilling fluids, cement slurries, fracturing fluids).
12-evenly spaced speeds per API Specs (1 to 600 rpm)
Atmospheric Pressure, Temperature to 200 °F (93 °C)



Mixer

Model 3060 Constant Speed Mixer – prepares cement slurries at the desired mixing speed. Capacity: 1 liter. Two preset speeds of 4,000 and 12,000 rpm and variable speed control for 1,000 to 18,000 rpm.

Cementing Services

Compressive Strength Tester

Compressive Strength Hydraulic Press – a manually operated, hydraulic press, designed to test the compressive strength of sample cement cubes (2" molds) in exact compliance with API Spec 10 requirements.

Filter Press

Chandler Model 4222 HPHT Filter Press - 500 ml cell - used for testing the filtration properties of drilling fluids, cement slurries and fracturing fluids. Provides an efficient means of evaluating the filtration properties at high pressures (2,500 psi) and high temperatures up to 500 °F (260 °C).

Most used cement additives

Name of Product	Description of material	Manufacturer
DF-540	Antifoam Agent	Aubin Ltd
CD-6	Cement Dispersant	Aubin Ltd
BDC 043	Cement Dispersant	BDC International
CX-1	Cement Liquid Extender	Aubin Ltd
BDC-011	Cement Low Temperature Retarder	BDC International
CR-112S	Cement Retarder High Temperature	Aubin Ltd
CR-120SB	Cement Liquid Mid Range Retarder	Aubin Ltd
CR-128	Cement Retarder High Temperature	Aubin Ltd
CR-105	Cement Mid Range Retarder	Aubin Ltd
DF-410	Cement Antifoam Agent	Aubin Ltd
CFL-109	Fluid Loss Control	Aubin Ltd
CFL-122	Fluid Loss Control	Aubin Ltd
BDC-031	Fluid Loss Control	BDC International
BDC-101	Gas Migration + Fluid Loss Additive	BDC International
CFL-386	Gas Migration + Fluid Loss Additive	Aubin Ltd
CFL-387	Slurry Gas Stabiliser	Aubin Ltd
CSP-500	Spacer Viscosifier	Aubin Ltd

Acidizing Services

RWS provides personnel, equipment and services to carry out acid pumping / acid-fracturing operations.

CMAP 800 Acid Pump Unit

CMAP Acid Pumping Unit is an integrated equipment that allows transport, mixing and pumping of acid stimulation fluids. The unit includes 8,000 liters acid tank, triplex pump, two centrifugal pumps and data acquisition system

400 HP Diesel drive
15,000 psi WP with high pressure inlet/ outlet connections
Over 2,000 liter/min Flow rate



Acid Tanker, truck mounted, 8,000 liters capacity

Filtration Unit used for filtering and cleaning of the process water.
Maximum Flow rate: 600 liters/min.
Secondary filtration grade: 5 μ m

Slick Line Services

Slick Line Unit



LANDLINE "C" Slickline Unit is designed for super light duty (.092") to super heavy duty (.125") slickline operations.

The unit is also designed for Swabbing, Fishing and Logging line operations.

The unit is equipped with

WinchDrumm (CC for .092" & CM for .125" slickline)

AutoSpooler Measured Head (hydro-pneumatic automatic spooling system)

Nonzoned Encoder&Transducer Set (including encoder, pressure transducer and cabling)

BOP and SB Control (with tank, accumulator and air driven pump), BOP and SB Reel (fitted with wet center reel, including control and hydraulic hose, for BOP and Stuffing Box operation)

Portable **SmartMonitor** data acquisition system

Drill Stem Test Services

Surface Testing Equipment

Description	WP [psi]	Test Pressure [psi]	Nom. ID [in.]	Max load	Connections	Dimensions
Flow head 5000 WP	5,000	10,000	3.1/8	At 0 psi - 300,000 lbs At WP - 200,000 lbs	Bottom - 4.1/2" IF pin Top - 6.1/2" 4Acme pin WL quick con	L - 149 in. W - 37 in. D - 35 in.
Floor Choke Manifold with 4 gate valves	5,000	10,000	3.1/8	Adjustable - 1.1/2 Set - 1/8, 1/4, 3/8, 1/2, 5/8, 7/8, 3/4, 1, 1.1/4, 1.1/2	Inlet/ Outlet WECO Union 3 in.	L - 70.1 in. W - 72.4 in. H - 37.6 in.

Tri-phase Separator

SOT 100 – 1000 x 4.5 Separation Module Unit with Tri-phase Separator is designed for oil and gas wells production tests through separation of crude oil, gas and water phases.

The module consists of:

- ✓ Horizontal Tri-Phase Separator
- ✓ Metering and Sampling apparatus
- ✓ Integral inlet and by-pass manifold

The Separator unit is skid mounted



Drill Stem Test Services

Downhole Testing Equipment

Description	Thread connection top x bottom	O.D. [in]	Length [m]	I.D. range [mm]	Nr. Pcs./string
Break –Off Plugs reverse tool operated by drop-bar, released from surface (reverse circulation)	Box up x Pin down - 2.7/8"E.U.	2 7/8"	0.40	52	1
Cross over connection between M.F.E .and drill pipe string	BxP 2.7/8"E.U..x3 1/2" FH.	4 3/4"	0.35	31	1
M.F.E.-multi flow evaluator type operated by pipe reciprocation Include choke and sample chamber.	BxP - 3 1/2" x 4 3/4"MOD	5"	2.80	Top: fixed choke 6 or 9 mm Below the choke – 32mm	1
M.F.E.-hydrostatic bias. Keeps packer set as string is reciprocated to cycle MFE.	BxP 4.3/8"MODx3.1/2" FH	5"	1.00	32	1
Recorder carrier Weatherford WMG Gauge Carrier Carrier to hold 2 pcs.- 3/4" WMG Gauges	BxP -3.1/2"FH	5"	0.96	52	1
Weatherford Micro Gauge WMG-PR (Piezo- Resistive Transducer) -memory: 500,000 d. points -pressure: 15,000 PSI -temperature: 150 Deg.C	P- special thread connection to carrier	0.75	11.5"	-	2
T.R. hydraulic jar -provides upwards shock to help free stuck tools.	BxP -3.1/2"FH	4.3/4"	2.40	37	1
Safety joint -allow retrieval of upper part of string if lower part becomes stuck	BxP -3.1/2"FH	4.3/4"	1.00	45	2
Cross over -ensure connection between string and packer	BxP -3.1/2"FHx2 7/8" or -3.1/2"FHx3 1/2' E.U.	4.3/4"	0.30	54 74	1
Packer Posi Test -seals off between annulus and tubing or drill pipe -supports string weight and has integral bypass	BxP -2.7/8" E.U. and 3.1/2" E.U	6 5/8" 7" 7 5/8" 8 5/8" 9 5/8"	1.40 1.40 1.40 1.80 1.80	52 52 52 74 74	1
Slotted/ perforated tubing -allows acts as a filter to sand.	BxB -2.7/8" E.U .	2.7/8"	1.40	59	1

Nitrogen Services

180k Nitrogen Converter

The Non-Fired Skid Mounted Nitrogen Converter provides gaseous nitrogen to the following parameters:

- Maximum flow rate: 85 m³/min
- Maximum working pressure: 10,000 PSI.

System temperature that provides the agent for vaporization and heating of liquid nitrogen is maintained automatically by PID controllers.

Pumps

High Pressure	ACD Triplex, 1. 5/8" Cold End, 10,000 psi,
Low Pressure	ACD Centrifugal Boost Pump, 180,000 SCFH
Nitrogen Vaporization Pot	CryoQuip - VWP 180K



DU 10/18 Liquid Nitrogen Tank Truck

The DU 10/18 Unit comprises a stainless steel double wall pressurized vessel, high efficiency wall insulation and loading/unloading system equipped with safety valves, pressure gauges, regulators, flowmeter and flexible hoses.

Storage Capacity	10,730 liters
Maximum Working Pressure	18 bar
Working Pressure of the pressurized vessel	-196°C ÷ 50°C

Sand Control Services

FBU-35 Gravel Pack Blender

Automatic equipment for mixing and pumping of proppant and fluid mixtures to obtain slurries up to 1900 kg/m³

Fluid rate	5 m ³ /min)
Max. discharge press	5atm
Max. discharge density	1600kgA/m3 sand added per gallon of water
Dry chemical rate	0.074 m ³ /min
Liquid chemical rate	100 l/min
Proppant input	4000 Kg/min)



Casing Running Services

Power Tong

Driven by a hydraulic power pack, power tongs provide controlled torque onto tubing and casing threads, ensuring those threads are gas tight and withstand pressure. Mounted on the tong or at the drillers console and operated by the tong operator or driller, the TripMaster torque control system displays torque applied to the connection in "real time" through the LCD screen.



Type: *FARR 13-3/8" Tong and Backup Assembly*
Torque Range @ 2,500 PSI:
High Gear: 4677 ft.-lb. / 6,343 Nm
Low Gear: 25,000 ft.-lb. / 33,900 Nm
Maximum RPM at High: 46 RPM
Tension Torque Gauge - Load Cell Assembly
36" Arm, 20,000 Ft.-Lbs.

Type: *Farr Model SLIM 4500 Hydraulic Tubing Tong*
C/W Hydraulic Backup
Torque Range @ 2,500 PSI:
High Gear: 4,000 ft.-lb. / 5,423 Nm
Low Gear: 8,000 ft.-lb. / 10,840 Nm

Torque Arm Length: 24" / 61 cm
Available Standard Jaw Sizes:
2-3/8", 2-7/8", 3-1/2", 4-1/2", 5"

