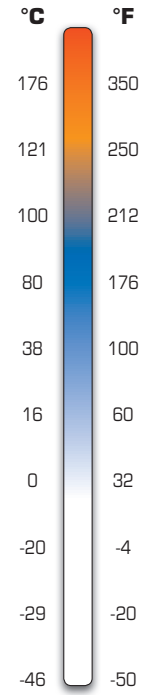


USEFULL DATA

TEMPERATURE



°C = 5/9 (°F-32)
°F = 9/5 (°C) +32

DISTANCES

1 inch = 25.4 mm
1 foot = 12 inches
1 foot = 0.3048 m
1 mm = 1000 microns
1 meter = 3.28 feet

POWER & ENERGY

1 kW = 1.34 hp
1 hp = 0.746 kW
1 kWh = 3412 Btu/h
1 MMBtu/h = 293 kW

SAND SEPARATION

Particle size	d in mm
Gravel	2.0 & larger
Very coarse sand	2.00 to 1.00
Coarse sand	1.00 to 0.50
Medium sand	0.50 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Fines	below 0.05

PRESSURE

1 bar = 14.5 psi
1 bar = 10 m H₂O
1 bar = 0.1 MPa = 100 kPa
1 bar = 0.987 atm

psi	bars
20 000	1 379
15 000	1 034
10 000	689.7
7 500	517.2
6 000	413.8
5 000	344.8
4 000	275.9
3 000	206.9
2 500	172.4
2 000	137.9
1 500	103.4
1 000	69.0
800	55.2
600	41.4
400	27.6
300	20.7
150	10.3
100	6.9

FLOWRATES & VOLUMES

1 US barrel = 42 US gallon
1 US barrel = 159 liters
1 US gallon = 3.785 liters

bbl/day	m³/h
20 000	132.5
15 000	99.4
10 000	66.3
7 500	49.7
5 000	33.1
3 000	19.9
1 500	9.9
1 000	6.6
300	2.0

API GRAVITY (CRUDE OIL) AT 60°F

25° API = SG 0.904
30° API = SG 0.876
35° API = SG 0.850
40° API = SG 0.825
45° API = SG 0.802
50° API = SG 0.780

MASS & AREA

1 kg = 2.2046 lbs
1 lb = 0.4536 kg
1 m² = 10.764 ft²
1 ft² = 144 in²



Fluid Control Europe - Asia

Singapore
Tel: +855 23 990 210
e-mail: sales@fce-asia.com



Fluid Control Europe

786, rue George Sand
42350 La Talaudière
FRANCE
Tel.: +33 (0)4 77 48 13 13
Fax: +33 (0)4 77 33 01 30
e-mail: fce@fce.fr



Fluid Control Algeria

Hassi-Messaoud
Algeria
Tel.: +213 (0)29 73 73 35
e-mail: fca@fce.fr

www.fce.fr

UPSTREAM PRODUCTION EQUIPMENT

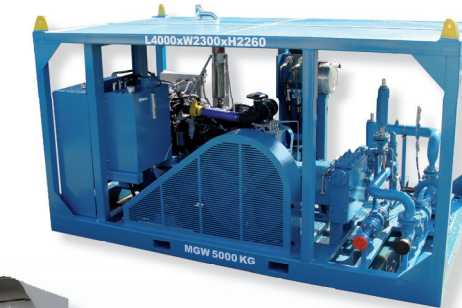
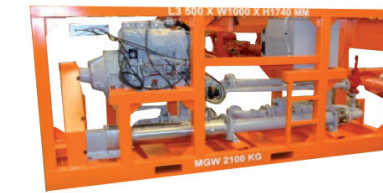
GAS/LIQUID & LIQUID/LIQUID SEPARATION

Engineering & Equipment Supply for marginal field production systems & flow stations.



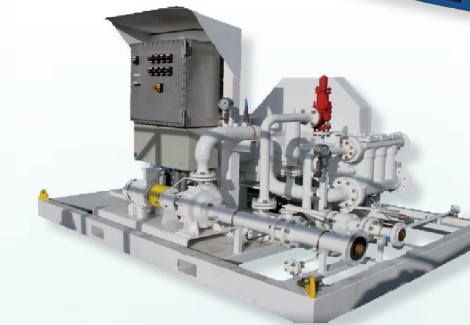
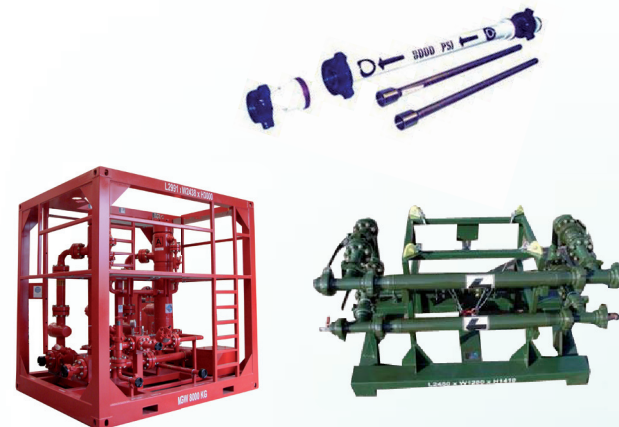
MOBILE or FIXED PUMPING UNITS

Medium & High Pressure service for Oil & Gas and Well Services applications.



HIGH PRESSURE SOLID REMOVAL UNITS

Well clean-up, Welltesting & Frac Flowback applications. Sand production testing units & Pumping applications.



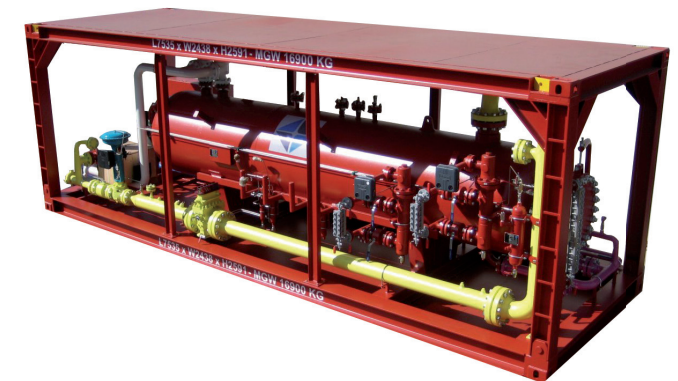
Pipeline transfer of petroleum fluids
Well killing, well cleaning (brine, acidized water, etc.)
Water injection into wells
Methanol / Glycol injection or recycling
Slop oil recovery, etc.



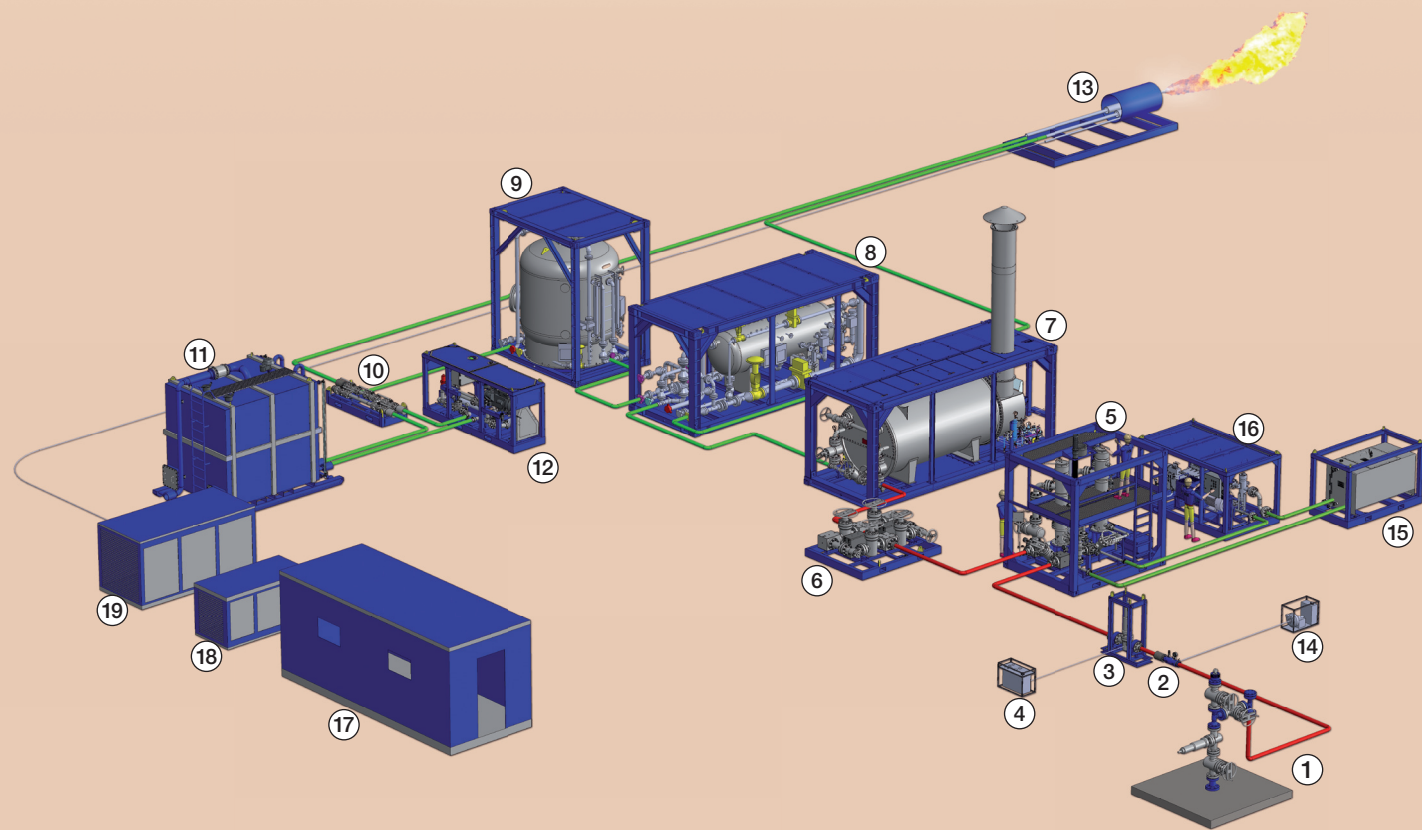
FLUID CONTROL EUROPE



INTEGRATED EQUIPMENT
PROVIDER FOR
**SURFACE WELLTESTING
& UPSTREAM
PRODUCTION SYSTEMS**



SURFACE WELLTESTING SET-UP

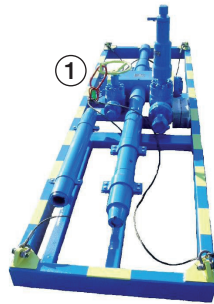


UPSTREAM EQUIPMENT

- 01- Wellhead or Flowhead (for DST operation)
- 02- Data Header
- 03- ESD Valve
- 04- ESD Control Panel
- 05- Sand Filter
- 06- Choke Manifold
- 07- Indirect Bath Heater

SECONDARY PROCESS EQUIPMENT

- 14- Chemical Injection Pump
- 15- Sand Recovery Tank
- 16- Flushing Pump



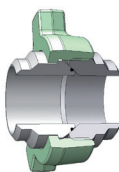
DOWNSTREAM EQUIPMENT

- 08- Test Separator
- 09- Surge Tank
- 10- 5-Valve Diverter Manifold
- 11- Gauge Tank
- 12- Transfer Pump
- 13- Burner & Flare

UTILITIES

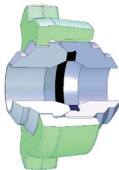
- 17- Lab Cab (lab devices & DAS)
- 18- Generator
- 19- Air Compressor

H2S SERVICE INTERCONNECTING COMPONENTS



WING UNIONS

Figure 206.
Low & Medium pressure up to 2 000 psi.
O-ring seal in the male sub.
(Buna-N for standard service
or Viton for H₂S service).



Figures 602 / 1002 / 1502 / 2202.
Medium & High pressure up to 15 000 psi.
Lip-type seal ring in the female sub.
(Buna-N for standard service,
Viton for H₂S service
or HNBR for H₂S and CO₂ service).

H2S SERVICE UNIONISED PIPING RATING

Pressure Rating	Nominal Pipe Size	Union figure
1000 psi	Up to 8" Sch. 40	Fig. 206
1200 psi	Up to 6" Sch. 40	Fig. 206
1440 psi	Up to 4" Sch. 40	Fig. 206
1600 psi	Up to 3" Sch. 40	Fig. 206
2000 psi	Up to 6" Sch. 80	Fig. 206
2300 psi	Up to 4" Sch. 80	Fig. 602
2500 psi	Up to 3" Sch. 80	Fig. 602
5000 psi	Up to 4" Sch. XXH	Fig. 602 / 1002
10 000 psi	Up to 4" Sch. XXH	Fig. 1502
15 000 psi	Up to 3" Sch. Extra Thk	Fig. 2202

OTHER CONNECTION TYPES

Flanged piping
Under Balance Drilling or
Early Production Facilities



Hubbed piping
High Pressure
Service



PIPING COMPONENTS & FITTINGS

Straight pipes (pup joints), various elbows, tees, data headers
and crossovers supplied with suitable transport baskets.

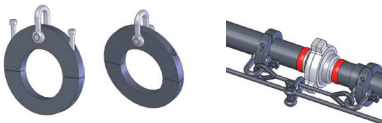


WIDE RANGE OF ACCESSORIES

**Thread protectors,
plugs & test plugs**



Tie-down Clamps



HIGH PRESSURE FLEXIBLE HOSES



For High Pressure and Severe Duty Services.

SAFETY CONCERNS



UNIONISED PIPING SAFETY ALERT

Avoid the DANGER of mismatching unions
2" Fig.602 and 2" Fig.1002 with 2" Fig.1502

SOUR GAS DANGER

HIGH TOXICITY

- Permissible Exposure = 10 ppm (15 ppm on short term)
- Immediately Dangerous to Life & Death = 100 ppm
- Immediate Death Level = 1000 ppm
- H₂S flame produces highly toxic sulphure dioxide (SO₂).

CORROSIVENESS HAZARD

- H₂S weakens carbon and alloy steel causing it to become brittle & fracture.
- Oxydation forms pyrophoric sulfide or black scale that will flash as it dries and is exposed to air.
- This can be a serious hazard when working on pipelines, flowlines, tanks and the like.

HAZARDOUS AREAS

ZONE 0 : Explosive gas-air mixture is continuously present or present for long periods.

ZONE 1 : Explosive gas-air mixture is likely to occur in normal operation.

ZONE 2 : Explosive gas-air mixture is not likely to occur or will exist for a short time only.

RIG SAFE : Used for equipment fitted with some safety devices but can be operated in safe area only.

SAFE AREA : A non-hazardous location in which fire or explosion is not expected, specifically due to the absence of flammable gas, liquid or dust.