

# LAB AND ADDITIVES

## LAB

Cementing services demand considerable versatility. Well conditions vary greatly from well to well, even within depths and bottom hole temperatures, formation problems lost circulation zones, sensitive clays, and well formations.

To service these varied localized needs, Superior has its own laboratory to tailor each job to the specific conditions of the well. From the formulation of the design to the actual slurry mixture, each job is tested and analyzed thoroughly. Computerized programs assist in designing the best cement job design for each well. Cementing is backed by fully-tested slurry programs, designed for wells on an individual basis and formulated with cement and additives to deliver the best quality performance. When raw materials are delivered from the manufacturer, each batch is tested to assure cement additives meet Superior's rigid quality specifications.

## ADDITIVES

Superior has a wide selection of acid blends, cement slurries and specialized additive materials. These products are effective in meeting the diverse well conditions and reservoir characteristics.

Superior has the facilities and experienced personnel to tailor a stimulation fluid or cement slurry to meet any specific requirement necessary for a successful stimulation treatment or cement job. Superior products are designed to be completely compatible with nitrogen or carbon dioxide.

## ACID ADDITIVES

- Acid Chemicals
- HCL Acid
- Acetic Acid
- Formic Acid
- Mud Acid
- Corrosion Inhibitor
- Inhibitor Intensifier
- Sulphide Inhibitor
- Non Emulsifier
- Anti Sludge
- Surfactants
- Iron Sequestering
- Friction Reducer
- Foaming Agent
- Mutual Solvent
- Solvent
- Paraffin Solvent
- Asphaltene Solvent
- Acid Retarder
- Gel Systems
- Gelling Agent
- Cross linker
- Iron Control
- Buffer
- Gel Braker
- Fluid Loss Additives
- Diverting Agents
- Water/ Gas shut off polymer
- Silica Sand Mesh (20-40)
- Caustic Soda
- Acid insitu
- Ammonium Chloride
- Calcium Chloride
- Potassium Chloride
- Sodium Chloride
- Ammonium Bifluoride
- Ammonium Prosulphate
- Soda Ash

## CEMENTING ADDITIVES

- Retarder
- Friction Reducer
- Fluid Loss
- Dispersent
- Antifoam
- Time controller
- Strength Retrogression Control
- Cement Spacer
- Chemical Wash
- Gas Block Fluid Loss
- Micromax
- Microblock
- Light weight Additive
- Ultra Light Weight Additive
- Silica Flour
- Fiber Cement
- Thixotropic Additives
- Weighing Agent
- Bentonite

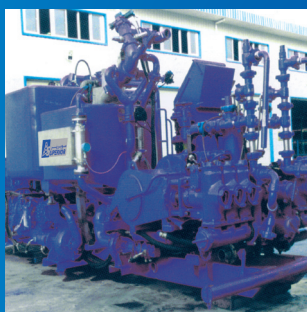
In addition to stimulation and cementing products, many other materials are available for special purpose treatments. These treatments include scale control, bacterial control, and cleanup of paraffin deposits.

No matter what the well stimulation or cementing needs are, Superior has the products, the technical knowledge, and the experience to do the job effectively.

### Superior Oilfield Services

PO Box 41156, Abu Dhabi, United Arab Emirates

Tel: +971 2 6446070, Fax: +971 2 6455538, Email: [superior@superior.ae](mailto:superior@superior.ae)



## CEMENTING SERVICES

Superior cementing units provide field proven dependability and high job quality. Designed for a wide range of slurry densities and formulations, Superior's cement pumping units and batch mixers provide flexibility and precision control to handle a variety of cementing services.

### APPLICATIONS

- Pressure testing
- Primary and secondary cement jobs
- Single and two stage cement jobs
- Cement liners
- Cement squeeze jobs
- Cement plug jobs
- Tieback cement jobs

### CEMENTING PUMPING UNITS SPECIFICATIONS (WITH AUTOMATIC DENSITY CONTROL)

Twin cement pumper, with dual Detroit Diesel engines Allison transmissions and triplex pumps. Pumpers are equipped with 41/2 fluid ends and state of the art mixing Automatic Density Control. Its basic operating principle is as follows:

The cement flow rate is controlled and adjusted via automatically controlled valve by the computer. The slurry densitometer detects the actual density and feeds the measured value back to the computer. A water flow meter mounted on the mixing system measures the water flow rate and sends the measured value to the computer. With the water rate and the desired density, slurry design and measured density, the computer calculates the required cement value position. A command signal is sent to the hydraulic actuating system to adjust the opening of the bulk cement-metering valve and thus controls the slurry density to the set range. The system displays and records the slurry density, discharge rate, total volume, pressure and bulk deliverability.

DESCRIPTION	TWIN CEMENTING SKID UNIT	TWIN CEMENTING TRAILER
Weight	20 t (main skid) + 2.4 t (aux.skid)	23.2 t (51,000 lbs)
Dimension	Main skid: 24 ft (L) x 8.5 ft (W) x 11 ft (H) Auxiliary skid: 9ft (L) x 4ft (W) x 6ft (H)	36.9 ft (L) x 10 ft (W) x 13.5 ft (H)
Max. pressure	11,200 psi (with 4-1/2" fluid end)	11,200 psi (with 4-1/2" fluid end)
Max. Flow	26 bpm (w/2 4-1/2" fluid end)	26 bpm (w/2 4-1/2" fluid end)
Density Range	8.32-22.5 ppg $\pm$ 0.2 ppg	8.32-22.5 ppg $\pm$ 0.2 ppg
Mixing Capacity	0 ~ 12.6 bpm	0 ~ 12.6 bpm
Working Temp.	-30°C ~ 50°C	-30°C ~ 50°C

### 100 BBL BATCH MIXER AND CONTINUOUS CEMENT MIXING SKID

100 bbl batch and continuous mixing skid which is the latest in mixing technology and density control. It includes two 50 bbl batch tanks with agitators and a 8 bbl mixing tank allows batch mixing of cement for primary, plug and squeeze cementing operations, flush and spacer mixing operations.

The 50 bbl batch tank also provides averaging of slurry density, and additive concentration. The system makes the operators' job easier by making the process more forgiving to potential job problems such as unsteady bulk delivery. Thus the quality of the resulting slurry adds significant value to the customer.

### EQUIPMENT SAFETY FEATURES

- Exhaust Spark arrestors/flame trap
- Exhaust manifold wrap
- Emergency shutdown controls
- Engine over speed shutdown valve
- Engine shut down for low lubricant pressure
- Engine shut down for high coolant temp
- Engine air starter
- Over pressure cut out
- Plastic/Antistatic fan
- Fire retardant/Antistatic fan belt

#### Superior Oilfield Services

PO Box 41156, Abu Dhabi, United Arab Emirates

Tel: +971 2 6446070, Fax: +971 2 6455538, Email: [superior@superior.ae](mailto:superior@superior.ae)





# COILED TUBING SERVICES

Superior is a leading company in coiled tubing applications and provides a full range of coiled tubing services – from a simple sand wash to a high pressure well operation. Superior has achieved a number of records for depth, pressure, accuracy and have handled some of the most complex operations under the most demanding downhole conditions.

## APPLICATIONS

- Unloading fluids with N2, foam, light fluids
- Artificial lift
- Fill Clean out of debris/sand
- Spotting cement plugs and/or cement squeeze
- Spotting Acid exactly where it is needed
- Well control/killing
- Using down hole motors to drill scale, cement or fill
- Spotting or jetting solvents for paraffin, asphaltene or scale removal
- Running down hole tools. e.g. Inflatable packers and bridges plugs.
- Fishing with coiled tubing.
- Siphon strings/Production tubing
- Under Reaming/milling and tubing cutters
- Coiled tubing E-line logging
- Extended reach technology
- Drilling Contingencies

Superior's highly qualified engineering staff understands the mechanical and fluid parameters of downhole tool assignments, we know what can or cannot be done with coiled tubing or any downhole motor/bottom-hole assembly. We often dispatch a complete mobile workshop to support our downhole tool assemblies to quickly redress tools between runs, or add components to modify job procedures on the fly, to save you time so you can save money by getting your well back on stream faster.

## COILED TUBING UNITS SPECIFICATIONS

Superior Coiled Tubing units are self-contained, can be easily transported to On-shore or Off-shore.

All units can be used in prolific High Pressure and High Temperature deep wells, sour environment and are very effective in vertical/long horizontal/highly deviated wells, and it allows continuous injection of fluids while reciprocating/moving out the pipe.

	40K	60K	80K	100K
Continuous Pull (lbs)	40,000	60,000	80,000	100,000
Continuous Snubing (lbs)	15,000	20,000	40,000 Mod	40,000
<b>Tubing Size</b>	<b>1"-1 1/2"</b>	<b>1"-2 3/8"</b>	<b>1"-3"</b>	<b>1"-3"</b>
Reel Capability	17,000 ft of 1-1/2"	17,500 ft of 1-3/4"	17,000 ft of 2"	18,500 ft of 2"
Max Speed	240 ft/min	200 ft/min	180 ft/min	150 ft/min

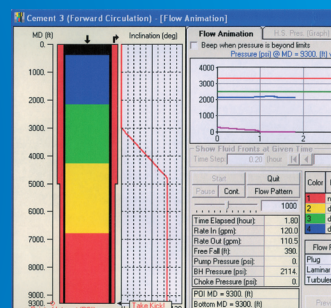
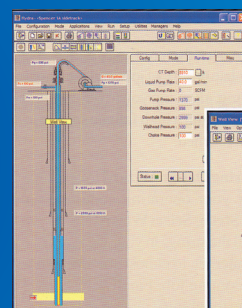
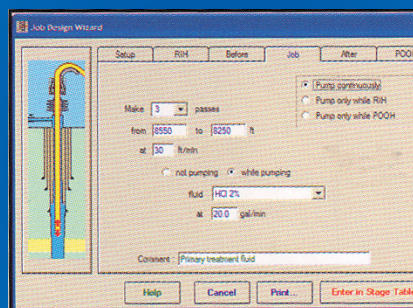
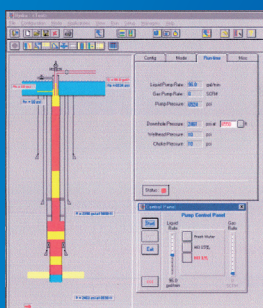
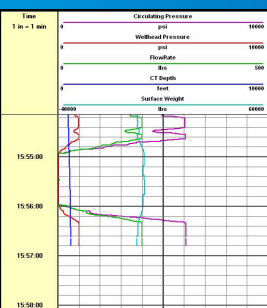
## EQUIPMENT SAFETY FEATURES

- Inlet Flame Trap rated 150 psi
- Stainless steel exhaust Spark Arrestor
- Water cooled exhaust manifold
- Exhaust manifold wrap
- Emergency shutdown controls
- Engine over speed shut down valve
- Engine shutdown for low lubricant pressure
- Engine shutdown for high exhaust temp.
- Engine shutdown for high coolant temp.
- Engine air starter
- Plastic/antistatic fan
- Fire retardant/antistatic fan belt

### Superior Oilfield Services

PO Box 41156, Abu Dhabi, United Arab Emirates

Tel: +971 2 6446070, Fax: +971 2 6455538, Email: [superior@superior.ae](mailto:superior@superior.ae)



# SOFTWARES

## COIL TUBING SOFTWARE

Superior engineers are equipped with a state of the art software to provide comprehensive technical support for coiled tubing operations where jobs are designed to optimize the performance of CT string or to design the most appropriate string for a given job using the following models:

**CT forces and buckling:** calculates drag and helical buckling, determine the maximum setdown weight and overpull at a specified depth, and estimate the surface weight as the tubing runs in and out of the well.

**CT operating limits:** calculates the tubing burst and collapse operating pressures and maximum axial forces.

**CT hydraulic performance:** calculates and monitor the pressure and flow rate of fluids at any location in the tubing and wellbore.

**CT fatigue management:** use Reel-Track with a sophisticated fatigue model to design jobs in a way that will prolong the useful life of the tubing string.

## STIMULATION SOFTWARE

Superior Stimulation Software is specifically designed to provide our engineers with a comprehensive set of tools for matrix acidizing planning and analysis. Practical utilization of actual treatment data offers engineers much better understanding of their well's response and reflects the reality of what is occurring in the reservoir before, during and after acid treatments. Using the following models:

- **Acidizing Simulation Model** allows planning, analysis and history matching. The real-data analysis may be conducted either in real-time during the treatment or later after the treatment. The objective of real-data analysis is to gain a better understanding of reservoir and wellbore during and after treatment.
- **Acidizing Design Model** is used to design the proper type and size of pumping schedule for the specific reservoir conditions found in the reservoir of interest.
- **Reservoir Simulation Model** predicts or history matches the production behavior of fractures or non fractured wells. This mode pertinent information from its acidizing models to a reservoir simulator where the effects of changing skin on well productivity are modeled. This is essential for evaluating success of past treatments and relevant economics of future treatments.

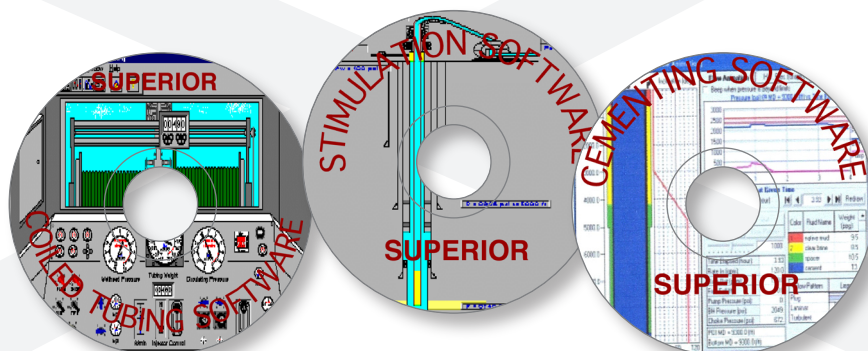
## CEMENTING SOFTWARE

### A. Cem tool

Assists engineers in calculations of volumes, pressure, material required for cementing operations. This eliminates the time-consuming and error in performing the following tasks and raise the quality of work.

### B. Cementing model

Superior engineers will perform quickly the design of cement jobs using the advanced engineering features and animated flow visualization of the software to accurately models the cement placement by the addressing U-tubing phenomena, dynamic pressures, equivalent circulating densities (ECD's) and formation breakdown pressures.

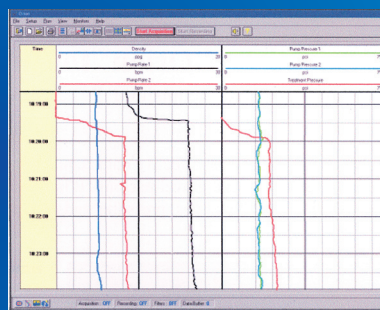
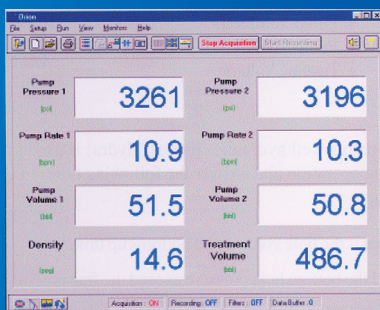


Superior Oilfield Services

PO Box 41156, Abu Dhabi, United Arab Emirates

Tel: +971 2 6446070, Fax: +971 2 6455538, Email: superior@superior.ae





# DATA ACQUISITION

Superior uses the most advanced real time Data Acquisition System to maximize and enhance the performance of cementing, acidizing, fluid pumping, nitrogen pumping and coiled tubing services.

The data of the job is displayed and recorded during operations in real-time to ensure maximum efficiency and safety and to ensure that the CT application is conducted within the specific string's limitations.

## DATA ACQUISITION PARAMETERS

Data acquisition system will precisely compile and display, in real time, the following parameters;

- CT depth
- CT speed
- CT weight
- CT wall thickness
- CT injector pressures
- CT stripper pressures
- Circulating pressure
- Wellhead pressure
- Liquid pump rates and volumes
- Nitrogen flowrates and volumes
- Nitrogen discharge temperature
- Slurry density

### Superior Oilfield Services

PO Box 41156, Abu Dhabi, United Arab Emirates  
Tel: +971 2 6446070, Fax: +971 2 6455538, Email: [superior@superior.ae](mailto:superior@superior.ae)



# NITROGEN SERVICES

Superior is capable of handling your nitrogen supply and pumping requirements from callout to finish. Upon contact Superior response quickly to perform a wide variety of Nitrogen services and provides cost effective solution. The goal is to restore your well and put it back into production. Nitrogen is non- combustible, non-corrosive, so it is safe, efficient, cost effective.

## APPLICATIONS

- Testing for zone communication
- Nitrified foam/nitrified acid
- Fill clean out
- Nitrogen lifting
- Drill stem testing
- Nitrogen purging
- Pressure testing of tubulars

## NITROGEN PUMPERS SPECIFICATIONS

Superior has advanced Nitrogen pumping equipment with a complete range of pressure capabilities and pumping volumes depending on pump cold end size used. Nitrogen units are equipped with Detroit Diesel engine, a vaporizer and cryogenic triplex pumps. A variety of fluid-end sizes are available for most efficient operation at any pressure required. The gas is discharged at 90-120F at all flow rates under any climatic condition or temperature. Units are available on a skid/trailer or a bodyload truck and carry a 2,000 or 4,000 gallons nitrogen tank.

Model	90K	180K	360K
System	Heat recovery	Heat recovery	Heat recovery
Triplex	Single	Single	Twin
Max. Flow rate	90,000 scf/hr	180,000 scf/hr	360,000 scf/hr
Min. Flow rate	115 scf/mint	230 scf/mint	450 scf/mint
Pressure	10,000 psi	10,000 psi	10,000 psi

## NITROGEN TRANSPORT EQUIPMENT

Liquid Nitrogen transport trailers are available in two sizes 2 x 2,000 or 7,200 gallons capacity. A bodyload truck is also available to transport 4,200 gallons of liquid nitrogen.

## EQUIPMENT SAFETY FEATURES

- Exhaust Spark arrestors/flame trap
- Exhaust manifold wrap
- Emergency shutdown controls
- Engine over speed shutdown valve
- Remote shut down
- Engine shut down for low lubricant pressure
- Engine shut down for high coolant temp
- Engine air starter
- Over pressure pup off valve
- Drip trays under cryogenic lines
- Plastic/Antistatic fan
- Fire retardant/Antistatic fan belt

### Superior Oilfield Services

PO Box 41156, Abu Dhabi, United Arab Emirates

Tel: +971 2 6446070, Fax: +971 2 6455538, Email: [superior@superior.ae](mailto:superior@superior.ae)



# STIMULATION AND PUMPING SERVICES

Superior Services uses state-of-the-art pumping, blending and transport equipment to provide customers with total capabilities in well stimulation. Highly trained crews deliver each treatment under the direction of experienced supervisory personnel who are charged with responsibility of providing the utmost in service to each customer. Treatments are designed and tested with the aid of computer programs. Superior engineers analyze these designs and works directly with the customer to provide a treatment that will result in optimum well productivity.

## STIMULATION SERVICES APPLICATIONS

- Pressure testing
- Acid pumping/stimulation
- Well killing
- Pumping well shut off fluids
- Activation of well
- Well bore fluid displacement
- Fluid blending and mixing
- Batch treatment/mothballing
- Chemical injector
- Cement squeeze
- Cement plugs
- Pipe line purging
- All kind of fluid pumping

## PUMPING EQUIPMENT

Capable of delivering over 1,000 hydraulic horsepower at pressures upto 15,000 psi. The unit uses 2 x 550 horsepower Detroit Diesel engines, Allison automatic transmission and two triplex pumps. A variety of fluid-end sizes are available for most efficient operation at any pressure required.

## ACIDMASTER

The Superior acidmaster can carry 1,500 gallons of acid and can provide up to 350 brake horsepower from a single triplex pump. Commonly used for smaller acid treatments and miscellaneous pumping service, it carries all treating lines normally required.

DESCRIPTION	TWIN PUMPING SKID UNIT	TWIN PUMPING TRAILER UNIT
Weight	20t	27t
Dimension	24 ft (L) x 8.5 ft (W) x 11 ft (H)	37 ft (L) x 10 ft (W) x 13.5 ft (H)
Max. pressure	15,200 psi (combined with 3-1/2" fluid end)	15,200 psi (combined with 3-1/2" fluid end)
Max. Flow	20 bpm (combined with 3-1/2" & 4-1/2" fluid end)	20 bpm (combined with 3-1/2" & 4-1/2" fluid end)
Displacement Tank Capacity	20 bbl (Two 10 bbl)	20 bbl (Two 10 bbl)
Working Temp.	-30°C ~ 50°C	-30°C ~ 50°C

## ACID TRANSPORT AND FIELD STORAGE

7,000-Gallon Acid Transport Trailers are provided with three compartments for hauling raw acid, inhibited blends or other treating fluids.

Field-acid rubber-lined storage tanks ranging from 2,000 to 15,000 gallons capacity with piping and manifold systems to meet a variety of jobsite needs.

## EQUIPMENT SAFETY FEATURES

- Exhaust Spark Arrestor/flame trap
- Exhaust manifold wrap
- Emergency shutdown controls
- Engine over speed shutdown valve
- Remote shut down
- Engine shut down for low lubricant pressure
- Engine shut down for high coolant temp
- Engine air starter
- Over pressure cut out/return to ideal
- Over pressure pup off valve
- Drips tray under triplex pumps
- Plastic/Antistatic fan
- Fire retardant/Antistatic fan belt

### Superior Oilfield Services

PO Box 41156, Abu Dhabi, United Arab Emirates

Tel: +971 2 6446070, Fax: +971 2 6455538, Email: superior@superior.ae