

# Pressure Pumping Equipment



# Integrated Pressure Pumping Solutions



## Our integrated pressure pumping solutions

The intervention and Stimulation Equipment (ISE) business unit of offers pressure pumping equipment with brands such as APPCO, Enerflow and Rolligon. Backed by decades of engineering expertise we provide equipment packages customized for the size and scope of your operation.

Our portfolio of equipment includes truck, trailer and skid mounted designs that are fully engineered to customer specifications. Multiple engine emissions options up to Tier 4F are available and modifications can be made to adapt the standard configuration for cold weather and high ambient environments. In addition, options are available for diesel, hydraulic or electric power. Unit certification is available for NEC 500, ATEX, IECEx zoned equipment, CE and DNV 2.7-1. Modifications for country specific requirements can also be incorporated such as GOST, ADR, Euro, etc.

## Rolligon

Since 1960 we have made our mark as your leading manufacturer and supplier of fracturing and stimulation equipment. Expanding from the off-road vehicle industry, our manufacturing capabilities have evolved to provide fracturing, acidizing, cement and coiled tubing support equipment. Regardless of your location, our global network provides customer service and technical expertise you can depend on.

## Enerflow

With a long history manufacturing oilfield service equipment and controls, we get the job done safely and efficiently. Over the years, we have continued to strengthen our position as a leading developer of pressure pumping, blending and cementing equipment. By partnering with us, you can rely on our team to deliver products that exceed your highest expectations.

## APPCO

We are more than just a manufacturer of material handling equipment. With a proven track record of excellence and over 60 years of experience, we are here to provide an unmatched depth of expertise and understanding from start to finish. Beginning as a supplier of material handling equipment to the aggregate and concrete industry, we have evolved into a leading provider of premium frac-sanders, multi-sanders and high volume storage tanks.

# Fracturing Equipment



The key to a successful fracturing operation is using equipment that is built for reliability, performance and longevity. Backed by decades of experience, our integrated offerings allow us to design and manufacture a comprehensive suite of fracturing service equipment. From a single unit to a complete fracturing spread, we can customize a solution to fit your needs.

## Blenders

Our blenders are designed to meet the requirements of a vast array of jobs ranging from low rate gel fracs to high rate slick water jobs without modification. Units are manufactured to be easy to operate and maintain while delivering the most reliable operation, precise automated control and wide range of operating flow rates.

- Designs rated up to 135+ BPM, with twin designs rated up to 150+ BPM
- Automated density and chemical control
- Simplified controls for ease of operation
- Direct communication with other units (LAS, hydration, DAS)
- Multiple liquid and dry chemical configurations
- Multiple auger configurations to meet customer specifications
- Dual or single side manifolds
- Open and closed tub designs



## Liquid Additive Systems

When fracturing applications require extensive use of chemicals, LAS units can be used to relieve significant burden from the blender operator. Our units feature the ability to carry a wide variety of chemicals to handle complex well treatment requirements.

- Up to 12 automated chemical circuits
- Up to 9 independent base rates for proportioning
- Multi-tier designs for cold weather applications
- Direct communication with other units (blenders, hydration, DAS)
- Multiple liquid chemical pump system configurations



## Frac Pumps

The frac pump units we manufacture are designed to meet the harsh demands of today's large shale fracturing jobs. The fully engineered units are easy to operate and maintain therefore increasing useful life and return on investment.

- Up to 3000+ BHP
- Multiple engine and transmission configurations
- Triplex and quintuplex units
- Digital control system for versatility and increased safety functions
- Compatible with multi-pump PC frac controls



## Hydrations

Our hydration systems reduce the amount of gel and chemical used during a job by allowing for “on-the-fly” hydration of fracturing fluids. Compared to pre-gel operations, hydration units significantly reduce job site expenses by eliminating time to pre-gel and costly disposal/clean-up of unused gelled frac fluids.



- 90, 180 and 270 BBL hydration tank capacity options
- Lined tanks for extended life
- Automated tank level and chemical injection
- Direct communication with other units (blenders, LAS, DAS)
- Bulk dry polymer and/or liquid gel systems with redundant options
- Optional additional liquid chemical systems

## Data Vans and Unit Control Centers

We manufacture custom data vans and trailers for the monitoring and control of a complete spread of fracturing, acidizing, pump down and cementing equipment. Our designs provide a comfortable, centralized control room environment for your operations and customer.

- Hardened electronics for oilfield
- Serial, CAN, Ethernet and wireless communication
- Data acquisition systems
- Process unit controls
- Multi-pump controls
- Video monitoring options
- Real-time satellite communication
- Real-time remote data viewing and storage
- Integrated laboratory
- Increased space with slide-out options
- Generator and power outlets to match country requirements



## Combo Frac/Blenders

Combination fracturing blender units have long been used to service low production fields where stimulation jobs are small and require an economical solution. We manufacture units to feature the pumping horsepower of a small frac unit combined with the capabilities of a small blender on one chassis. The units can also be designed to provide frac slurry to additional pumpers to meet larger job requirements.

- Fracturing horsepower from 800 to 1350 BHP
- Blender rates to 40 BPM freshwater and horsepower to 400 BHP
- Triplex and quintuplex units
- Digital control system for system versatility and increased safety functions
- Incorporates many standard features of full scale blenders and frac units

# Acidizing Equipment



When formations require high volume acid treatments, having the right equipment is crucial to success. In order to meet your needs, we offer multiple acid units for pumping and transporting inhibited acids.

## Conventional Acid Pumps

Conventional acid pump units are mid-sized high pressure pumping units equipped with a minimum 800 BHP of downhole horsepower and are capable of hauling up to 1,500 gallons of acid. Our units are designed to be operated as standalone units for small acid pumping jobs or in conjunction with larger acid transports for larger pumping jobs.

- Trailer designs range from 800 to 950 BHP trailer designs
- Twin 750 gallon acid transport tanks
- Quintuplex pump standard
- Remote control and data acquisition options
- Mix tub for salt and chemical additives
- Enhanced versions with proppant and chemical delivery
- Wet kit or unit mounted hydraulic power source



## Acid Frac Pumps

Acid fracturing pump units are the perfect fit for today's modern acid treatments. We manufacture units for use in conjunction with acid transports for large acid pumping jobs or as extra horsepower on fracturing jobs

- Designed for large volume, high pressure or high rate acid jobs
- Remote control and data acquisition options
- Mix tub for salt and chemical additives
- Wet kit or unit mounted hydraulic power pack



## Acid Kill Pumps

We manufacture acid kill pump truck units as an inexpensive option for jobs requiring large amounts of acid pumped at intermediate rates and pressures. Additionally, units can function to maintain backside pressure during high pressure treatment jobs.

- Triplex pump
- Designed for large volume, low rate acid jobs
- Remote control and data acquisition options
- Mix tub for salt and chemical additives



# Cementing Equipment



Whether you are looking for a basic unit for plug and abandonment, long string horizontal casing or offshore high horsepower, we manufacture units to meet your cementing requirements. Our units provide precise management of the cement mixing and pumping process to ensure successful completion.

## Batch Mix Units

Our cement batch mix units are economical for ensuring homogeneous cement slurry of an exact density. Our units are capable of having one tank mixing slurry while the other is discharging. Units also have the option to be equipped with educator mixers for adding bulk cement or cement additives from sacks.

- Recirculating mixer design for thorough bulk wetting
- Dual centrifugal pump design and redundant piping allow for combined mixing and pumping operations
- Closed top mixing tanks
- Centrifugal pump seal flush system
- Non-nuclear density measurement
- Ability to mix high density slurries



## Cement Pumpers

Our cementing units are high performance, versatile units designed to handle a variety of job types and operating conditions while delivering accurate, consistent slurry.

- Two and three engine options
- Data acquisition systems
- Redundant piping and hydraulics
- Patented CAM recirculating high energy mixer and electronics
- Non-stick and defoamer tank
- Displacement tank paddles
- Standard split mix tank design
- Various chemical pump types
- Additional downhole density/flowmeters
- Twin 10, 12 or 15 BBL displacement tank capacity options
- Mag or turbine mix water flowmeters
- Designed for extended runtime



### Combo Cementer/Acidizers

Combination cementer/acidizers can improve efficiency and lower field cost by utilizing fewer pieces of equipment and people at the well site. Our versatile design not only allows a single operator the ability to cement wells requiring less than 220 sacks of bulk cement, but also allows for acidizing of wellbores or perforations using up to 1,000 gallons of acid.



- Patented CAM recirculating high-energy mixer and electronics
- Reciprocating triplex pump
- ASME coded bulk cement tanks
- Acid tanks with agitators
- Data acquisition systems

### High Volume Air Compressors

To complement your cement/aggregate operation, we manufacture high volume air compressor to pneumatically convey dry bulk products.

- Piston or screw type compressors
- Up to 400+ CFM
- Varying pressure ratings



### Automatic Mixing Systems

We manufacture automatic cement mixing systems that feature our patented high energy recirculating mix head and CAM system. Our units allow for the mixing of highly accurate cement densities during cementing operations.

- Stand-alone cement mixing unit
- Automated density control with mix water, recirculating and boost centrifugal pumps
- Designed to work with existing pressure pumping equipment
- Data acquisition systems



### Cement Bulk Transport

The addition of a cement bulk, and other dry bulk material, transport unit adds the ability to mix large quantities of material on-site. With several available options, we can customize and manufacture a unit to meet your needs.

- Two 310 CF ASME pressure vessels
- Integrated air compressor
- 38 PSI working pressure tanks

# Capillary Equipment



Maximize well production with our capillary tubing units. Units are engineered for precise placement of capillary string to reliably increase well productivity by treating paraffin, corrosion, scale build-up and produced water via foam-lift.

## Capillary Tubing Units

Our capillary units offer simple, reliable operation with a number of custom options available. Units feature a patented powered sheave style injector head that has the choice for two different pull ratings and two sizes of tubing capacities.

- Model 707 and Model 505 injector head options
- Pull rating up to 7,500 lbs
- Tubing capacity up to 3/8"
- Center or offset mounted crane for convenient rig-up and increased visibility
- Liquid chemical injection pumps
- Air compressor for running pneumatic tools
- Contact your local sales representative for larger capacity offerings



# Coiled Tubing Support Equipment



We manufacture a complete line of fluid pumping designs which can be used in coiled tubing services. Whether you are performing clean outs, reverse circulation, fluid swab-out, well kill, pressure control, pressure testing, stimulation or cementing we can meet your needs. We have concentrated on developing practical pumping unit designs that accommodate the demands put on today's well servicing companies.

## Coiled Tubing Support Pumps

We design and manufacture CT support pumps that meet varying demands of coiled tubing pumping. The standard CT support pump incorporates a two c-pump design for redundant fill/boost pump operation.

- Single and twin configurations
- Twin 11 or 15 BBL displacement tank capacity options
- Redundant piping and hydraulics
- Two speed boxes for low pump rates
- Data acquisition systems
- Designed for extended run time



# Complementary Equipment



We understand the importance of providing solutions for industries surrounding the stimulation equipment industry. With our line of complementary products, we can support all aspects of your operation.

## Software Solutions

Whether it is for a fracturing spread, cementing units, acidizing units, coiled tubing support or data acquisition we can assist you in upgrading or standardizing your equipment controls. Our controls systems feature ruggedized, field-proven hardware and an operator friendly interface. With a “complete package” offering, you can rest assured that our systems will communicate with each other and incorporate similar control logic and appearance, giving your operators familiarity with our systems after being trained on just one.

Learn more about our:

- Enerflow ECAMS
- Rolligon
  - FRACTRAC
  - CHEMTRAC
  - HYDRATRAC
  - DASTRAC II
  - FC II
  - FCPC
  - CAM III
  - SANDTRAC



## Pigging Pump

Pigging Pumps are designed for clean fluid pumping and transfer operations requiring high rates and pressures up to 1000+ PSI. Our unit is ideal for companies performing work such as pipeline cleaning and pigging, high pressure fluid transfer or pressure testing.

- Multi-stage centrifugal pump
- 1000+ PSI pumping pressures
- 50+ BPM pump rates



### All-terrain Vehicles

Since 1960, we have been able to provide you with all-terrain vehicles for those hard-to-reach locations. Our all-terrain vehicles have multiple base designs boasting load capacities from 4,000 to 40,000 lbs and can be equipped with an array of accessory options and capabilities. Completely customize a vehicle by combining and utilizing various products for jobs and functions including all-terrain amphibious vehicles, geophysical, pipeline stringing, exploration, forestry, marsh reclamation and tundra supply vehicles.



### Low Ground Pressure Tires

We design and manufacture low ground pressure tires for environmentally sensitive and hard to reach areas where conventional off-road tires would not be supported. Our tires have a low ground compaction that allows them the flexibility to conform to the terrain causing minimal or no damage to the surface. Each tire is manufactured with Vidar protected rubber for maximum protection from penetration and can match many axle designs.

### Wagons and Tractor Trailers

Our wagons and tractor trailers can be manufactured for use as an extension of our all-terrain vehicles or for other commercial off-road tractors. Wagons and tractor trailers are available in pipe or flatbed configurations and can be customized to meet your needs.



## Frac Site Proppant Handling Equipment



For today's fracturing applications, we supply various proppant handling solutions for the transportation and deployment of proppant for frac operations. From rail to the wellbore, we have a product to move your bulk proppant.

### Frac-sanders

Our frac-sanders are multi-compartmental proppant storage systems that allow proppant to discharge through multiple gates onto a hydraulically driven belt conveyor that deliver it to the multi-sander or directly into the receiving hopper of the blender. Compartments allow for segregation of proppant type and efficient bin feed to blender.

- 2,700, 3,000 and 4,000 cu.ft. capacity options
- Variable feed rates
- 24" wide conveyor delivers up to 22,000 lbs/min
- Dust control options
- Roof mounted walkway with guardrails
- Load cell system option for live proppant weight
- Upper and lower control valves for operating gates and conveyor drive



### Multi-sanders

Our multi-sanders are utilized on large proppant frac jobs to accommodate discharge from up to eight frac-sanders. The hydraulically driven gathering belt is a unique design that uses a conveyor belt with a flexible high, vertical sidewall with steep climber cleats. This provides a compartmented belt system that allows for the high angle discharge of materials into the double discharge chute system.

- 30" dual belt and 36" single belt options
- Deliver up to 30,000 lbs/min of material to one or two blenders
- Engine control panel mounted on the driver side
- Manual hydraulic control system



### Mini Frac-sanders

For remote sites or small jobs, our mini frac-sanders are designed to transport and deliver proppant at the job site. They include many of the same features as our frac-sanders.

- 40,000 lbs proppant transport capacity and 80,000 lbs on-site capacity
- Designs with three or four hydraulic slide gates
- 24" wide conveyor belt



### Mobile Unloading Belt Conveyors

We manufacture the FSU-24 mobile unloading belt conveyors for the removal of excess proppant in the frac-sander.

- Unload approximately 125 to 150 TPH of material
- 24" wide sidewall belt with cleats
- Optional belt scale
- Optional high lift for loading frac-sander with big bags



# Proppant/Aggregate Storage Equipment



Since 1955, we have specialized in your high volume proppant and bulk aggregate storage equipment. With our long history, we are known to build equipment to last while reducing long-term cost and maintaining high efficiency.

## E-tanks

Our e-tanks are designed to provide portable storage of frac sand and other oilfield/aggregate materials with easily movable and erectable configurations. These units may be filled by a single conveyor system from either railcars or pneumatic trucks.

- 4,000 and 5,000 cu.ft. design options
- Optional DCS-260 roof-mounted silo dust collector
- Silo includes internal bucket elevator
- Electric drive motor with torque arm speed reducer



## High Volume Proppant/Aggregate Storage Silos

Our high volume storage silos are designed for the massive storage and load out of your frac sand and other oilfield/aggregate materials. Terminals are available in varying sizes and configurations with the capability to hold up to five million pounds of sand.

- Bolt together design for shipping purposes
- 12" air operated discharge gate
- Optional DCS-260 roof mounted silo dust collector
- Service platform for valves crossover platform
- Two roto-bindicators per silo (one bin high and one bin low)
- Two heavy duty belts and bucket elevator
- Electric drive motor with torque arm speed reducer



### Mobile Railcar Unloaders

We design and manufacture MRU-24 mobile railcar unloaders to enable the unloading of proppant from bottom drop railcars directly in pneumatic trailers for transport or storage.

- Unload approximately 75 to 100+ TPH of material
- Diesel or gas engine options
- Hydraulically powered direct drive head pulley
- 24" wide crescent top belt
- Conveyor belt scale with control box
- Manual adjustment load out spout with dust control hood
- Auxiliary feed hopper (frac sand sacks)
- Hydraulic height adjustment



### Proppant/Aggregate Terminal Configurations

With the increased requirement for quick turnarounds on proppant/aggregate to the jobsite, we have terminal configurations to meet your needs. Whether it is rail car or semi-truck bulk loading/unloading, we can provide a solution built to last.

- Reduce rail demurrage cost
- Scalable configurations
- Fully engineered solution
- Ability to trans load into multiple semi-trucks
- Work with site contractor to provide smooth installation
- Combine all or part of our high volume storage, conveying systems and bucket elevator systems
- Integral dust control system



### Bucket Elevator and Conveyor Belt Systems

We have systems available if you are looking for a solution to move high volumes of proppant/aggregate materials. With a wide array of options, we can provide all or part of your proppant/aggregate transfer system.

- Equipment fully customized for each unique application and customer specification
- Shuttle conveyor systems
- Multi-silo distributor systems and chutes
- OSHA compliant stairways, ladders, platforms, walkways, guardrails, etc.
- Rail and semi drive-over hopper systems
- NOV exclusive cylindrical bucket elevator shaft system
- Extremely heavy-duty equipment for years of trouble-free service



# Custom Engineered Products



With a large engineering staff, we have the ability to modify existing products or engineer a custom designed product to meet your needs.

## Custom Engineering Solutions

Looking to develop something unique? Contact your local sales representative for available products or for a customized equipment design. From concept to completion, we work with you to provide a solution fit for your needs.

- Our engineers have access to 3D SolidWorks, AutoCAD, FEA analysis software and more
- In-house controls software development
- Various test facilities
- Extensive blast and paint facilities



# Aftermarket Services



In today's industry, we understand that you are working under a critical deadline. With 24 hour support and 61 locations within the Intervention and Stimulation business unit, we are dedicated to providing service solutions direct from the manufacturer or one of our many shared service locations.

## Aftermarket Solutions

We recognize that aftermarket support is not only parts support, but a complete 360 degree system to maximize the value of your capital equipment and minimize your operational expenses. Through our parts department, field service, phone support and rebuild/refurbish centers we can provide the high level support for the products we manufacture or similar competitors equipment that our partners come to expect.

- We have the organizational structure and both dedicated and shared facilities to support major and minor rebuilding of equipment
- Along with mechanical rebuilds, we also have the ability to perform full electronic re-control of customer equipment regardless of original manufacturer.
- Our parts department is capable of providing immediate support and our field service technicians have the capability to address on-site equipment issues
- We provide training for systems, controls and unit operation customized to fit your needs
- We maintain a network of on-call employees who are able to assist with parts and service needs on a 24 hour basis in an effort to help you minimize costly downtime



Before



After

## Pressure Pumping Locations

### USA – Anderson, Texas (Rolligon™)

Phone: 1 936 873 2600

E-mail: [Pressure-Pumping-Group@nov.com](mailto:Pressure-Pumping-Group@nov.com)

### USA – San Antonio, Texas (APPCO™)

Phone: 1 210 333 1111

E-mail: [Pressure-Pumping-Group@nov.com](mailto:Pressure-Pumping-Group@nov.com)

### USA – Englewood, Colorado (Condor™)

Phone: 1 303 952 2990

E-mail: [Pressure-Pumping-Group@nov.com](mailto:Pressure-Pumping-Group@nov.com)

### Canada – Alberta, Calgary (Enerflow™)

Phone: 1 403 648 6011

E-mail: [Pressure-Pumping-Group@nov.com](mailto:Pressure-Pumping-Group@nov.com)

---

National Oilwell Varco has produced this brochure for general information only, and it is not intended for design purposes. Although every effort has been made to maintain the accuracy and reliability of its contents, National Oilwell Varco in no way assumes responsibility for liability for any loss, damage or injury resulting from the use of information and data herein. All applications for the material described are at the user's risk and are the user's responsibility.

### ISE Headquarters

1020 Everman Parkway

Fort Worth, Texas 76140

1 817 985 5000

© 2016 National Oilwell Varco All Rights Reserved  
10360\_001\_v01