



**Your job just got easier.**



## GRAVEL-PACK TOOLS

Tryad Service Corporation has qualified Gravel-Pack Specialists with up to 80 years of combined service experience. Tryad can also supply Gravel-Pack machines and tools for placing gravel for our customers. Tryad also designs and manufactures its own down hole tools to gravel pack liners, whether it's for a cased or open-hole completion.



A sample of Tryad's Gravel-Pack and down hole tools

## GRAVEL-PACK MACHINE

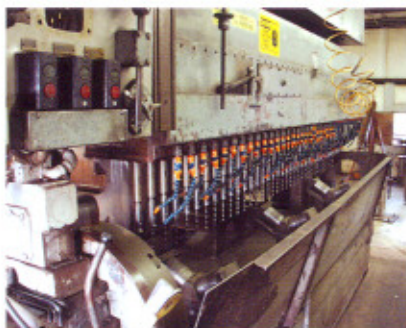
Tryad's Gravel-Pack machines are an inexpensive way to place Gravel-Pack sand into an oil or water well for sand control.

The Gravel-Pack machines are self-contained with diesel, air and hydraulic power. They are also mounted onto a 2-axle trailer that can be pulled with a pickup truck. The machines are retrofitted to accommodate offshore shipping for offshore platforms.

The Gravel-Pack machines are connected to the rig pump and the sand is introduced to the pump fluid downstream. Only one qualified specialist is needed to operate the machine and Gravel-Pack tools.



**Tryad Service  
has qualified  
Gravel-Pack Specialists**



## PERFORATION

Perforating is used to retrieve oil from the pay zone without acquiring a lot of sand. Tryad offers various types of slotting. The most common types are straight mill and keystone slotting that range from slot sizes of .01" - .25" and is used when there is a lot of sand present. Tryad also offers round hole perforating with hole sizes from .25" - .50" which is utilized when there is a high volume of oil without a lot of sand problems, to capture more inlet area. It is commonly used with wire wrap screen applications. Tryad also offers a high pressure cleaning system with high speed cutting blades to ensure a high quality perforated product, clear of metal shavings and debris.



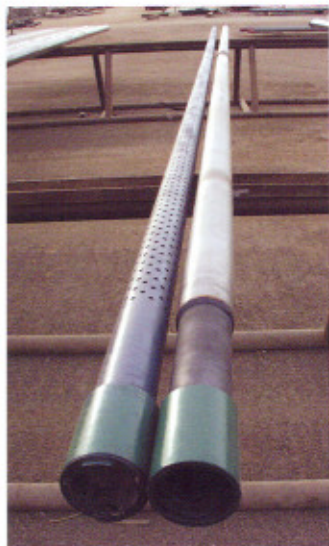
**We supply  
Gravel-Pack  
Machines**



## GRAVEL-PACK (Production Screen)

Screen is a filter that is placed in a well to prevent formation sand production. Gravel-Pack sand may then be placed around the screen and into the perforations. This allows formation sand to bridge on the Gravel-Pack sand, and the Gravel-Pack sand to bridge on openings between wire wraps of the screen.

Tryad's Gravel-Pack screen is supported on a length of standard oil field tubing, referred to as "base pipe". The base pipe is drilled with a sufficient number of holes to create a greater amount of flow area per foot of pipe than the internal flow area of the pipe. This ensures that the screen design will not be the limiting factor for flow capacity in the completion design.



Some manufacturers of screen wrap the wire directly onto the base pipe. This is not recommended because the primary flow path for the fluid is restricted to only those areas where the holes in the base pipe and the openings between the wire wraps coincide. Tryad's screen is manufactured by welding the wire wrap to longitudinal "ribs" at each point of crossing. This prevents the screen from unraveling if fishing the screen is required. The preformed screen "jacket" consisting of the outer wire wrap and the longitudinal ribs, is then welded to the base pipe at each end of the jacket. The ribs hold the wire wrap off of the base pipe, creating an annular area between the inside of the screen jacket and the outside of the base pipe. This will allow fluid at all the openings in the screen to be able to drain to the holes in the base pipe.



**We offer a  
high quality  
threading shop**

A feature of Tryad's screens is the triangular-shaped wire (this is referred to as "keystone shaped"). By using keystone shaped wire, the wire presents a flat face to the outside of the screen, which faces the formation. The bevel between two adjacent wire wraps opens to the inside, so that if any sand grains manage to get through the outer gauge of the screen, they can pass on through without plugging the screen. This is called a "self-cleaning" screen design.

Tryad's wire wrap screen jackets can be mounted, but is not limited to, carbon, stainless and 13 chrome base pipe. Tryad can offer 304 and 316L stainless steel, Incoloy 825 and carbon steel wire at any gauge opening.



## THREADING AND MILLING

Tryad offers a high quality (API certified, SCT and Spec 7 license) threading shop with full-time operators dedicated to meeting our customers' needs. Tryad has several lathes, buck-on and CNC machinery that are capable of manufacturing accessories and threading, ranging from 1.900" OD - 13 5/8" OD. Some of the threads that Tryad cuts on a regular basis are API Buttress, API 8rd., API 10rd., line pipe connections, flush joint, API drill pipe connections and the new Super Max Thread. Tryad's milling machine is used to manufacture our down hole tools.

