In the oil and gas industry, a variety of tools are used depending on the life of the well. For the completions cycle, arguably no tool is more important than a packer.

Choosing the right packer for the job can help ensure the integrity and longevity of the well productions, and the overall success of the well completion.

Packers are used for a variety of applications including: protecting the casing from pressure and corrosive fluids, isolation, elimination of surges, holding fluids, treating fluids in the casing annulus, and some artificial lift applications.

Most packers operate by driving a cone behind a tapered slip to force the slip into the casing wall, preventing movement of the packer. Compression of packing elements in the packer also creates a seal. Seals can hold differential pressure downhole.

Seals are typically made from rubber, and can use metal back-up rings for support. Two common seal types are the bonded seal and the chevron-type seal.

The Evolution E-Hydraulic Set Packer

There are a variety of packers available, and they are usually chosen for function, operation and lifespan requirements. Operational differences include *compression-set packers, tension-set packers, mechanical-set packers, hydraulic-set packers* and *wireline-set packers*.

Compression-set packers, like Evolution's PS-TXT use tubing weight to activate sealing elements once the tool is deployed at the desired depth. The main application of this type of packer is for production and well treating operations.

Tension-set packers such as the AD-1 (or STP-1) and the model 32-A available from Evolution are similar to the compression-set type, except that a pulling force is used to compress the seal elements. Typical applications for this type of packer are in shallow well operations and water injection and stimulation work.

Mechanical-set packers use rotation as a key to their operation. This type of packer simultaneously sets seals and slips in a continuous motion that drives cones behind slips and compresses the seal elements. Evolution's Integrator-X is an example of this type of packer, which also has the advantage of being retrievable.

Hydraulic-set packers, such as Evolution's E-Hydraulic Set Packer, use fluid pressure on a piston cylinder assembly to drive the cone behind the slips and compress the sealing elements. Setting on this type of tool holds by means of a pressure actuated mechanical lock.

For **wireline-set packers**, a cable is attached to the tool, and when the packer reaches the required depth, an explosive charge is activated, and the force of the expanding gasses are transmitted to the tool's setting and sealing mechanisms.

Another critical decision when choosing a packer is the required lifetime of the tool. Permanent packers and retrievable packers are available. Most permanent packers are drillable, whereas retrievable ones are not.

There are a wide range of packer types and sizes, designed or configured to meet specific well conditions.

Consult your Evolution representative to find out more.

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