

Energy // StreaMax™

By Niels Uhrbrand



For many years we've all got used to thinking of oil as a resource that is just there. It may be expensive, but we're glad to have it. Very few of us consider how much technology is involved in getting petrol and diesel to the pump and into our cars.

The process starts deep underground, often several kilometres below the surface of the earth where oil and natural gas have collected in large pockets. Many years of seismological research and exploratory drilling are required before oil extraction can begin, and only when preliminary surveys indicate that there are sufficient quantities of accessible oil to make extraction financially viable.

To extract oil a deep hole is drilled into the earth through which a production pipe is channelled. This production pipe is a specialised item of equipment that can be divided into sections in order to vary the pipe's length. Pipe sections are typically 12 m long with attachments at both ends. Pipe diameters vary from 8 to 17 cm, or 3½ to 5½ inches. The oil industry work with American measures and speak American English, and the production pipe is known as Downhole Production Tubing.

When a pipe has been lowered into the oil field it's time to pump the oil up. In order to do so it is often necessary to apply additional pressure in the form of water and chemicals. Oil from Danish North Sea reserves often contains large amounts of chalk as well sulphur and CO₂.

The extracted oil contains a number of different hydrocarbons in a variety of combinations. Some are light (gas) whilst some are significantly heavier and can be used to generate products such as tar, paraffin and wax. These heavier oils are difficult to extract and have a tendency to stick to the insides of the pipe - preventing oil flow. Chalk in the oil can make matters even trickier.

The solution is to clean the pipe, and to do so harsh chemical treatments are used, amongst other things.

This can present several problems, one of which is that the chemicals come up again with the oil and have to be removed. That process costs money in itself, but what is perhaps worse is that it is time-consuming.

This is where Accoat solutions come into the picture. During the last two years Accoat have supplied a coating solution called StreaMax™. StreaMax™ was developed and patented by DuPont the company behind Teflon™.

StreaMax™ is a coating system which is based on Teflon™, but has been specially developed for use in Downhole Production Tubing. Like Teflon™, StreaMax™ has fantastic non-stick qualities. Because of these qualities, substances don't attach to the pipe - thus removing the need to clean it. This prevents downtime, saves chemicals and benefits the environment.

The advantages of coating the inside of oil pipes:

- Corrosion resistance is improved in relation to a wide range of chemicals including acids, alkaline gases and manufactured salt water.
- Extremely durable
- Excellent non-stick properties preventing pipe blockages
- Even at temperatures of 260 °C the system is highly stable
- At high operational pressures the system is highly stable
- Better pipe flow (the oil passes through more easily) – increasing productivity
- Reduced requirements for chemical maintenance and cleaning
- Decreased downtime, thereby delivering operational savings
- Cost reductions resulting from a lower frequency of oil pipe replacement
- Cost reductions from extension to equipment lifetime
- Cost reductions from the use of cheaper types of steel made possible by interior pipe coatings.

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- More than balance...