



## Treatment of oily water

Nutshell filters are an extremely efficient way of treating oily water produced during the processing of oil and gas. Multi-grade nutshell media provides a large absorption area, capturing and retaining copious amounts of oil as the water passes over it. The NATCO PowerClean system uses an innovative backwash process to re-circulate the filter bed contents once a day, stripping the oil and solids from the nutshell media. The success of the filter relies heavily on the design and operation of the pump to circulate the nutshell fibrous media without damaging it.

The PowerClean system was developed by Natco in the United States, but to produce and support it in the UK Axsia needed a reliable and supportive local recirculator pump manufacturer. Axsia approached Amarith for its expertise in the design of open impeller pumps operating on slurry and its experience in designing innovative pumping solutions for the oil and gas industry.



## Challenges of pumping solids

The design brief was challenging. In addition to the problems posed in re-circulating the nutshell media in a sour hydrogen sulphide environment, the pumps required variable speed technology to enable them to be adjusted to the specific operating conditions. Compactness and reliability were also key.

Axsia chose Amarith to undertake the design of the pumps for its recognition of the challenges and willingness to work hand-in-hand to tackle them.

Amarinth had the experience, application knowledge and a competitive offering and quickly provided details of a potential solution along with the required level of detail.

## An elegant solution

The solution was an elegant one. Amarith took one of its proven and reliable heavy duty pump designs and modified it to suit the specific operating conditions.

For the process to work optimally the pump speed must be carefully controlled. A change of just 100rpm significantly impacts the ability of the system to release the oil collected on the nutshell media. Amarith chose to govern the motor speed using invertors rather than adopting the more traditional complex belt drive system. In addition to superior speed control, this also had the benefit of delivering a compact and uncomplicated installation.

## Reduced commissioning time

In use, the pumps have exhibited excellent performance and a very high degree of reliability. Their compact arrangement makes them quick and easy to install.

The Amarith solution has reduced the engineering resource required for future builds and delivers much easier control over equipment configuration. Being quick to install and set at the optimum operating speed, the overall commissioning time is significantly reduced. Axsia now have a filtration system with a real competitive advantage and as with all Amarith equipment, the pumps are fully ATEX compliant.

The ongoing partnership between Axsia and Amarith will see a range of material options being offered for a standardised range of pumps. Customised installations have already been designed and installed, such as horizontal pumps for the Prirazlomnoye offshore oilfield located in northern Russia.



Founded in 1969, Axsia Serck Baker is an international consultative, contracting and project management company which executes process systems primarily for the oil, gas and water industry. Over the years the company has brought many technologies to the market place that have now been integrated into the NATCO Group portfolio. In the UK, Axsia has a turnover of some £30M and employs 120 staff.

NATCO is leading provider of wellhead process equipment, systems and services used in the production of oil and gas. NATCO has designed, manufactured and marketed production equipment and services for more than 75 years and its production equipment is used onshore and offshore in most major oil and gas producing regions of the world.



*“Finding a reliable and supportive supplier for the recirculator pumps was the key to producing the Nutshell Filters here in the UK. Amarith listened to our requirements and came up some great ideas. They worked closely with us to create a very elegant solution. Amarith has certainly proven itself to be a reliable and innovative business partner.”*

**Mr Andrew Hamilton**  
Proposals Manager