



## Low shear requirements

FLSMIDTH gMAX Systems had been contracted by Renco to provide a hydrocyclone separation solution that would be built in the UK and then installed on the rig operated by Eni in the Loango field off Congo. The filtration system would be used to separate oil from water during the production process.

The system required two pumps as part of the second stage separation process, but it was critical for the separation unit to work properly that the pumps did not emulsify the oil and the water.

Ensuring that oil and water do not emulsify requires a low shear pump. The specification of low shear pumps is not an exact science though and different companies specify their needs in different ways.

## Using a centrifugal pump

gMAX specification was that the low shear pumps had to operate at speeds below 1800rpm (4 pole speed) and with a hydraulic efficiency of greater than 70% and be manufactured from super duplex material.

Low shear applications are often served by progressive cavity pumps, but for the duty required for this application it would have required a 3 metre long pump. This was not an option within the confined space available in the separation unit.

Amarinth proposed an alternative solution using a compact centrifugal pump with a speed of 1450 rpm and a duty point efficiency of 66%. The use of a centrifugal pump also allowed a lower pressure to be maintained at high duty.

## Working closely together

Although the pump did not meet the exact specification, knowing Amarith's excellent reputation for supplying equipment that could meet the

requirements of demanding applications of the oil and gas industry, gMAX decided to order the Amarith solution.

In order to get the best performance from the pumps, Amarith worked closely with gMAX on designing the system, particularly in regulating the flow during recirculation.

Amarinth also assisted gMAX in the commissioning of the pumps and in training the engineering staff.

## Successful completion

Finally on completion, gMAX were delighted to report that the performance of the Amarith pumps was well within acceptable parameters, despite not meeting the exact criteria laid down by gMAX.

Based on the strength of this successful application, a budget proposal has now been submitted by Amarith for a similar application on a neighbouring platform.



## Developing new criteria

Given that Amarith were able to meet the needs of this application using a standard pump has also led Amarith to investigate what the critical performance characteristics are for low shear applications. Clearly, different manufacturers hydraulic design philosophy may lead to a better or potentially worse effect on shear performance than was otherwise realised. Amarith are now in a stronger position to advise companies like gMAX when selecting pumps based on this somewhat dated arbitrary criteria.



## FLSMIDTH gMAX Systems

FLSMIDTH gMAX Systems is the world's leading provider of hydrocyclone separation and severe-duty slurry pumping solutions. Since its formation as Krebs in 1952, the company has been serving process industries and is recognised around the world for its knowledge and expertise in the use of hydrocyclones for the separation and classification of solids and liquids and liquids from liquids for a variety of applications in the upstream oil and gas industries.



*"The requirements of this job were difficult to fulfil and we have been delighted with the innovative solution Amarith has delivered. They kept on top of the job and worked closely with us on the system design to ensure that the final unit performed as specified on the rig."*

**Graham Sowell**  
Senior Proposal Engineer