The recent advances in floatation technology are welcome development for everyone dealing with produced water. The ability to combine performance of several technologies into one unit is great news met with so much anticipation. IQPC’s Darwin Jayson Mariano recently spoke with Mike Bhatnagar, Sr. Product Manager – Produced Water at Cameron, a leading provider of flow equipment products, systems and services to worldwide oil, gas and process industries, to shed light on this topic.

What are the common technical challenges faced today when it comes to managing produced water? How do you think this can be addressed?

Over the life of the oil well, the volume of water produced will exceed the volume of oil produced, creating three crucial challenges to operators: maintaining efficient environmental practices, meeting environmental regulations and handling large volumes of produced water efficiently and effectively.

As environmental polices of regulatory authorities and operators become increasingly more stringent, there is a need to develop high efficiency systems that can meet and exceed the overboard, disposal well or re-injection requirements. Technology selection may require dissolved hydrocarbon removal in addition to free and dispersed hydrocarbon removal.

Conventional offshore and onshore treatments of produced water have involved the use of multiple stages of water treatment to meet the required discharge concentrations. Once water breakthrough occurs the water cut increases with time. Total volume of oil produced tends to drop over time. Most mature oil production facilities produce considerably more water than oil in volumetric terms and for certain wells the water cut may be high as 95 - 99%. These facilities will require efficient produced water treatment equipment to meet current discharge constraints; equipment upgrades and in some cases additional equipment to meet the production needs. Increased total fluid volume passing through the PW train may be the bottleneck and create poor performance.

Tie-in of new fields increases total volume to be treated. The hydrocarbon resource becomes more valuable and recovering additional oil even at the ppm level from large volumes of produced water can boost the overall production rates. There exists a
“As environmental policies of regulatory authorities and operators become increasingly more stringent, there is a need to develop high efficiency systems that can meet and exceed the overboard, disposal well or re-injection requirements. “

need to have systems with smaller foot print, smaller weight requirements that can be retrofit into existing systems in order to meet these demands.

What interesting technologies or innovations do you see lately in produced water management? How will it affect/help key stakeholders?

There are two things that come to mind:

1. The next generation compact flotation system that can combine the performance of several technologies into one unit.
2. The compact water knock out unit that can remove water from the bulk fluids from the wells at high water cuts.

Please tell us more about the latest developments in compact floatation units? What key benefits does it provide?

Cameron’s high-efficiency compact flotation system is used to remove oil from produced and waste waters. The TST-CFU™ technology has been developed to meet the need for a high-performance, multistage single vessel for treatment of produced water in the oil and gas industry. The TST-CFU™ is the next-generation compact flotation unit that uses gas flotation combined with centrifugal forces to separate and remove hydrocarbons as liquid and gas, aromatic compounds, hydrophobic substances and small solid particles from produced water. The TST-CFU™ system requires less equipment, has a lower weight, has a smaller footprint, is less dependent on chemicals and can potentially replace multiple produced-water treatment stages. The TST-CFU™ units are available in flow rates of 750 to 100,000 BWPD (5 to 700 m3/hr.) and provide distinct benefits for offshore installations as compared to traditional technologies.

Complimenting the TST-CFU, Cameron’s high-efficiency compact Water Knock Out unit is used to remove water from the well stream. The TST-WKO™ technology has been proven to offer distinct advantages that enhance the performance of traditional separators, which include, improved performance in providing high cut water levels, reduced maintenance costs due to no moving parts internally and lower operating costs by not requiring an external power supply, among others.
Can you talk about Cameron’s solutions/product lines that can help address key concerns in produced water management?

The TST-WKO™ can handle over 10% oil in water concentrations and reduce it to less than 300ppm O/W through a single unit that can be further treated by a three stage single vessel TST-CFU™ to bring the OIW level to less than 20ppm. The water content in the reject oil from the TST-WKO™ was reduced to 10-20% and routed to the separator. This has resulted in drastically improving the operating capacity of the separator.

The TST-CFU™ with its unique performance meets these challenges and delivers a powerful advantage compared to traditional designs. The unit can handle high O/W content (1000 ppm) and can achieve below 10 ppm O/W through multiple stages within one vessel. As a polishing vessel, it has shown reduction in O/W content from 20-25 ppm down to 1 ppm.

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5 REASONS WHY YOU MUST ATTEND PRODUCED WATER MANAGEMENT 2013:

1. Technology-Driven Focus This Year: Current technologies like hydrocyclones and compact floatation units are facing increasing problems in produced water management. Learn how new technologies like membrane and filtration systems can enhance your process with today’s produced water environments.

2. Enhance your entire produced water management process—From design to drilling, to water minimization, analysis, separation, treatment, re-injection and disposal.

3. Interact and network with over 50 senior production managers, process engineers, technology acquisition managers from leading NOCs and IOCs in Southeast Asia, Australia and the Middle East.

4. Four brand new roundtable and panel discussions to really obtain the critical information through informal and interactive channels.

5. Brand New and Improved Speaker Line Up: Greater in-depth international and regional representation including keynote presentations from ExxonMobil Indonesia, Santos Limited, Saudi Aramco, Cairn Energy India and more!

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