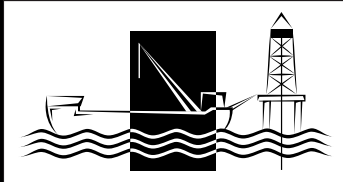


Production Technology:

# Hydrocyclones for Produced Water Treatment



Prior to the early 1990's, the most common units for meeting produced water discharge regulations on offshore platforms utilized large four-cell induced gas flotation (IGF). As the need evolved to be able to handle higher flowrates on floating facilities the size and weight of four-cell IGF units and their susceptibility to vessel motion led to a search for other designs which were lighter, smaller and insensitive to vessel motion.

Earlier, Southampton University led an effort to determine whether hydrocyclones, which had been used for years to separate solids and liquids, could be modified to separate oil from skimmed sea water in oil spill clean-ups. This was the start of a fifteen year research effort to develop specific geometry for such a hydrocyclone. This basic work was taken by industry entrepreneurs and initially used for offshore facilities in Australia and the North Sea. While at first the use of hydrocyclone technology met with some skepticism and less than adequate performance, after the publishing of the results of the Esso Bass Straits testing in a 1985 OTC paper, and a Conoco 1987 OTC paper on how best to control hydrocyclones in the water treating system, the industry began to use this technology. It has now become standard equipment on many offshore facilities worldwide.

Recognizing the pioneering efforts of the following individuals and organizations that contributed to this technology:

Jim Cappi, Noel Carroll, William Carroll, Neville Clark, Derek Coleman, Peter Gould, Peter Harvey, J. J. Hayes, John MacIntosh, Neil Meldrum, David Parkinson, G. J. J. Prendergast, Martin Thew, Phil Tuckett and John Weston

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