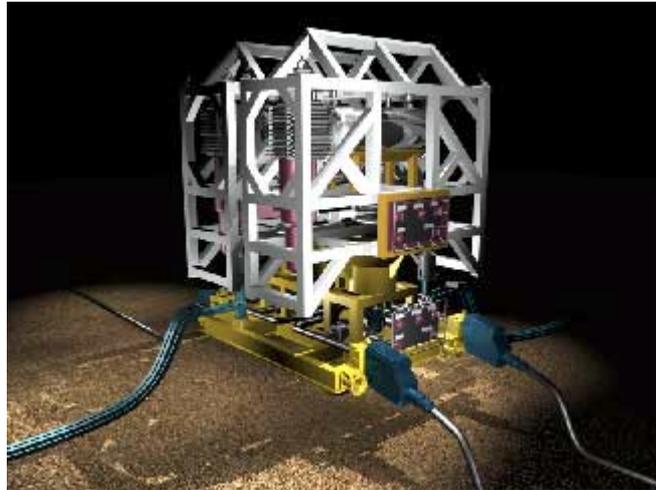


Seabed Processing Enabling Technology



by
David E Appleford, Managing Director, Alpha Thames Ltd
and
Brian W Beer, Senior Project Engineer, Alpha Thames Ltd

*Abstract of a Paper Presented by David Appleford at the
OTC 2001 Conference
Houston, April 2001*

This paper will show that seabed processing offers multiple advantages and also that the technology for implementing it is available now. The paper will describe typical field applications and the enabling technology. Future technology, based on ongoing development programmes, will also be addressed.

The utilisation of seabed processing has been limited to date because of deficiencies in enabling technology. Fortunately, this situation no longer exists; seabed systems are now available for the development and enhancement of major as well as marginal fields. The difficulties presented by deep water and long tie-backs are effectively overcome as seabed processing gives extra drawdown and can incorporate boosting. However, the maximum advantage is only attained when the most appropriate seabed processing technology is employed.

The only two systems actually available at present utilise either insert-retrievable equipment or system-integrated modular designs. These systems will be compared and contrasted; the latter type of system being described in some detail. The enabling technology includes high voltage, high power, underwater-mateable connectors, subsea pumps, underwater electric actuators and diverless flowline connection systems.

Ongoing development engineering will provide 33 kV underwater-mateable connectors, in order to deliver higher power. Future technology will include rotary, expanding plug, double block and bleed valves principally for multi-ported fluid connectors. All-electric power and field control systems are envisaged.

Market conditions indicate that the advantages of seabed processing are particularly appropriate at the present time. Modular systems have particular advantages in terms of field development and operation.