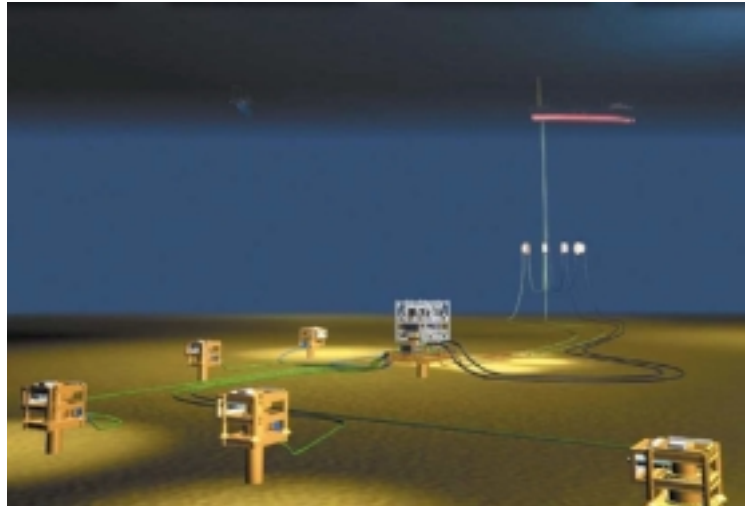


System-Modular Management of “Smart Assets” for Recovering the Remaining Potential



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This paper presents an efficient, cost-effective method for the management of "smart asset" hydrocarbon reservoirs.

System-Modular installations can accommodate a great variety of hydrocarbon processing systems and power and control equipment; they can be readily reconfigured during field life to cater for reservoir, infrastructure and technology changes.

System-Modular installations can provide a control hub for step-by-step field development, an autonomous "smart" control system, total hydrocarbon recovery management, distribution of control data, reservoir monitoring, remotely re-programmable software and data communications. OPEX is minimised by the low expenditure of these intelligent systems which optimise production. They can operate with a power/control buoy and HF radio or satellite link. Field electric power distribution, electric actuators, locally controlled chemical injection distribution and power for HPUs are also provided.

Seabed processing provides greater drawdown (especially in deep water), enables longer tiebacks, enhancing production and extending field life. Existing infrastructure can be utilised; marginal fields are thus rendered viable. The reconfigurable system minimises CAPEX by installing equipment only when needed instead of at the outset: manifolding, followed by two-phase separation, then three-phase with boosting and water re-injection. The utilisation of electric actuators to operate process valves avoids the need for multiphase pumping.

Flow assurance is enhanced by the three-System-Module concept (including spare) giving 100% redundancy with continuous availability and rapid deployment.

Reliability is ensured by complete system integration, "burning in" prior to shipping and the minimum number of wet-mateable interfaces. Deployment, commissioning, reconfiguration, recovery and ultimate decommissioning are readily achieved.

AlphaPRIME System-Modular technology provides seabed hydrocarbon processing and smart field control, packaged for initial choice and subsequent flexibility.

Field studies show that this technology can be configured to achieve optimum returns from specific fields with minimum expenditure and maximum reliability. It can also be applied to installations in lakes and other inland scenarios.