

UPSTREAM SOLUTIONS

MAXIMISING PRODUCTIVITY AND COST CONTROL IN DIFFICULT MARKET CONDITIONS

With oil and gas development facing increasingly more complex technological, environmental and economic challenges, operators and engineering companies are being forced to find cost-effective solutions to designing and operating production systems.

KBC is uniquely positioned to help companies optimise these systems both at the design and operating stages, thus minimising OPEX/CAPEX and improving operating efficiencies and safety through our "Life-of-Field" approach. KBC delivers results through a combination of our expertise in a wide range of engineering disciplines with advanced technologies such as integrated

production modelling (IPM), flow assurance and process simulation.

KBC has a unique blend of talent, operating experience and organisational transformation capabilities to provide a full spectrum of consulting services to our clients, including strategic investment support, economic analysis, asset reliability, energy and process optimisation, and sustainable workforce capability. Together with our market-leading software solutions and intellectual property, clients can realise millions of dollars in profit improvement by a thorough understanding of all aspects of an asset's actual performance relative to its Maximum Achievable Potential.

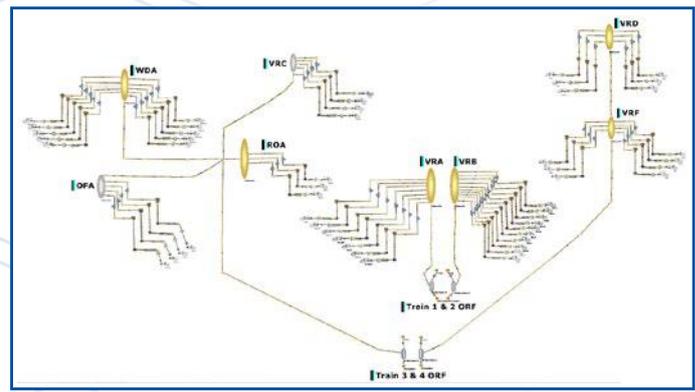
FIELD DEVELOPMENT RIGHTSIZING

KBC offers field development RightSize planning to allow operators and engineering companies "get it right the first time". Our services are applied across a range of new and existing assets, on greenfield and brownfield developments. KBC's approach distinguishes itself by being more rigorous, accurate and holistic in representing complex assets from reservoir to transfer line, and across the entire Life of Field.

Through detailed modelling of oil and gas production fluids, processes and equipment, we provide a wide range of valuable engineering data to be used by several engineering disciplines, including flow assurance, pipeline and riser engineering and topsides/facilities as well as safety and integrity management. Taking this approach allows us to assure technical feasibility of a concept and carry out analysis quickly and efficiently using our technologies - Infochem Multiflash™, FEESA Maximus™ and KBC Petro-SIM™.

Therefore, we minimise the need for arbitrary design margins and ensure proper process and equipment

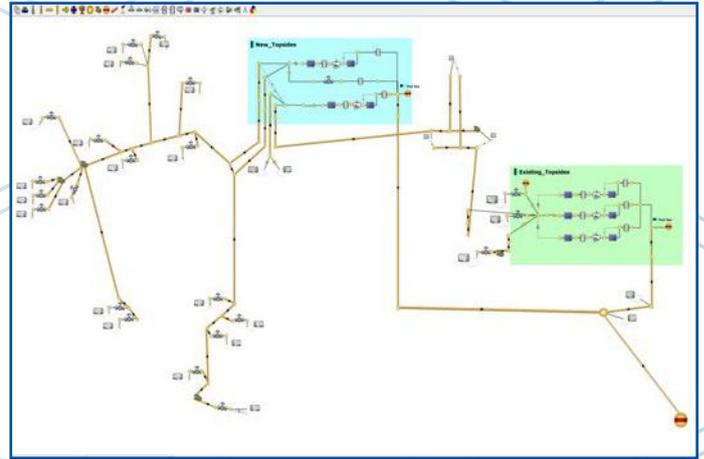
sizing and modularity, thus saving potentially tens of millions of CAPEX. These studies are ideally conducted at the conceptual stage of the project before detailed design and can be applied to on a wide range of upstream production projects which were previously unviable and/or uneconomical. However, KBC's approach and technologies can also provide guidance to projects in the FEED stage, and we have rescued many previously unviable projects.



PRODUCE THE LIMIT

Most operating facilities do not operate at their design condition because they have been designed for a scenario which doesn't exist through the whole Life of the Field. The design condition may be too conservative, process and equipment performance may have degraded, the wells and reservoir may be behaving significantly different than expected, or the system has reached its end-of-life production. In particular, unlike onshore facilities, offshore facilities are not built incrementally, and so may find themselves mis-matched with actual production requirements. This can just as easily occur with new facilities as with mature ones. The results are lower production efficiency, increased downtime, higher operating costs and reduced integrity.

KBC's Life of Field approach addresses the mismatch in two ways. First, we assess the actual operating performance using KBC and third-party tools with its Maximum Achievable Potential (MAP) to identify and recommend changes to the existing operations such as process equipment settings and operating windows as well as maintenance and reliability procedures and practices. We work within existing budgets and staffing to improve

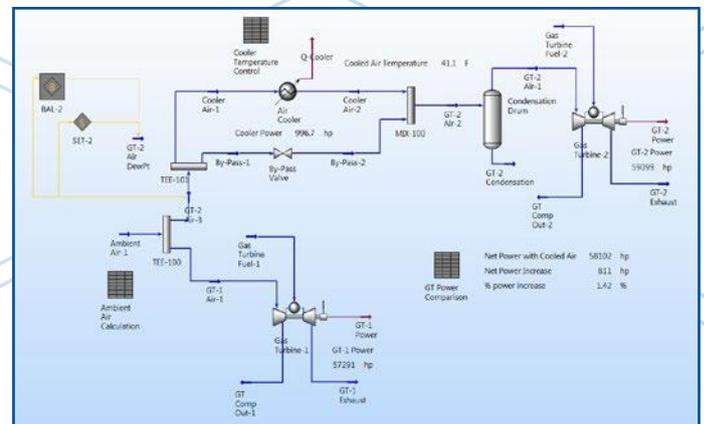


performance. Secondly, we analyse and develop a list of improvement opportunities requiring additional OPEX and CAPEX to optimise the asset for the balance of its lifecycle ... in effect re-RightSizing. This typically includes making changes to key equipment. We then follow through the work to ensure safe, reliable operations post-the changes. By "thinking and acting like operators", our consultants define and execute initiatives to improve production efficiency fit for all current and future operating conditions.

WORKFORCE CAPABILITY



Sustaining improved performance is highly dependent on the capabilities of your workforce, operations, maintenance, engineering and support personnel. KBC's addresses organisational effectiveness by implementing programs that go beyond classroom training to address organisational structure, staffing strategy and performance management systems, plus hands-on field training and coaching, skills and competency development, troubleshooting and problem solving, and Management of Change.



For more information, visit us at

www.kbc.cat.com