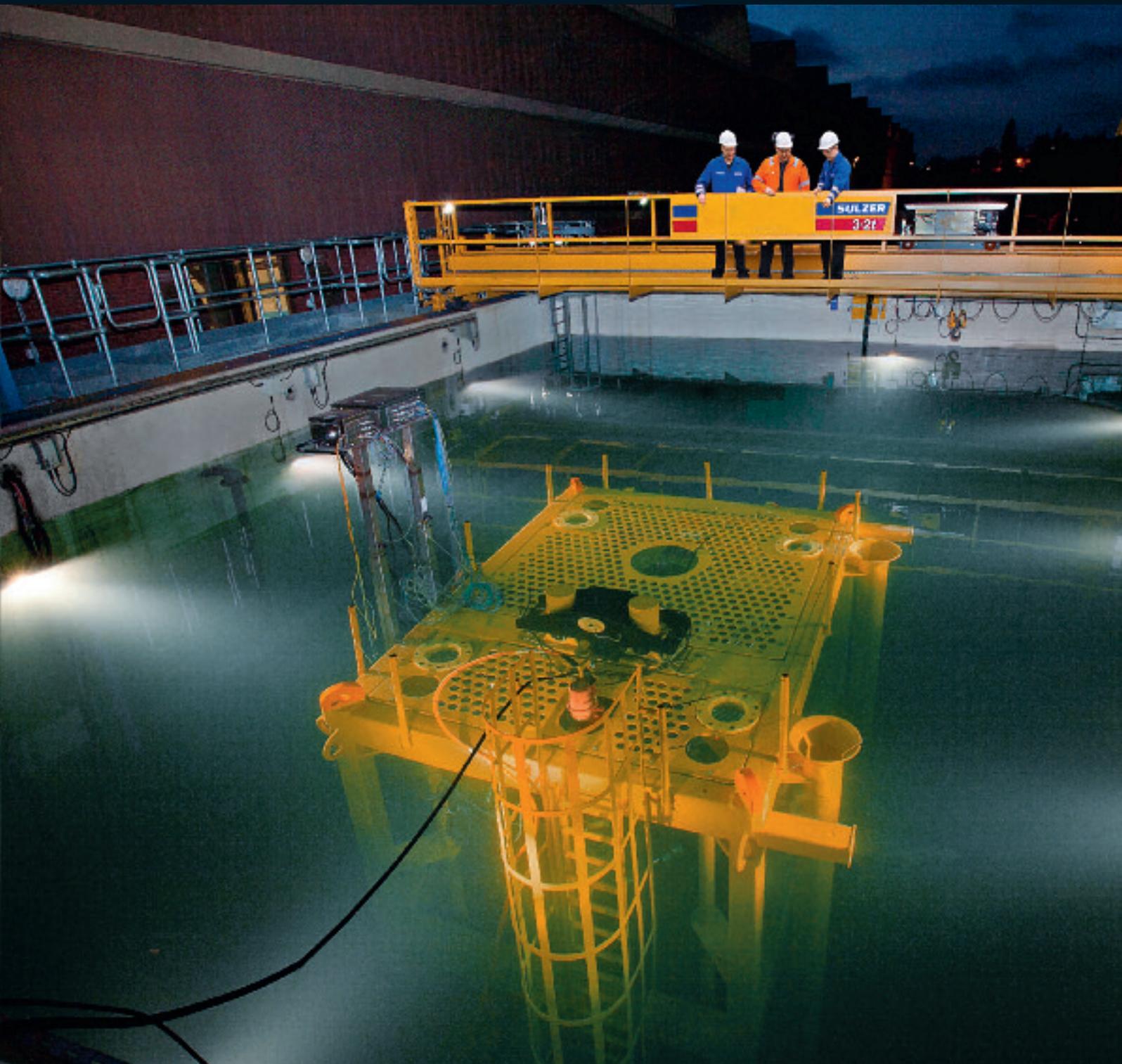


# Subsea pumps under test

Sulzer Pumps develops pump solutions for deepwater oil and gas production. Subsea pumping, which involves challenging operating conditions, allows the recovery of oil from remote subsea fields. Experience how Sulzer validates the performance of the new subsea pumps in the purpose-built test facility in Leeds, UK.





### Phase 1: Setting up the test

Sulzer Pumps UK is in the final phases of qualification of a 3.2 MW subsea multiphase pump, which will be located on the seafloor at depths of up to 2000 m. The pump will be tested for 1000 hours of operation on multiphase flow—from 100% liquid to 100% gas. The pump test includes all equipment that will be placed with it underwater to demonstrate the full system performance. The industry has recognized this game-changing application of permanent magnet motor technology to drive state-of-the-art pump hydraulics and awarded Sulzer Pumps with a *Spotlight on New Technology Award* at the 2013 *Offshore Technology Conference* in Houston, TX, U.S.A.



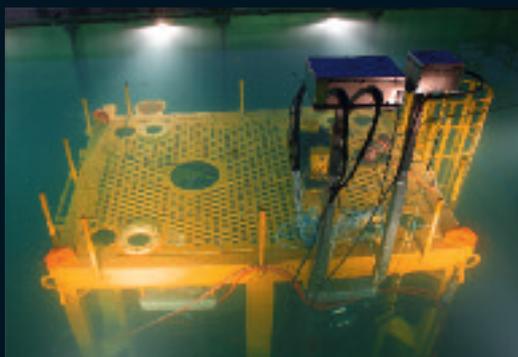
### Phase 2: Let the water flow

To test this new product line, a new test-bed was required. This new test-bed, which holds approximately 1500 000 liters of water and has both liquid and gas testing capabilities, is the most sophisticated one currently in operation at Sulzer Pumps. Instrumentation and data collection are critical. Over 240 parameters are monitored continuously, and certain instruments record data at a massive 20 000 times per second. By testing in this way, Sulzer's customers have confidence that they can safely deploy the equipment subsea.



### Phase 3: Go-ahead for testing

Numerous procedures are used to detail the test programs for the hydraulic, mechanical, electrical, cooling, control, and pressurizing systems. Sulzer involved a number of key customers in the prototype development project. Thanks to the collective experience captured in the qualification program, Sulzer could meet its internal acceptance requirements and ensure the customer's confidence. The main findings of the extensive testing program have been presented to the key customers and at selected industry events. The full archive of qualification documents, including the test reports, is available for review by potential customers.



### Phase 4: Around-the-clock testing

Testing concludes with the system verification tests. These tests demonstrate that the pump works seamlessly as part of the overall system, which includes the pumped medium and the high-voltage electrical network. The final stage of examination provides extended endurance testing to demonstrate that the pump operates reliably and consistently without constraints 24 hours a day. After conclusion of the endurance testing, there are further possibilities for supplementary measurements sponsored by customers to demonstrate the pump operating in field-emulated conditions, such as model oil performance testing.