

P.C. de Haas *Conceptual design of a riser pressure boosting system.*
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In this report riser base pressure boosting is evaluated as a low cost means of enhancing the production from a satellite reservoir. A conceptual design and an economic evaluation of a riser base pressure boosting system is presented. The riser base pressure boosting concept is compared to the wellhead based pressure boosting concept.

Although pressure boosting at the riser base is less efficient than pressure boosting at the wellhead, riser base pressure boosting results in an increase in production relative to the natural flow situation. With respect to production rate and associated power consumption, riser base pressure boosting will be more beneficial at small distances between the reservoir and the process facilities.

The riser base pressure boosting system has been targetted to meet the following two functional criteria:

- reduction of backpressure on the reservoir
- suppression of effects due to slugging. Concepts in which energy is added to both gases and liquids have the largest potential for a significant backpressure reduction on the reservoir and a corresponding increase in flowrate. A riser base pressure boosting system based on multiphase boosting technology where gases and liquids are boosted without separation of phases, is designed in more detail.

Both the riser base pressure boosting concept and the wellhead based pressure boosting concept will result in an increase in present value cash surplus relative to the natural flow concept. For the production system considered in this study, with a distance between reservoir and platform of 10 km, the difference between the present value cash surplus of the wellhead based pressure boosting concept and the riser base pressure boosting concept is very marginal. For this particular situation, the advantage of a lower capital expenditure for the riser base pressure boosting concept is compensated by the disadvantage of a lower production rate. It is expected that the riser base pressure boosting concept will become more attractive when the pressure boosting systems are installed as a retrofit to the natural flow concept.

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Modified: 2008.01.27; logistics@3mE.tudelft.nl, [TU Delft](#) / [3mE](#) / [TT](#) / [LT](#).
