

# High-Efficiency Pumps Quadruple Waterflood Capability Without Infrastructure Changes, Gabon

In-country engineering team and updated REDA HPS pump support economics and reservoir pressure requirements of the mature onshore field

**Efficiency improvements and local support enabled an operator to increase waterflooding capability for a mature field fourfold without expensive and time-consuming infrastructure changes.**

## Maturing field required help to cost-effectively maintain production

An operator in Gabon wanted to rapidly improve waterflood capacity in a mature oil field without significant infrastructure modifications or capex. The REDA HPS\* horizontal multistage surface pumping system in place comprised two J350N 49-stage pumps and could achieve injection rates up to 30,000 bbl of water per day with 66% efficiency.

The system delivered industry-leading efficiency at the time of its installation and more than adequate reservoir pressure management during the early life of the field, enabling pressure and flow rate increases for 10 years. As the reservoir depleted, however, additional

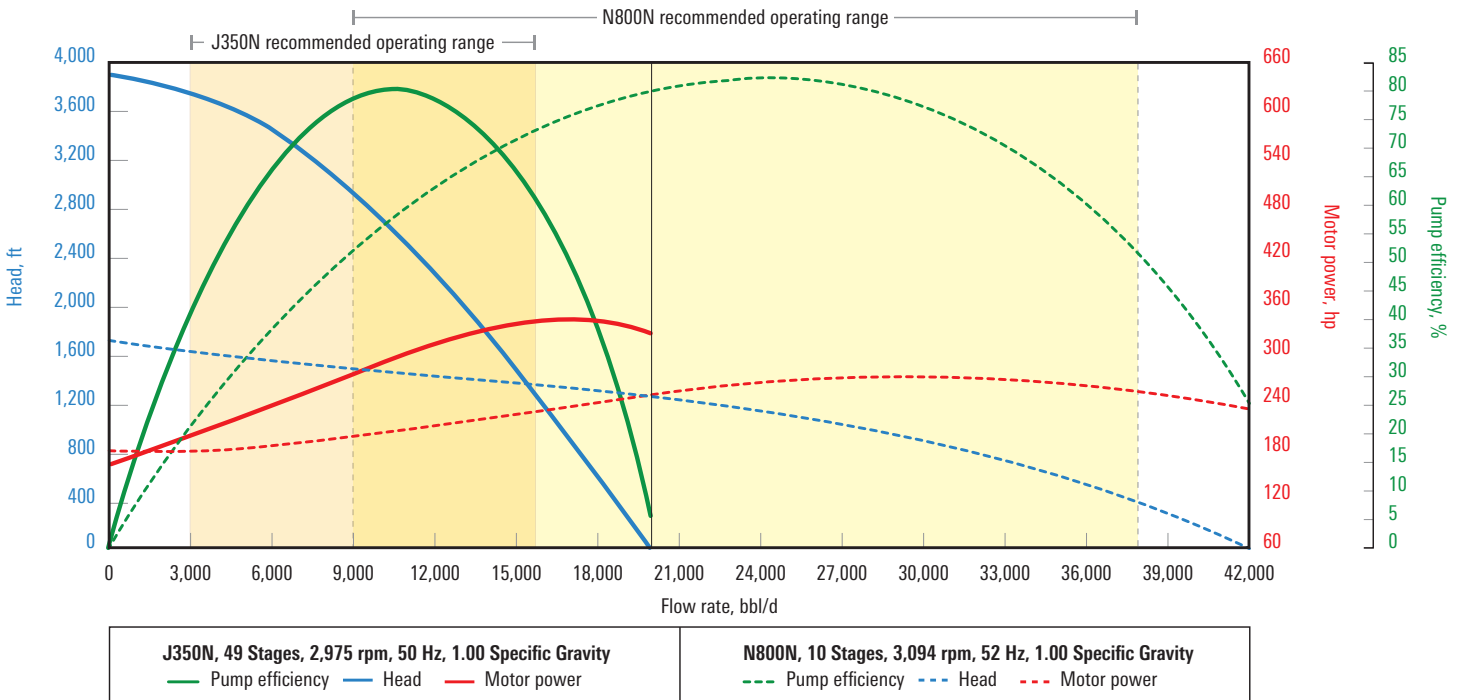
boosting was required. The existing pumps were not sufficient, but the field’s production did not justify major capital investment. Unless an economical option was found to increase injection to 100,000 bbl/d, oil production would soon cease.

## Smaller, high-efficiency pumps provided a solution

Local engineers developed a new design to replace the J350N pumps with four N800N 10-stage pumps, which have higher efficiency (82%). The full system would greatly enhance waterflood capability without significant infrastructure changes.

## Operator quadrupled injection capacity and extended field life

The high-efficiency pumps, along with upgraded thrust bearings and flanges to accommodate higher flow rates, were installed rapidly using local support personnel. The system can now deliver up to 124,000 bbl/d, which is expected to meet both current and future requirements.



Each of the two original pumps had 49 stages and could together deliver up to 30,000 bbl/d, which was adequate for early waterflooding but insufficient for later reservoir requirements. Four newer high-efficiency pumps, each with just 10 stages, can deliver up to 124,000 bbl/d, increasing capacity without lengthy and expensive changes to the surface infrastructure.

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