



CASE STUDY

EconoFlo™ addressed a client's need for reliable sand control in horizontal open-hole thermal producers.

SUPERIOR'S RESPONSIVE DESIGN ENGINEERING TEAM FULLY QUALIFIED ECONOFLO™ THERMAL SCREEN IN FOUR MONTHS.

Superior Completion Services was approached by a major international oil company (IOC) late in 2013 with a challenge to deliver reliable sand control in a heavy oil environment. This occurred when all other standalone sand control methods did not meet expectations and the industry was nearing the cusp of a major downturn in commodity prices. The existing methods either plugged or required continuous clean out to get back online with production.

The client challenged Superior to develop and qualify a premium woven metal mesh filter product for thermal applications, that closely matched the price point of their standard slotted liner or one of their regular supplier's offering of a multi-pore geometry screen product.

Within four months from initial request, Superior's responsive design engineering team rose to the challenge and fully qualified a product, EconoFlo™, for thermal applications.

EconoFlo was designed to reduce the amount of manufacturing cost by moving the percentage of overall cost to raw material and away from the actual fabrication cost. This was accomplished in the EconoFlo design by:

- Fabricating the weave directly onto the base pipe
- Applying industry proven resistance welding techniques to affix the multi-layer weave in place during fabrication
- Using industry proven techniques of swaging the assembly together

Raw material cost savings built into the product to keep the price point near its target of the previously used alternative solutions:

- Use of lower cost raw material such as 1018 carbon steel for the outer protective shroud with 316Lss end rings for the swaging process
- Offering electrical resistance welded (ERW) API 5CT base pipe when it is less expensive than seamless

CHALLENGES

- » Develop a premium woven metal mesh filter product for thermal applications
- » Match the price point of our customer's standard slotted liner or a supplier's multi-pore screen product
- » Deliver a reliable sand control screen in horizontal open-hole heavy oil environments
- » Existing methods plugged or required continuous cleanout

SUPERIOR ENERGY SOLUTION

- » Superior's responsive design engineering team fully qualified EconoFlo in four months
- » EconoFlo was designed to reduce material and manufacturing costs
- » Based on feedback from the client and after a nine-month field trial, EconoFlo had proven results
 - No measurable sand production and no appreciable decline in total liquid production
 - The same could not be said of the other competing products
- » EconoFlo became a standard offering for thermal producers in their heavy oilfield

VALUE

- » Superior has a lower cost option for standalone screen completions in an open-hole heavy oil environment

FIELD TRIALS

In January 2014, EconoFlo landed on the ground at the client’s storage facility, less than five months after concept of design and thermal qualification of the product. The first installation of EconoFlo occurred on March 23, 2014. The second installation occurred on April 6, 2014. The nine-month long production began on June 5th and 24th of 2014, respectively.

A flow performance challenge began with solutions offered by Superior in the form of EconoFlo and competing supplier’s product offerings in the market at that point in time. The objective was to define the solution that delivered the best in key performance indicators for: 1) least amount of sand production; and 2) longest time to plug.

RESULTS

After the initial nine months of production, EconoFlo had proven itself with no measurable sand production and no appreciable decline in total liquid production during the pilot project. The same could not be stated for the other products installed for the pilot campaign.

The decision was taken by the client to make EconoFlo a standard offering for thermal producers in this heavy oil field. The technical support team for this IOC became a promoter of EconoFlo as a solution for their global heavy oil needs in thermal applications.

The first two figures illustrate the flow performance of EconoFlo for the first two installations during the pilot program. In Figure 1 you can see the flow performance results for the first installation of EconoFlo on June 5, 2014. Figure 2 offers the results of the second installation, which occurred on June 24, 2014. Both figures provide results for the first five years of production.

Figure 3 demonstrates flow performance of an inadvertent installation of inventory on hand from brand “X” in January 2015.

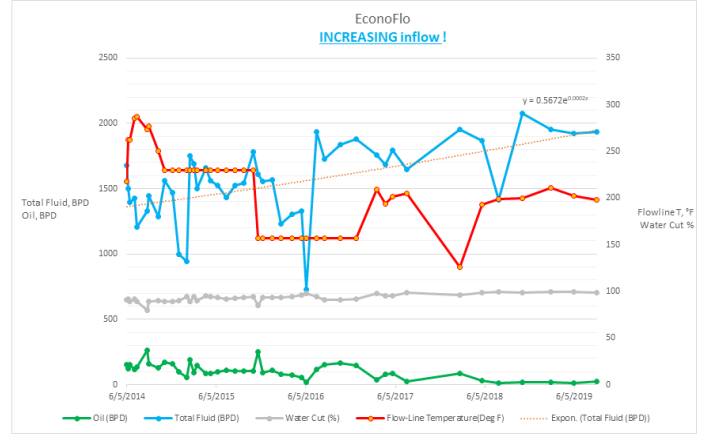


Figure 1 First installation of EconoFlo™.

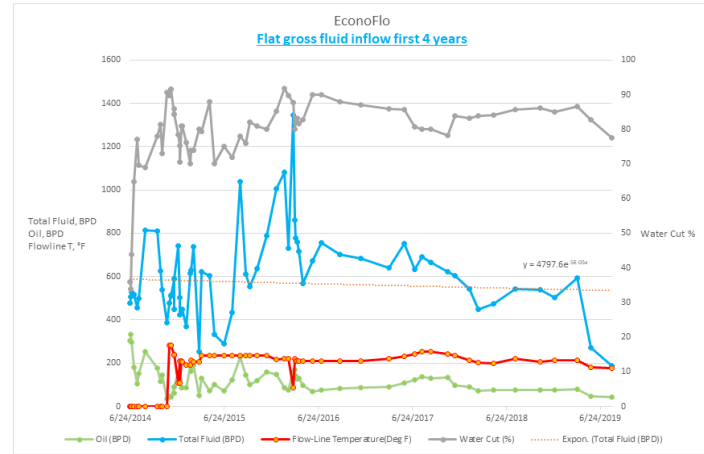


Figure 2 Second installation of EconoFlo™.

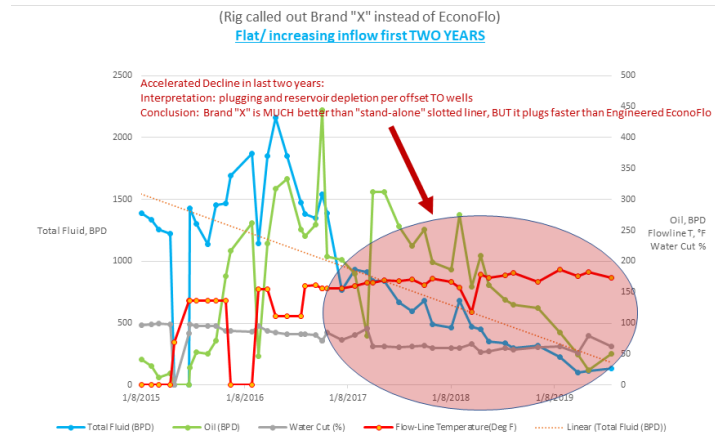


Figure 3 Inadvertent Brand “X” Completion.