

CASE STUDY: REDUCING THE COSTS OF FUEL AND ENGINE REBUILDS

A leading engine manufacturer in the USA put a 2500 BHP engine and radiator to the test on a dynamometer.

Background

To optimize fuel consumption and operational efficiency in the hydraulic fracturing industry, a leading engine manufacturer in the USA embarked on a comprehensive study to understand how much fuel a frac pump engine consumes at idle.

Key Findings

Significant savings can be achieved through decreased fuel consumption and engine maintenance by minimizing engine idling.

The MGB PowerCELL technology platform was proven in a separate study to reduce idle times by up to 85% in a typical frac operation without requiring extra capital investment. This leads to considerable cost savings while also reducing the environmental footprint.



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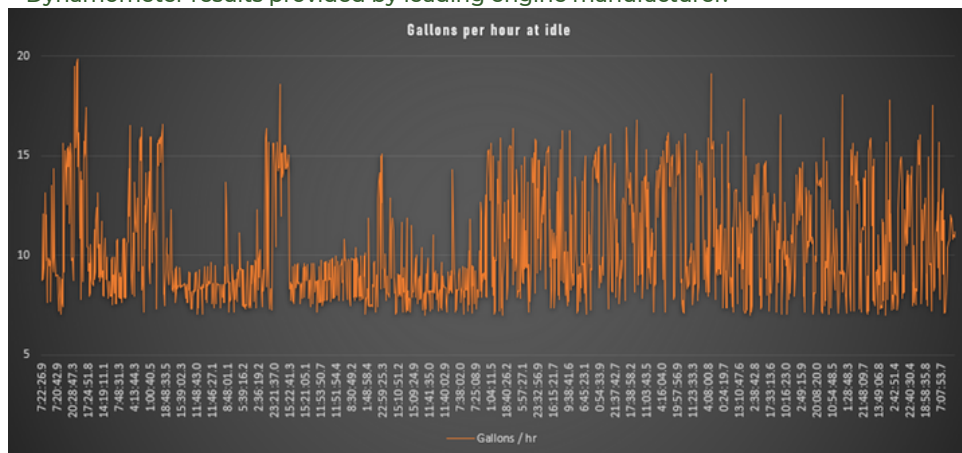
CHALLENGE

The primary challenge was to accurately measure the fuel consumption of a 2500 BHP frac pump engine under various conditions, including idle and when subjected to external loads such as cooling systems. Ambient temperature variations between 20 and 40 °F added another layer of complexity to the measurement process.

SOLUTION

To tackle this challenge, the manufacturer equipped a test engine with fuel flow meters and placed it on a dynamometer. This setup allowed for precise measurement of fuel flow over several days under controlled conditions. The study aimed to quantify fuel consumption at idle and during the engagement of external cooling systems, which represent additional loads on the engine.

Dynamometer results provided by leading engine manufacturer:



CONCLUSION

The study revealed significant insights into the fuel consumption patterns:

- Idle Consumption:** The engine consumed an average of 10.3 gallons of fuel per hour at idle, with no external loads applied.
- Increased Consumption Under Load:** When external cooling systems were activated, fuel consumption rose to approximately 15 gallons per hour. Underscoring the impact of additional systems (such as lube pumps and coolers) on fuel efficiency.
- Potential for Excess Consumption:** With aging engines and the added load from additional systems, fuel consumption could surge beyond 20 gallons per hour.

The manufacturer's insights pave the way for interventions, such as those offered by MGB, which promises to reduce idle times by up to 85% in typical frac operations. This potential reduction not only represents significant cost savings but also contributes to environmental conservation efforts within the industry.