



OIL FIELD SERVICE EQUIPMENT THROUGHPUT

PROJECT SUMMARY

With energy prices at historically high levels, drilling activity for oil and gas is at historically high levels. A manufacturer of drill string downhole tools was looking at free demand as much as 80% greater than current capacity.

SYSTEM DESCRIPTION

Drill collars are 30 foot stainless steel bars with precisely machined outside and inside diameters. The concentricity between the OD and ID is especially important. OD's range from 6 to 12 inches and weigh 3000 pounds or more. A very complex series of machining and checking operations are required to produce drill collars. Parts are moved from station to station with overhead cranes. Waiting losses were significant.

OPPORTUNITY

A number of productivity initiatives were underway to reduce waiting losses. Very long cycle times made it difficult to evaluate the effectiveness of these initiatives. Missing was a system-level analysis tool to focus these efforts on the constraint.

APPROACH

PMC developed a discrete event simulation model of the drill collar machining process from dock to dock. The model enabled the manufacturing teams to develop system-level strategies to increase throughput, test these strategies in a safe environment, and understand the robustness of these strategies to changing market conditions.

SOLUTION

A short-term constraint-by-constraint throughput improvement road map was developed that increased production by 40%. The model is being used to improve the risk/reward equation for plant rearrangements and capacity investments. Longer term, this approach can be repeated on the next constraint: raw forgings.

BENEFIT

In the short term, the EBITDA from increased production volumes is constrained by the availability of raw forgings (the next constraint) but should still exceed \$800K per year.