Predicting ESP Failures for a Leading Oil & Gas Company

A leading American oil and natural gas company which uses enhanced oil recovery technique to extract petroleum. The company has 230.2 MMBOE of estimated proved oil and natural gas reserves as of December 31, 2019, of which 98% is oil.

Business Challenges & Objectives

- Evaluate SAP's platform and advanced data processing capabilities with customer ESP (Electric Submersible Pumps) data to prove if one could detect pre-emptive notifications of failures
- Evaluate Incture's services and its O&G industry knowledge and technical expertise in analyzing Company's ESP data.

Solution

Integrating operational ESP data with other company data to Predict rate of pump failure. SAP, Incture and the client worked together to analyze operational ESP dimensions such as vibration, Temperature, Frequency and operating Voltage, start/stop and operational tolerance error data to understand the factors that contribute to pump failure. We provided analytical reports on observed relationships and co-relations.

Outcome

Predicting ESP failures will help customer increase production while reducing operating costs, give customer unmatched equipment reliability insight, assist customer in negotiating better warranty and service contracts, provide customer a financial edge over peers.

Business Impact

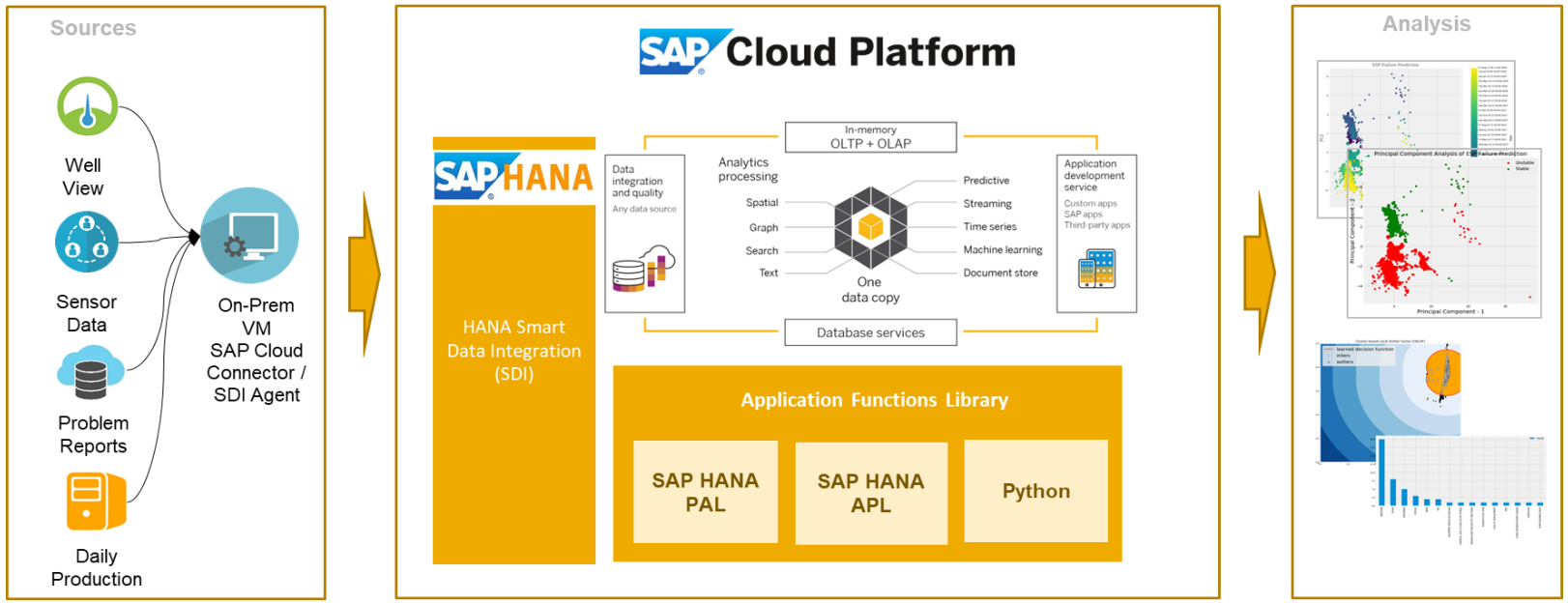
1MN USD

Projected Annual Benefit

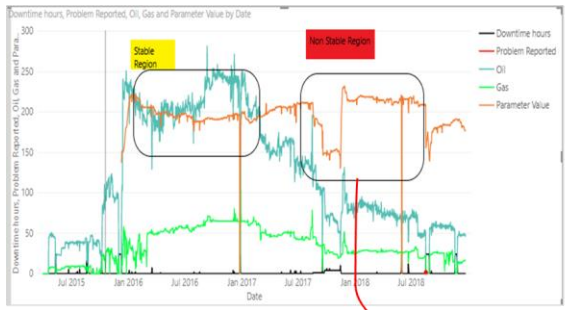
85%

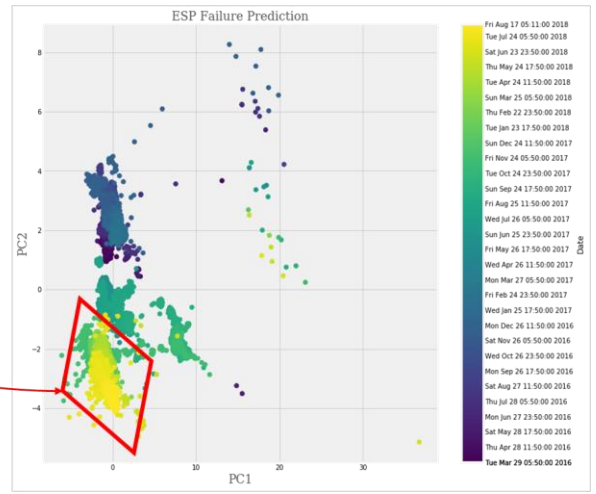
Prediction of ESP failure

Predictive ESP failure application



ESP & Production Data	Reference Data	Historical Data
•Motor Temperature •Current •Intake Pressure •Voltage •Overload Set Point •Downtime hours •Oil, Water, Gas Production •Flowline Pressure •Casing Pressure •Production BOPD	•Well View completion data •Well Header Data •Facility data •Sites – BAKMTCYG, CFUTXCYG	•Well Problem Data •Failure and pull reports (manual entry)





Our ML algorithm was able to identify data patterns that enables it to predict **85%** of the ESP failures with limited data set available