

CSE ProdCast by CSE Icon

At-A-Glance

Solution Type

CSE ProdCast is a smart, analytical solution leveraging an artificial neural net to forecast production of oil, gas, and water for existing and new wells.

Regions Available

- › North America

Industries

- › Oil & Gas

Features & Benefits

- › Production forecast for oil, gas, and water extracted from a well
- › Scalable solution that can intake historical data for multiple wells
- › Robust model that can account for dynamic changes in operational parameters
- › Highly accurate production forecasting
- › Actionable insights for operations
- › Forecasting model does not require unrealistic assumptions to be made

Implementation Requirements

- › PI Server
- › PI AF Server
- › PI System Access
- › PI Vision

BUSINESS CHALLENGES

Production forecasting is a critical activity for oil and gas companies, as it can significantly influence field development planning and the economic evaluation of oil and gas assets. Traditional methods employed for production forecasting, such as numerical simulations and decline curve analysis models (DCA) including Duong, Fetkovich, MBT, Stretched Exponential, etc., are based on assumptions and require extensive domain knowledge. Moreover, for an unconventional reservoir, the estimation of future oil and gas production is complex due to the heterogeneous nature of formations and dynamic operational events.

Due to these complexities, combined with the rapid decline rate of wells, an unconventional well often does not follow the natural trend of the depletion regime. To overcome these challenges, CSE ProdCast was built using an artificial neural network (ANN) for predictive modeling using time-series data as a mechanism for predicting a more 'natural response' from the reservoir. This new approach leverages a data driven model that learns directly from data without making any prior assumptions. It provides an alternative quick, accurate, and cost-effective approach for forecasting production of existing and new wells. The solution can also be extended to build production forecasting models using data from multiple wells.

The following figures demonstrate how the oil, gas, and water volumes forecasted by ICON's ANN compare to sample production data (figure 1) and DCA models (figure 2).

Figure 1 – Comparison of artificial neural network (ANN) forecast with sample production data.

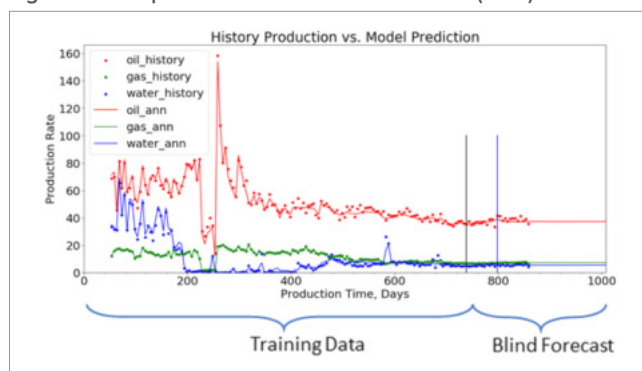
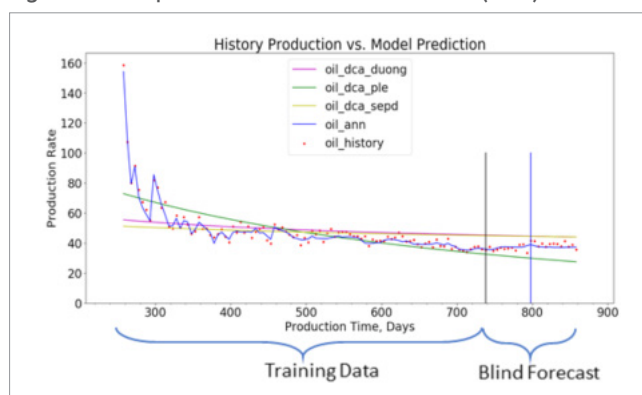


Figure 2 – Comparison of artificial neural network (ANN) forecast with DCA model forecast.

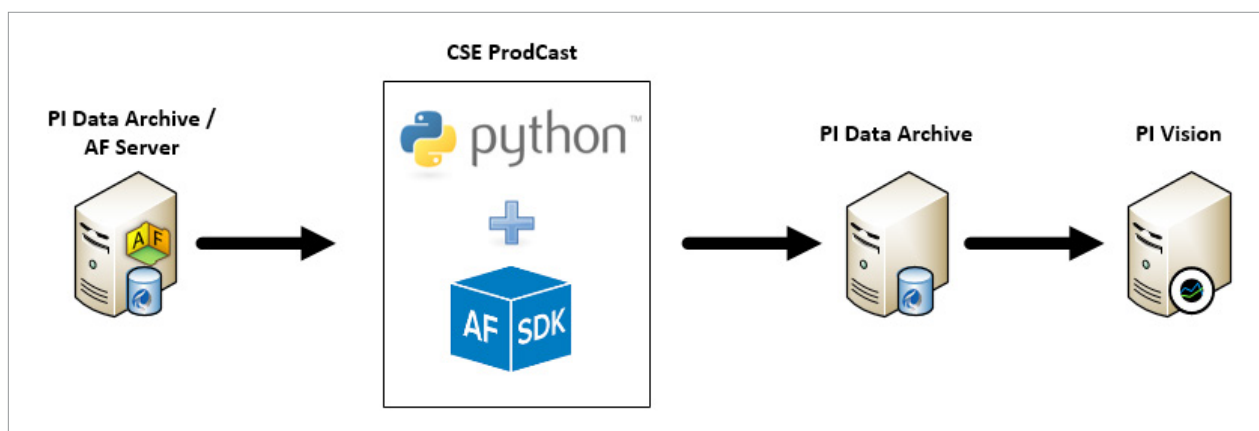


BUSINESS IMPACTS

The biggest advantage of CSE ProdCast is the increased accuracy of its forecasting model as compared to the traditional decline curve analysis methods. This increased accuracy is made possible by leveraging a data driven approach that does not require assumptions. Additionally, CSE ProdCast is robust enough to incorporate any dynamic changes in operational parameters, such as temperature and pressure, and has the capability to forecast all three phases (oil, gas, and water) unlike traditional methods which only forecast a single phase. The solution is also scalable to forecast the production of a well using aggregate data from multiple wells which renders the forecast more realistic and accurate.

SOLUTION APPROACH

CSE ProdCast pulls time-series data directly from the OSIsoft PI System utilizing the Asset Framework (AF) SDK. This data is used to run advanced forecasting algorithms in real-time. The results from the algorithms are fed back to the PI System and can be displayed and compared to actuals using any of the off-the-shelf PI System visualization tools, such as PI Vision. CSE ProdCast can be deployed on any Windows server where the AF SDK is installed and from which connectivity to the PI Data Archive is possible. Examples include installing the solution directly on the PI Data Archive server, a server running other analysis services (e.g., the PI Analysis Service), or a dedicated server.



ABOUT THE PARTNER ECOSPHERE

The OSIsoft Partner EcoSphere provides a collection of third-party services, applications, and technology to help customers maximize the value of the PI System.

Explore more solutions and the OSIsoft Partner EcoSphere at:
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FOR MORE INFORMATION

To learn more about how CSE ProdCast can help you accurately forecast your oil, gas, and water production, please contact sales@cse-icon.com.

