

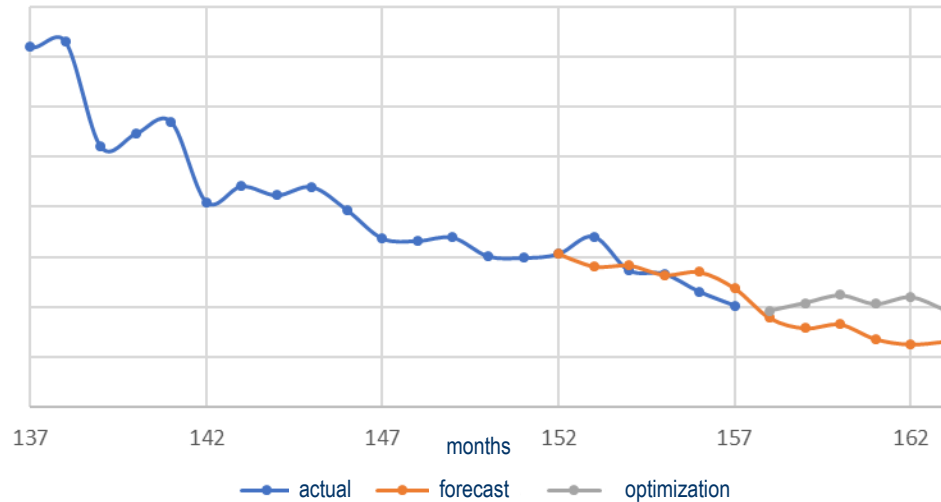
Waterflooding Optimization for Brown Oilfields

- Water flooding management tool for oilfields with a long production history
- Helps to optimize design of the injection volumes distribution
- Reliable and fast short-term oil production forecast without detailed geological and dynamic modeling
- Driven by history of injection-production volumes
- Oil production increase by up to 10% in six months through optimization of less than 50% of injectors
- Completely automatic solution based on filed data:
 - Local well coordinates
 - Monthly oil & liquid production volumes
 - Monthly water injection



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DAILY OIL PRODUCTION



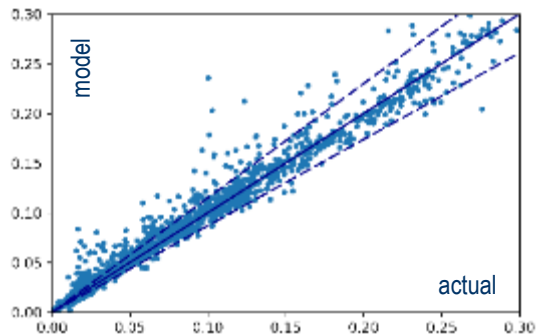
Example

- Brown oilfield with over 10 years of production history; well stock prd / inj = 100+ / 60
- Time*
 - Model creation = 10 hours
 - Forecasting = 2 hours
- Forecast accuracy $R^2 = 0.95$ for the model trained on 6 months of production history

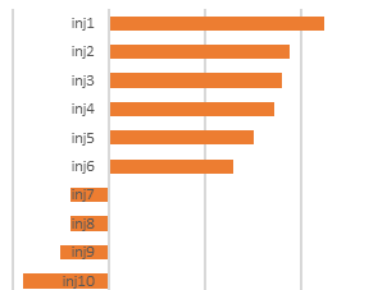
Results

- +7% to oil production within next 6 months; only key injectors were modified
- -3% to cumulative water injection with redistribution between key injectors

MATCHING WITH OPT HISTORICAL DATA



SUGGESTED WATER INJECTION RATE MODIFICATION



* – Testing metrics are provided for a recent commercial project on the company's own computational facilities.