MODEL ANALYSIS

FROM GIVEN EXCEL DATAFILE,

INPUTS-ALL COLUMNS HIGHLIGHTED IN YELLOW

OUTPUTS-ALL COLUMNS IN GREEN

INPUTS – 851 X 15 data items

OUTPUTS:

- Ethylene – 851x1
- Propylene – 851x1
- RPG Production – 851x1
- C4 mixture – 851x1

INPUTS VS Ethylene Model analysis

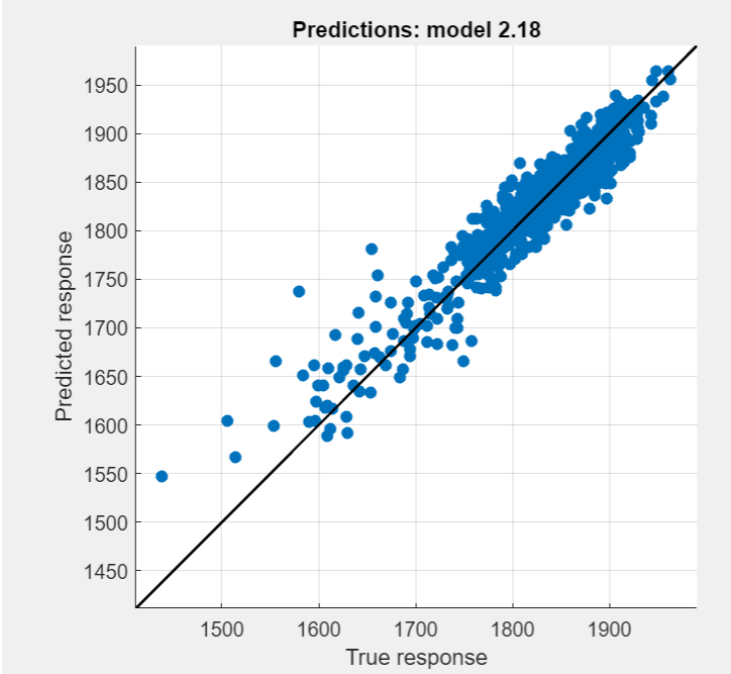
Model: Gaussian Process Regression(Exponential)

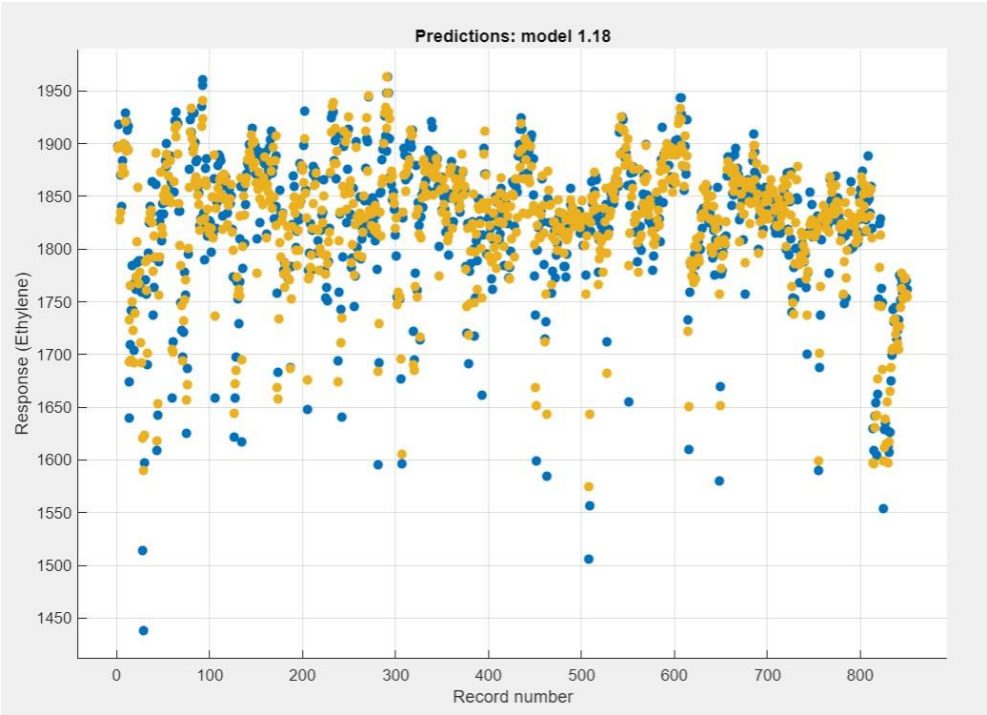
Model 2.18: Gaussian Process Regression
Status: Trained

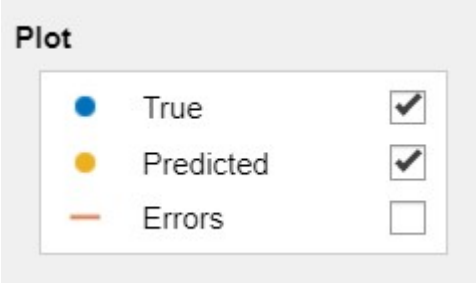
Training Results

RMSE (Validation)	23.083
R-Squared (Validation)	0.89
MSE (Validation)	532.82
MAE (Validation)	16.646
Prediction speed	~10000 obs/sec
Training time	82.212 sec
Model size (Compact)	~117 kB

- **Model Hyperparameters**
- **Feature Selection: 15/15 individual features selected**
- **PCA: Disabled**
- **Optimizer: Not applicable**

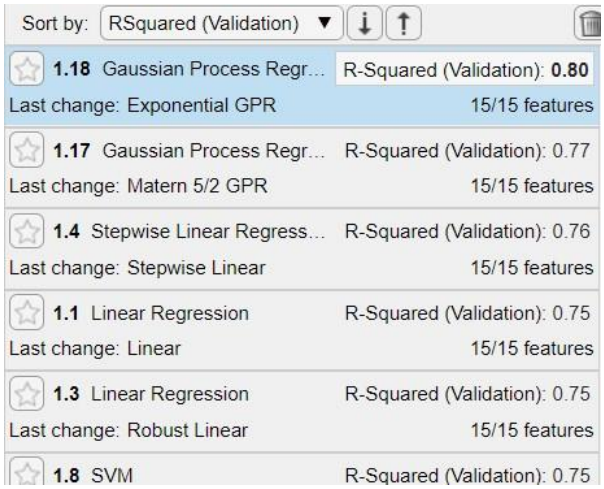


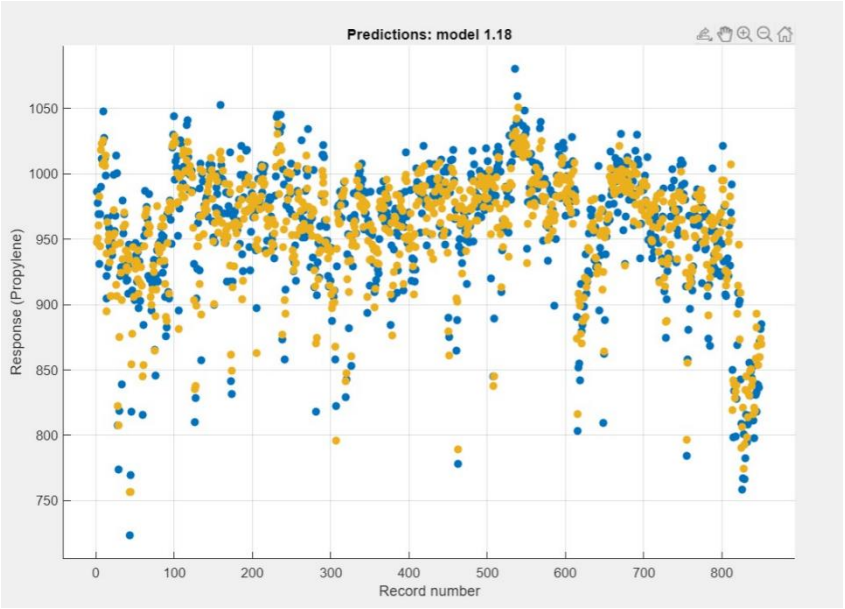




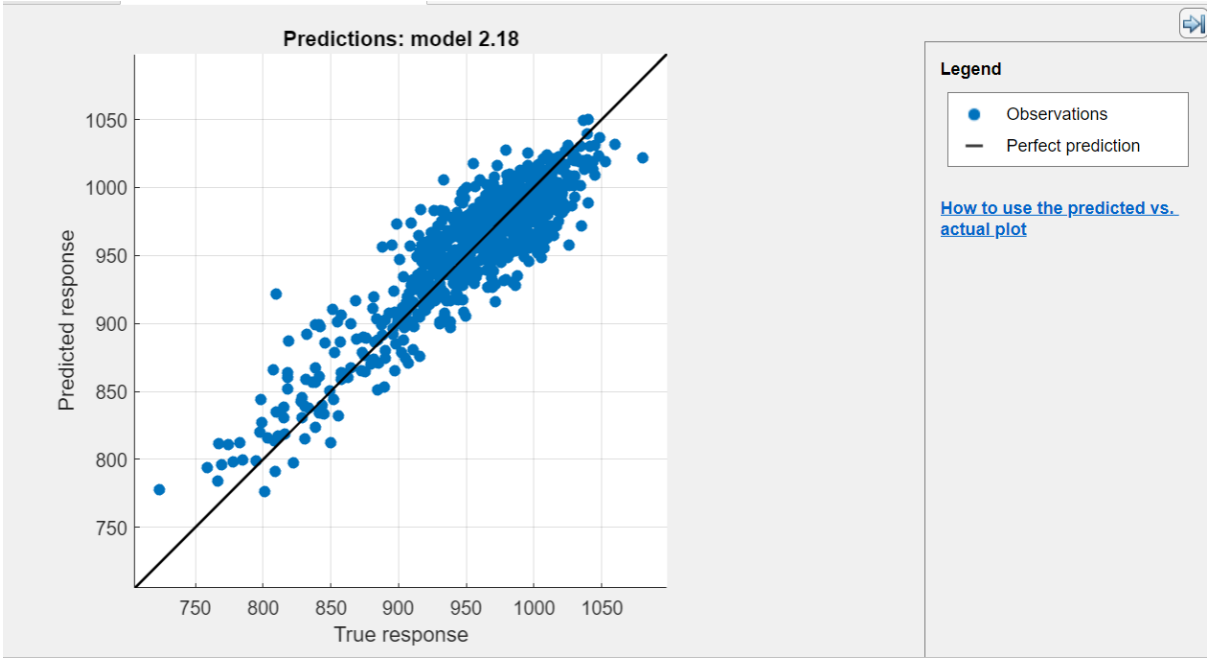
INPUTS VS Propylene Model analysis

Model: Gaussian Process Regression(exponential)





Actual vs Predicted plot



INPUTS VS RPG production Model analysis

Model: Gaussian Process Regression(exponential)

Model 1.18: Trained

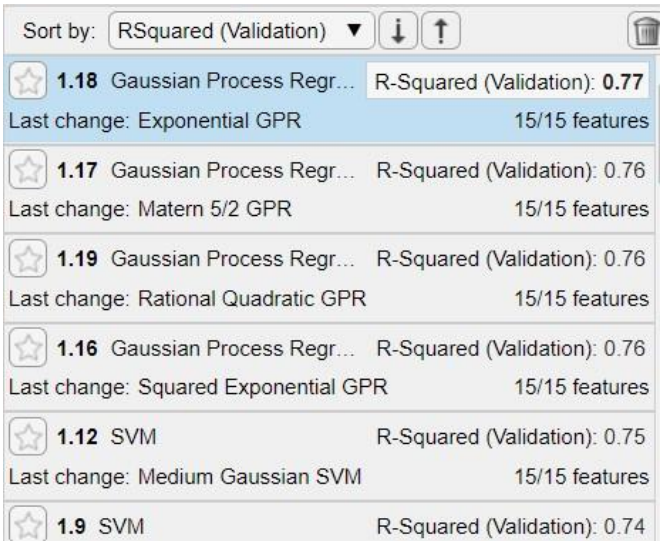
Training Results

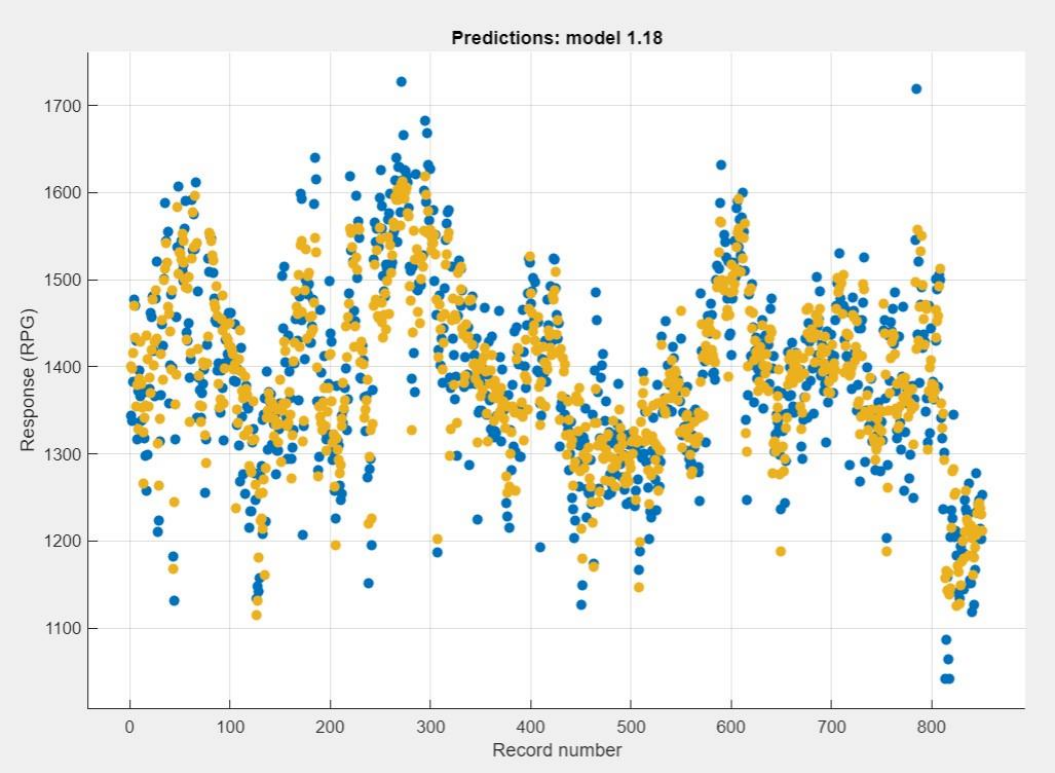
RMSE (Validation)	52.617
R-Squared (Validation)	0.77
MSE (Validation)	2768.6
MAE (Validation)	40.061
Prediction speed	~25000 obs/sec
Training time	8.3729 sec

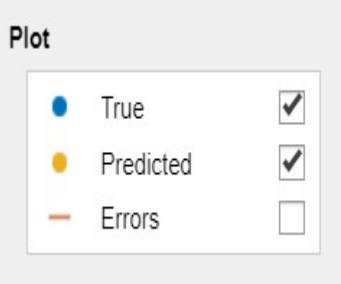
Model Type

Preset: Exponential GPR
Basis function: Constant
Kernel function: Exponential
Use isotropic kernel: true
Kernel scale: Automatic
Signal standard deviation: Automatic
Sigma: Automatic
Standardize: true
Optimize numeric parameters: true

Models:







INPUTS VS C4 Mixture Production Model analysis

Model: Gaussian Process Regression(exponential)

Model 1.18: Trained

Training Results

RMSE (Validation)	21.192
R-Squared (Validation)	0.71
MSE (Validation)	449.12
MAE (Validation)	15.896
Prediction speed	~26000 obs/sec
Training time	9.5351 sec

Model Type

Preset: Exponential GPR
Basis function: Constant
Kernel function: Exponential
Use isotropic kernel: true
Kernel scale: Automatic
Signal standard deviation: Automatic
Sigma: Automatic
Standardize: true
Optimize numeric parameters: true

Sort by: RSquared (Validation)

1.18	Gaussian Process Regr...	R-Squared (Validation): **0.71**
Last change: Exponential GPR		15/15 features
1.19	Gaussian Process Regr...	R-Squared (Validation): 0.70
Last change: Rational Quadratic GPR		15/15 features
1.17	Gaussian Process Regr...	R-Squared (Validation): 0.70
Last change: Matern 5/2 GPR		15/15 features
1.16	Gaussian Process Regr...	R-Squared (Validation): 0.68
Last change: Squared Exponential GPR		15/15 features
1.4	Stepwise Linear Regress...	R-Squared (Validation): 0.66
Last change: Stepwise Linear		15/15 features
1.12	SVM	R-Squared (Validation): 0.65