PLANT/INDUSTRIAL DATA

MODEL ANALYSIS

INPUTS- 400 X 15

OUTPUTS – 400 X 4

- ETHYLENE
- PROPYLENE
- RPG
- C4

4 Models --- each output column was individually mapped with input columns.

The given data was cleaned thoroughly so that the average error in each model was minimised to the greatest extent.

INPUT VS ETHYLENE

MODEL: GAUSSIAN PROCESS REGRESSION(EXPONENTIAL)
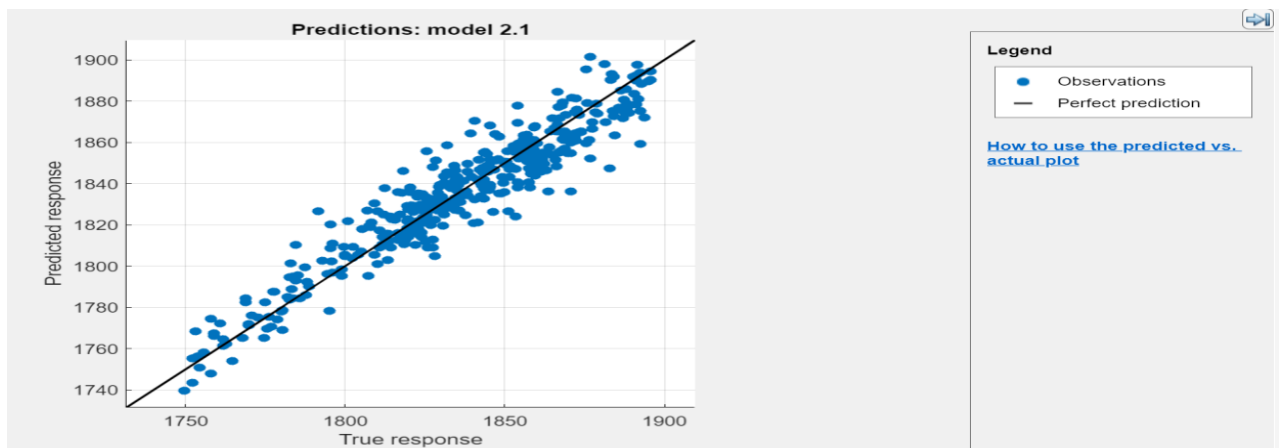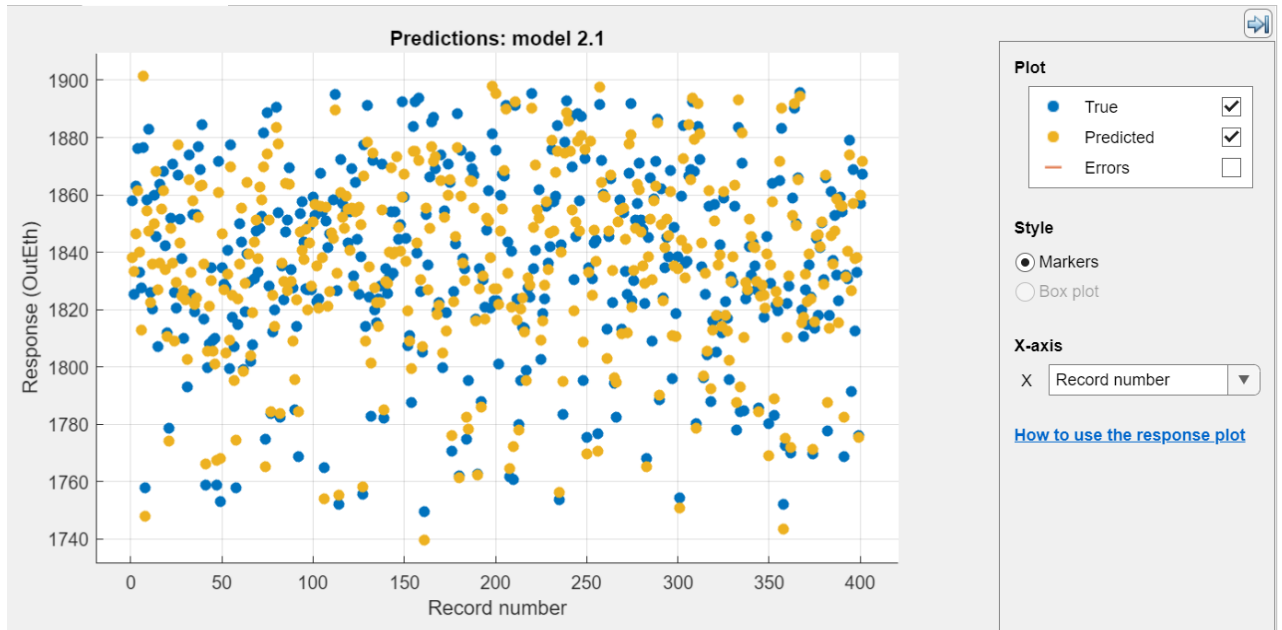
R-SQUARED ERROR: 0.89753

AVERAGE ERROR: 0.09513

Session: untitled

Training Data: InpEth   Observations: 401   Predictors: 15   Response Name: OutEth   Response Classes: 338

Validation: 5-fold cross-validation

Favorite	Model Number	Model Type	Status	RMSE (Validation)	MSE (Validation)	RSquared (Validation)
☐	2.1	Gaussian Process Regression	✅ Trained	10.815	116.97	0.89753
☐	2.3	Gaussian Process Regression	✅ Trained	10.958	120.07	0.89481
☐	2.4	Gaussian Process Regression	✅ Trained	11.104	123.3	0.89198
☐	2.2	Gaussian Process Regression	✅ Trained	11.553	133.47	0.88307
☐	1	Tree	✅ Trained	26.527	703.68	0.38354

INPUT VS PROPYLENE

MODEL: GAUSSIAN PROCESS REGRESSION(EXPONENTIAL)

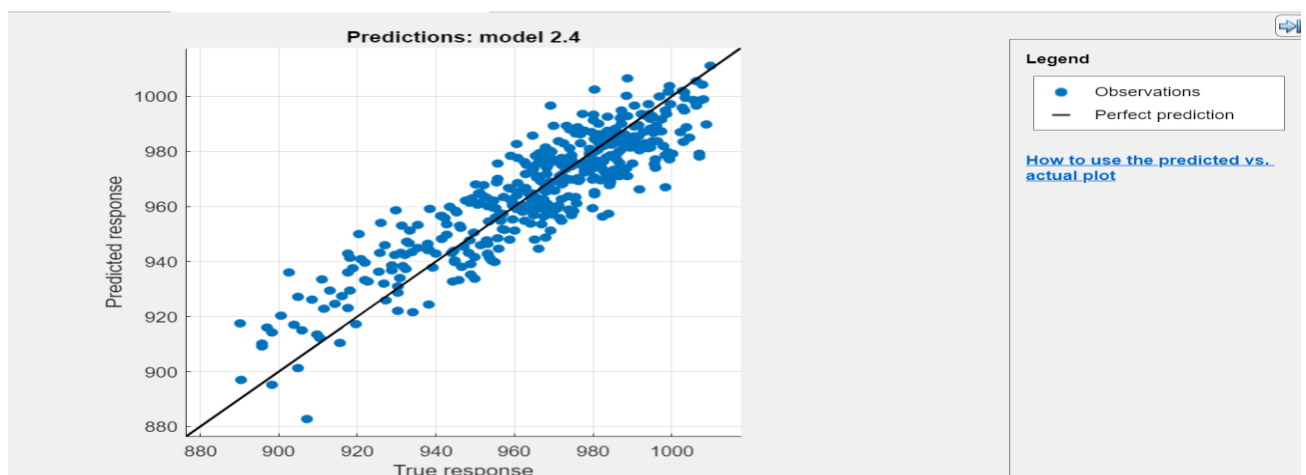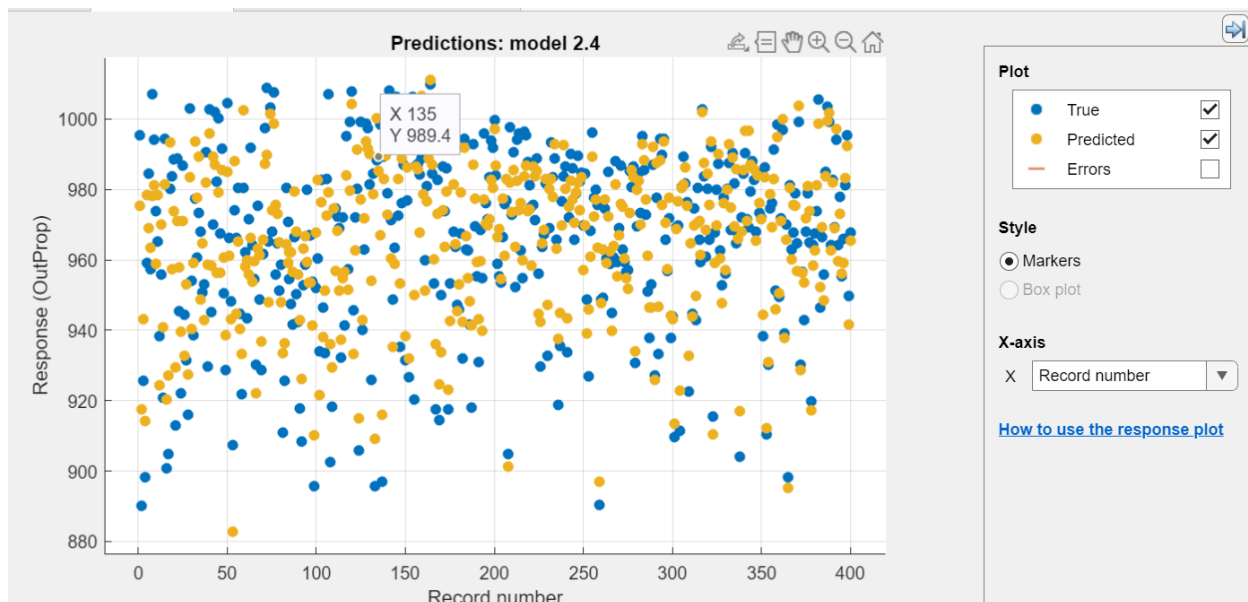**R-SQUARED ERROR**: 0.80307

AVERAGE ERROR: 0.000487

Session: untitled

Training Data: InpProp   Observations: 400   Predictors: 15   Response Name: OutProp   Response Classes: 321

Validation: 5-fold cross-validation

Favorite	Model Number	Model Type	Status	RMSE (Validation)	MSE (Validation)	RSquared (Validation)	
☐	2.4	Gaussian Process Regression	✅ Trained	11.5	132.25	0.80307	
☐	2.1	Gaussian Process Regression	✅ Trained	12.024	144.59	0.78469	
☐	2.3	Gaussian Process Regression	✅ Trained	12.081	145.95	0.78267	
☐	2.2	Gaussian Process Regression	✅ Trained	12.604	158.86	0.76343	
☐	1	Tree	✅ Trained	21.026	442.08	0.34169	

INPUT VS RPG

MODEL: GAUSSIAN PROCESS REGRESSION(EXPONENTIAL)

R-SQUARED ERROR: 0.87

AVERAGE ERROR: 0.09
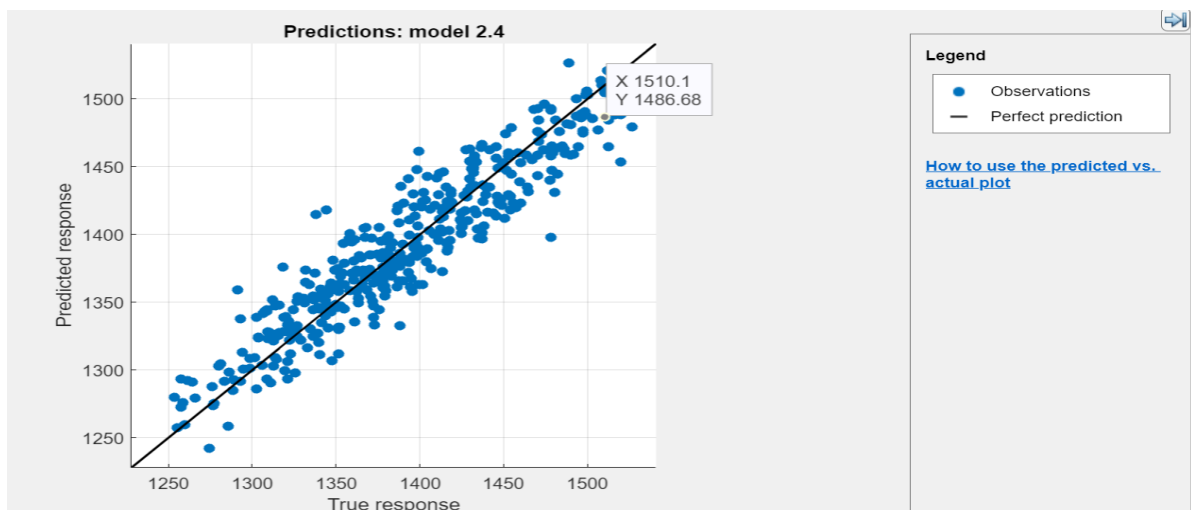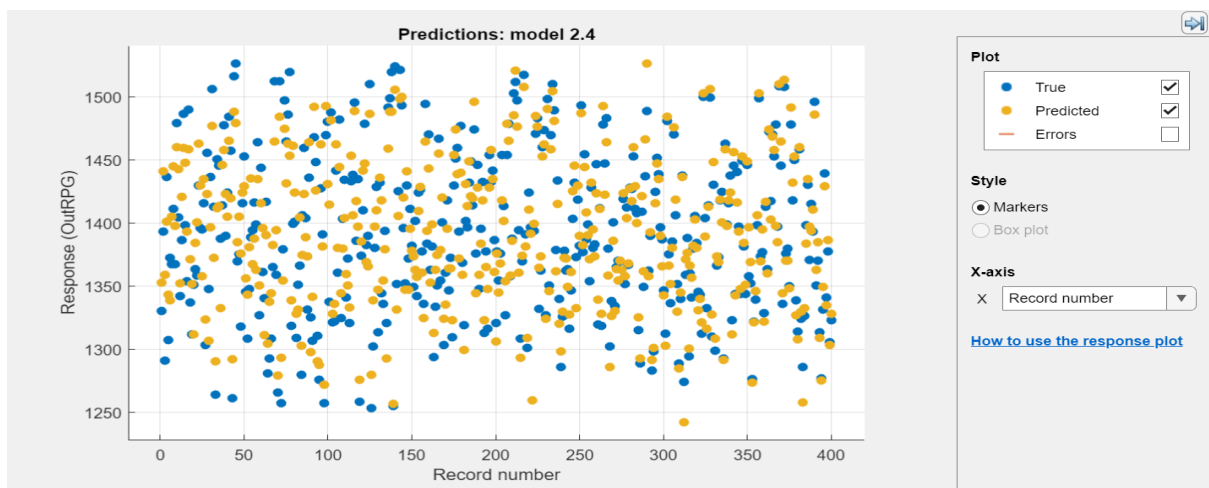

Session: untitled

Training Data: InpRPG   Observations: 400   Predictors: 15   Response Name: OutRPG   Response Classes: 378

Validation: 5-fold cross-validation

Test Data: InpRPG   Observations: 400

Model Number	Model Type	Status	RMSE (Validation)	MSE (Validation)	RSquared (Validation)	MAE (Validation)
2.4	Gaussian Process Regression	✓ Trained	22.872	523.15	0.87012	18.345
2.3	Gaussian Process Regression	✓ Trained	23.811	566.98	0.85924	18.726
2.1	Gaussian Process Regression	✓ Trained	24.073	579.5	0.85613	18.822
2.2	Gaussian Process Regression	✓ Trained	24.433	596.95	0.8518	19.036
1	Tree	✓ Trained	36.447	1328.4	0.67021	28.136

INPUT VS C4

MODEL: GAUSSIAN PROCESS REGRESSION(EXPONENTIAL)

R-SQUARED ERROR: 0.79735

AVERAGE ERROR: 0.100257

Session: untitled

Training Data: InpC4   Observations: 400   Predictors: 15   Response Name: OutC4   Response Classes: 304

Validation: 5-fold cross-validation

Favorite	Model Number	Model Type	Status	RMSE (Validation)	MSE (Validation)	RSquared (Validation)
☐	2.4	Gaussian Process Regression	✅ Trained	8.3948	70.473	0.79735
☐	2.1	Gaussian Process Regression	✅ Trained	8.6614	75.019	0.78428
☐	2.3	Gaussian Process Regression	✅ Trained	8.8675	78.633	0.77389
☐	2.2	Gaussian Process Regression	✅ Trained	9.2956	86.408	0.75153
☐	1	Tree	✅ Trained	16.549	273.87	0.21248