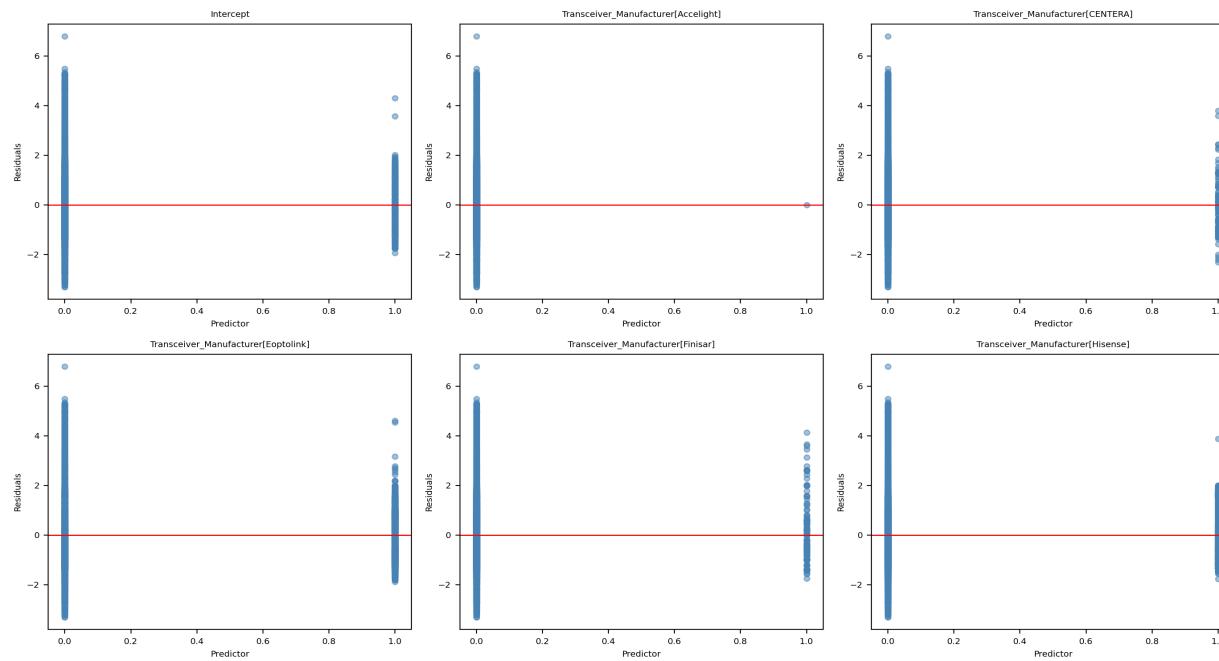
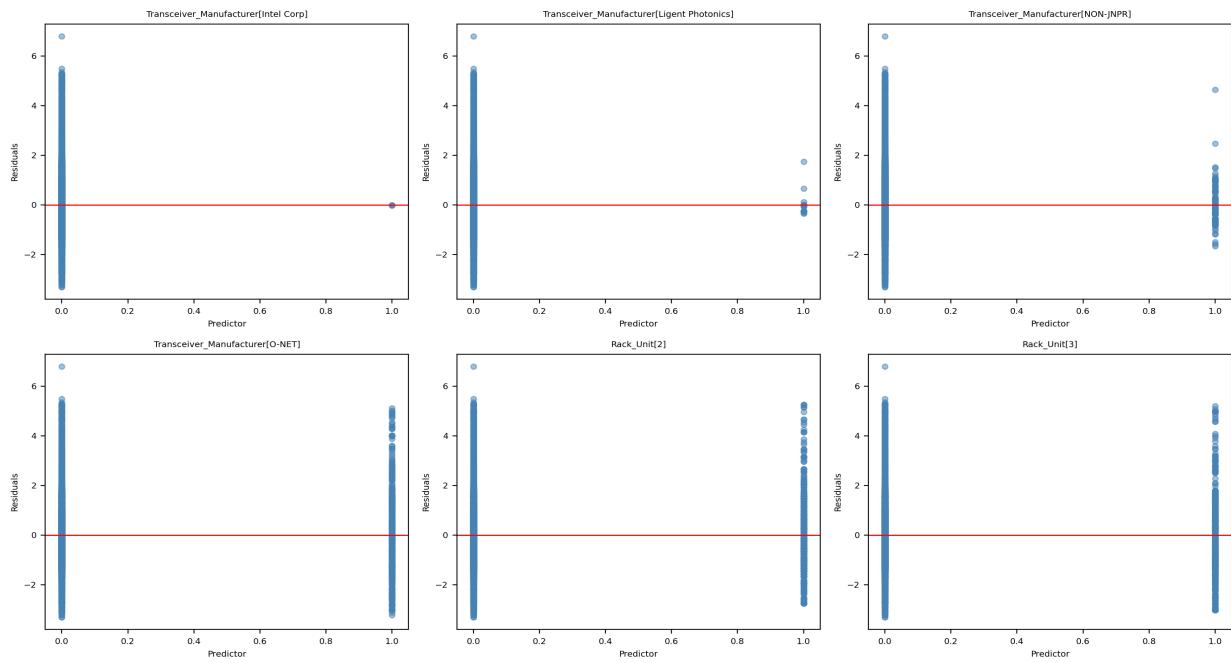
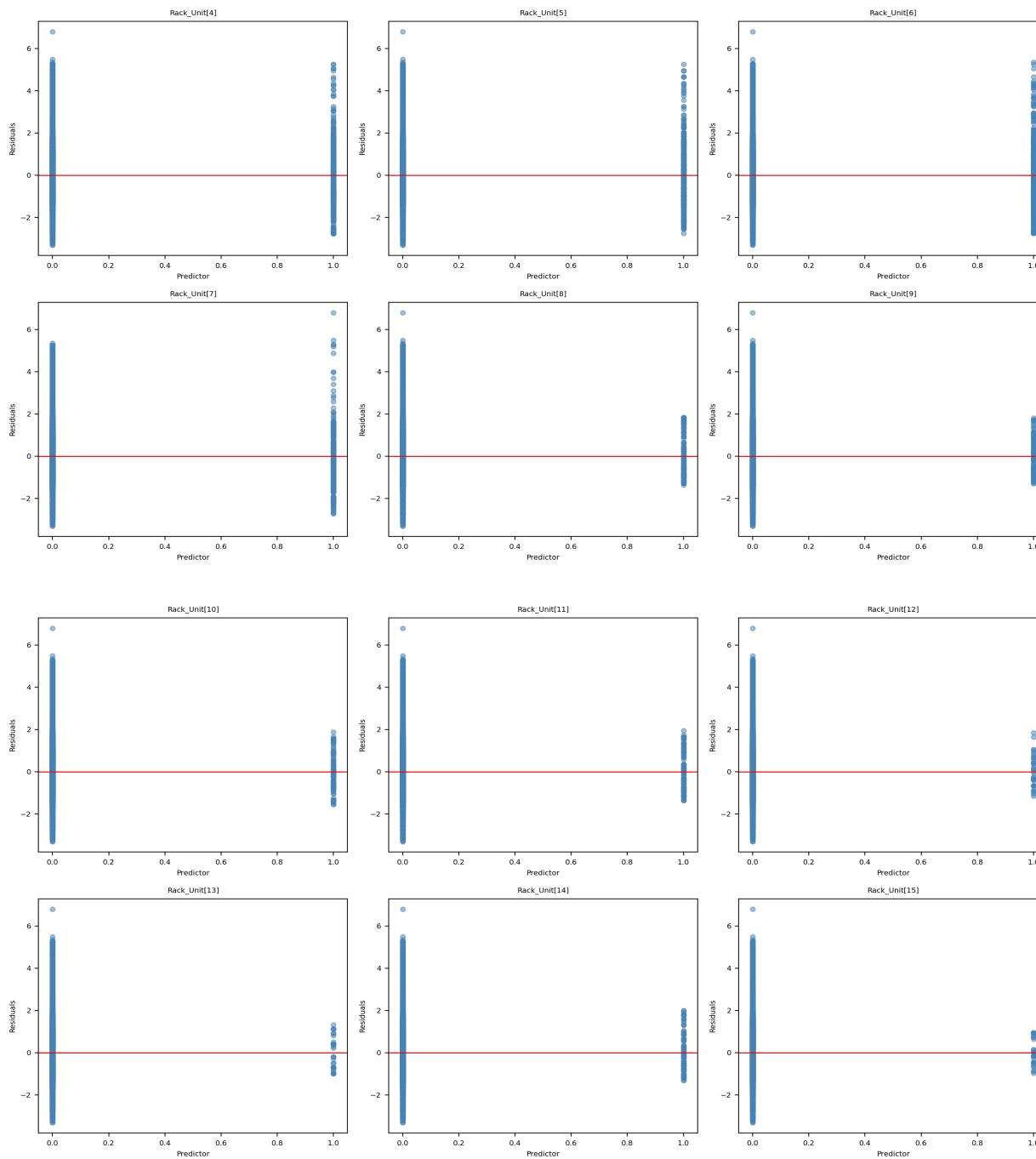


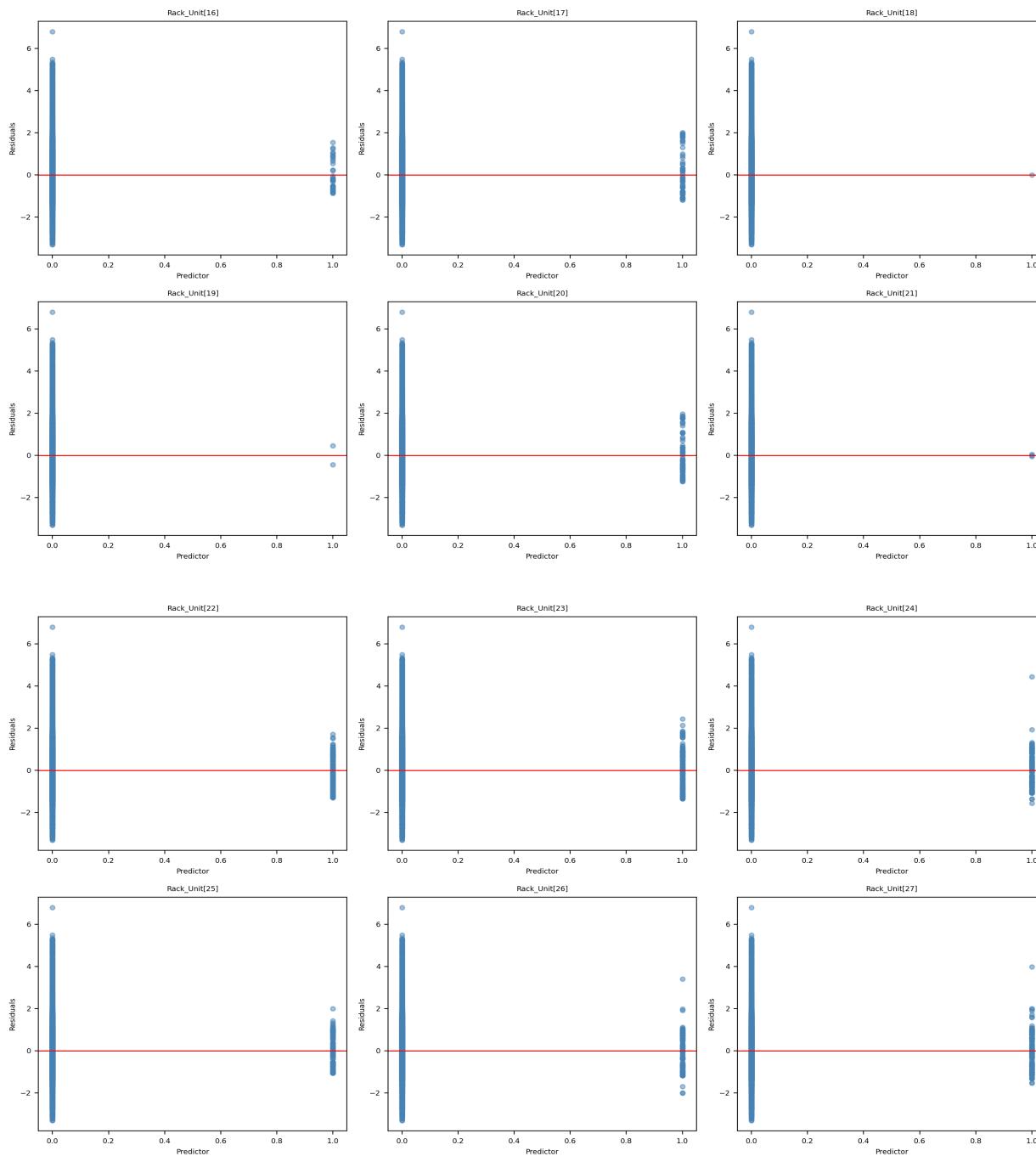
# Reduced DOE Model: Analysis & Diagnostics

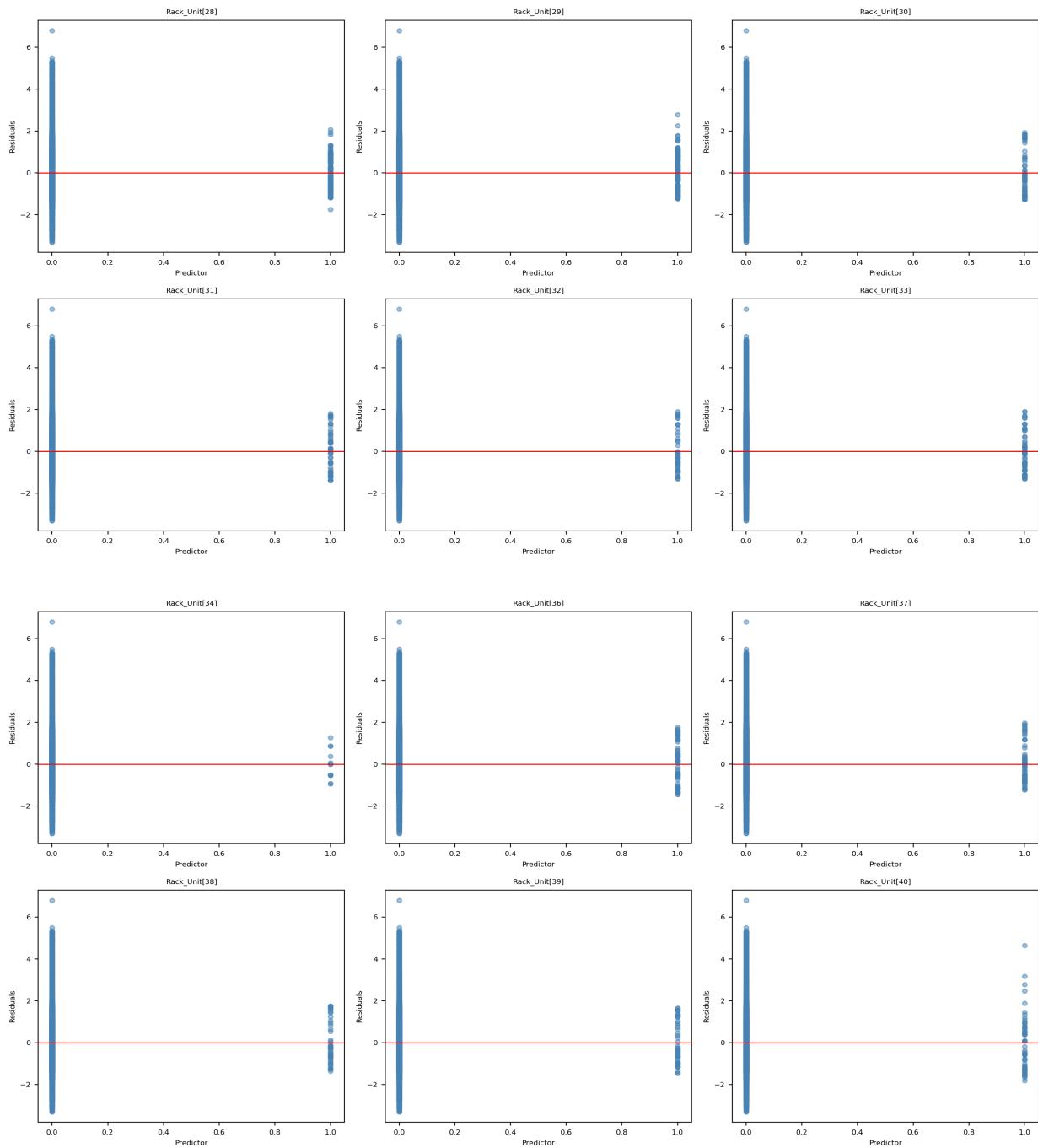
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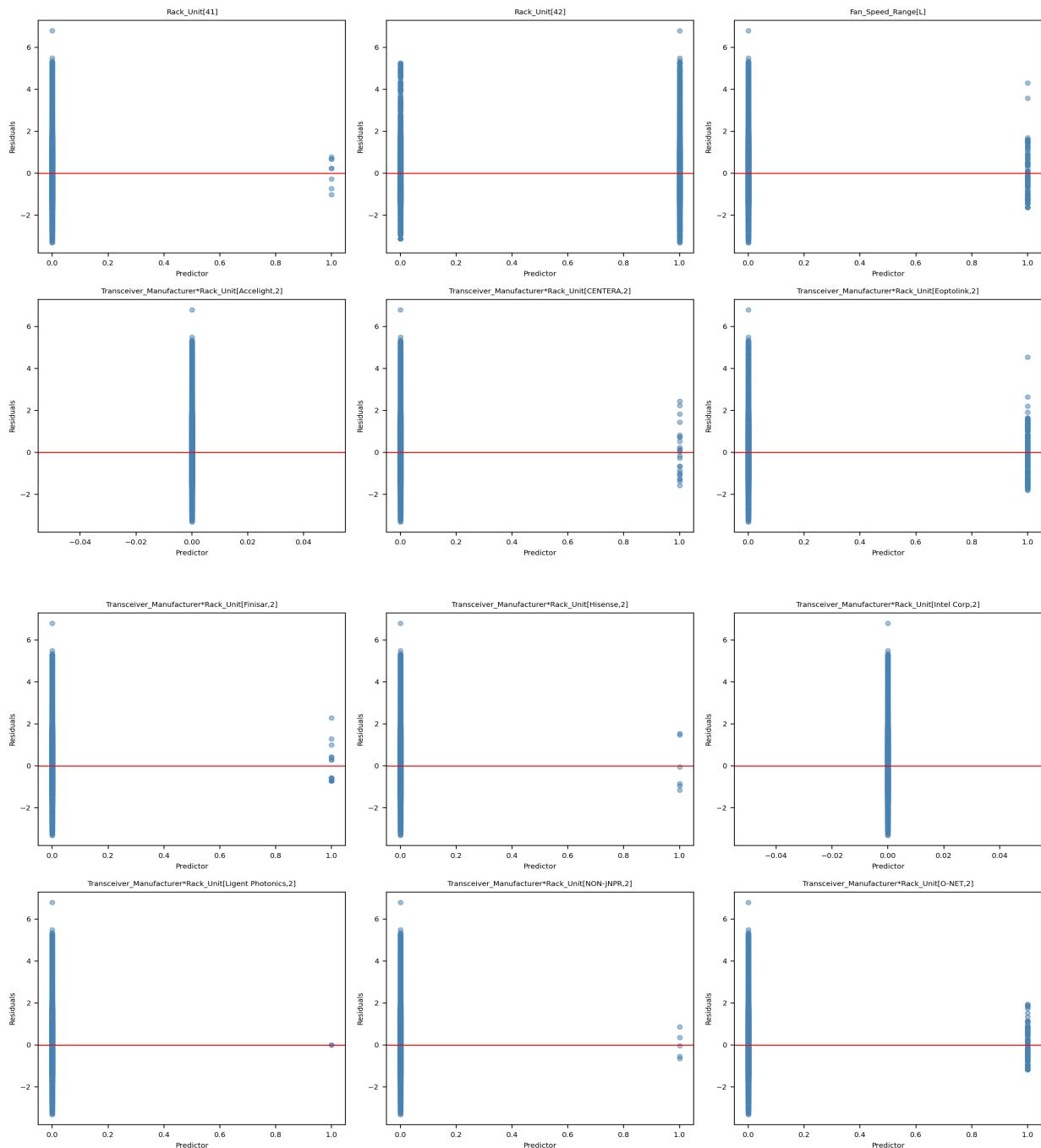


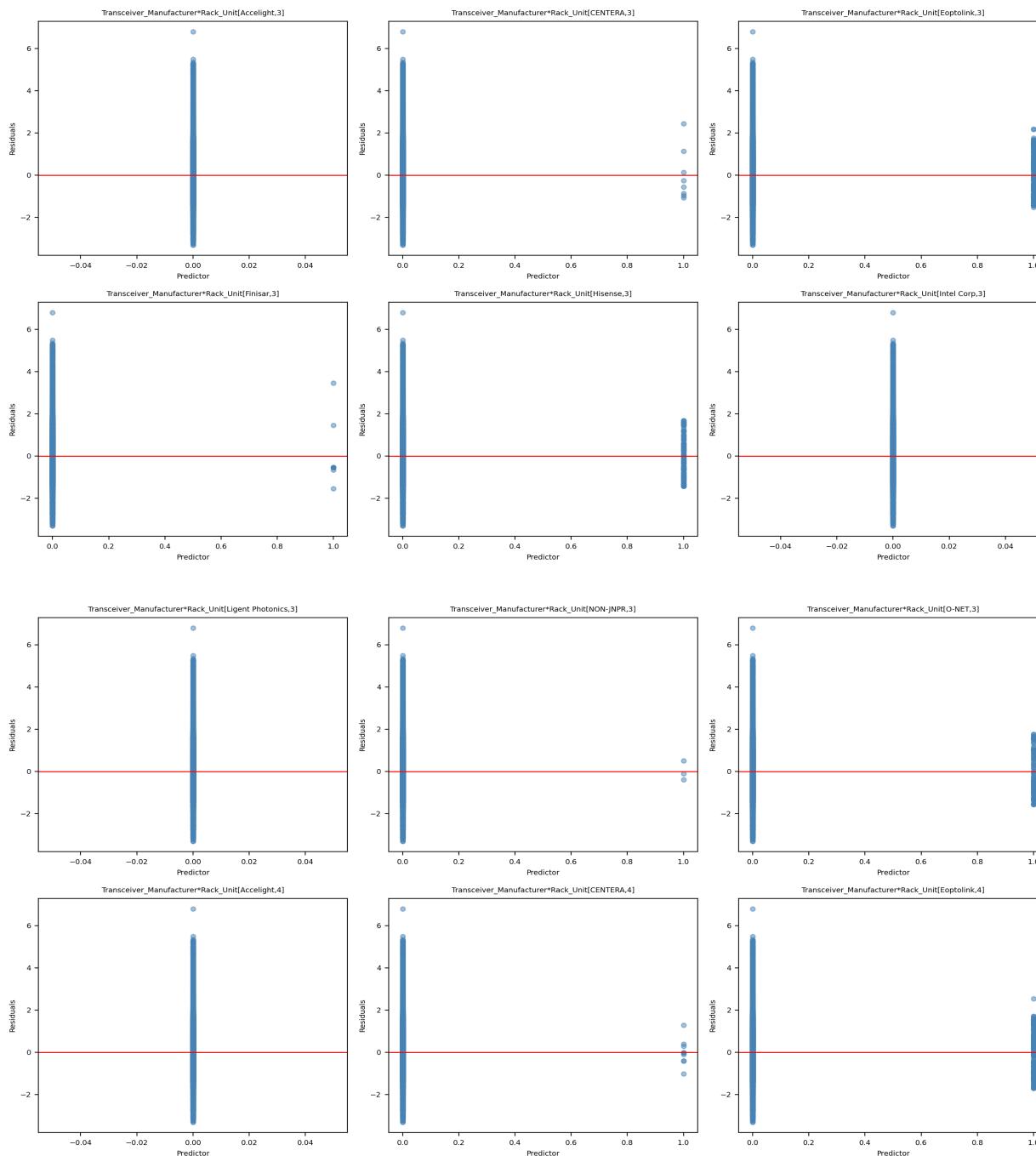


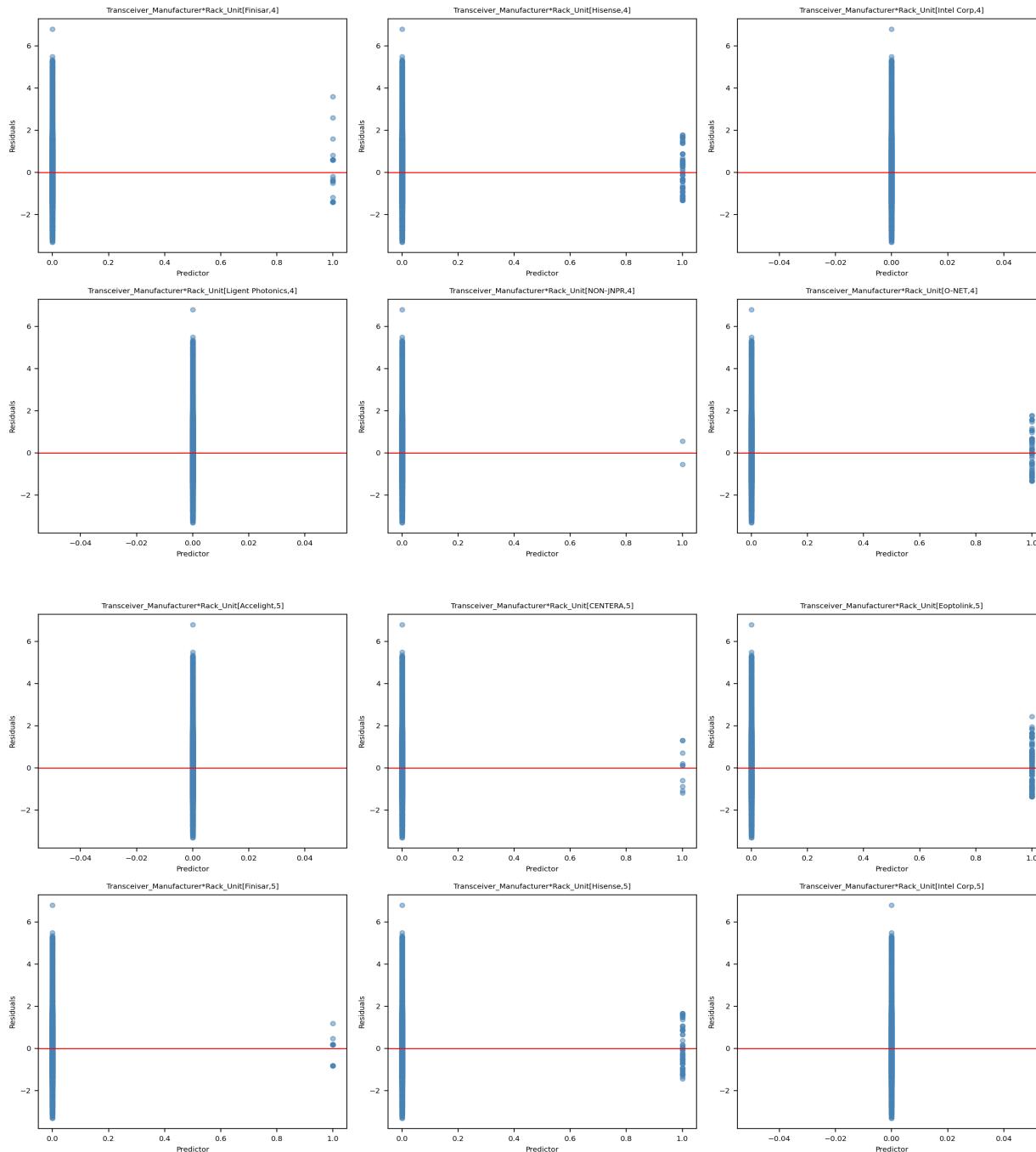


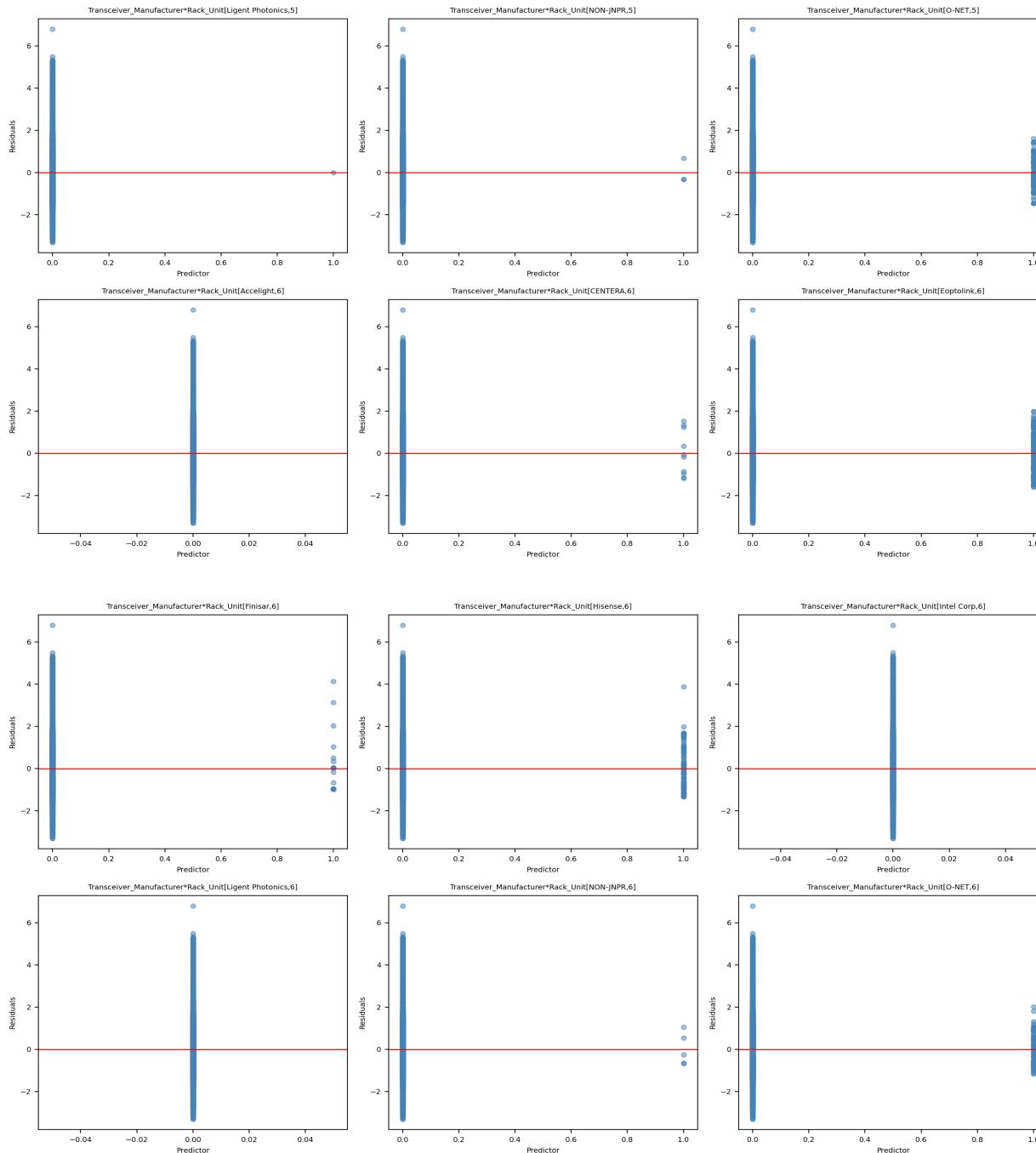


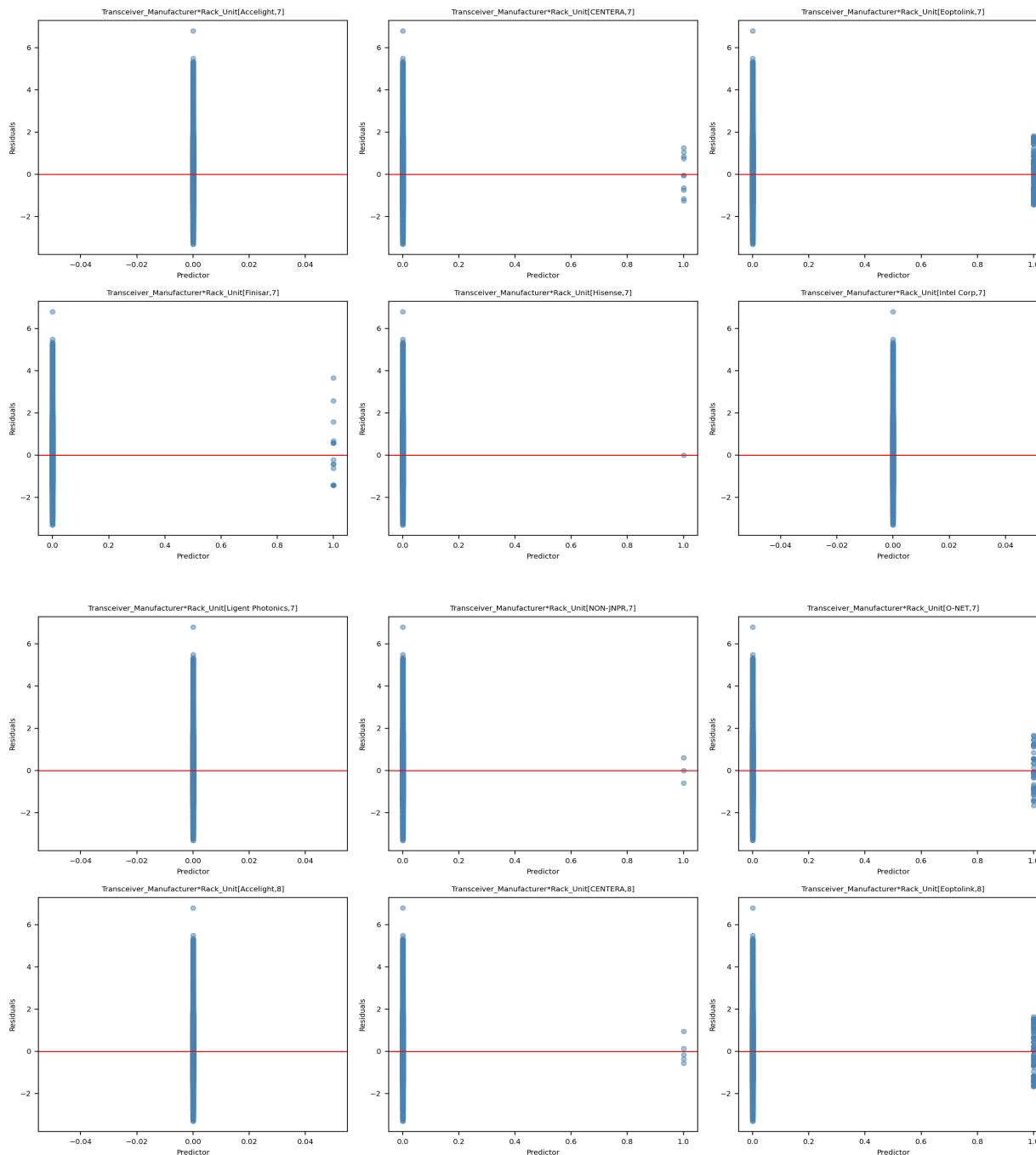


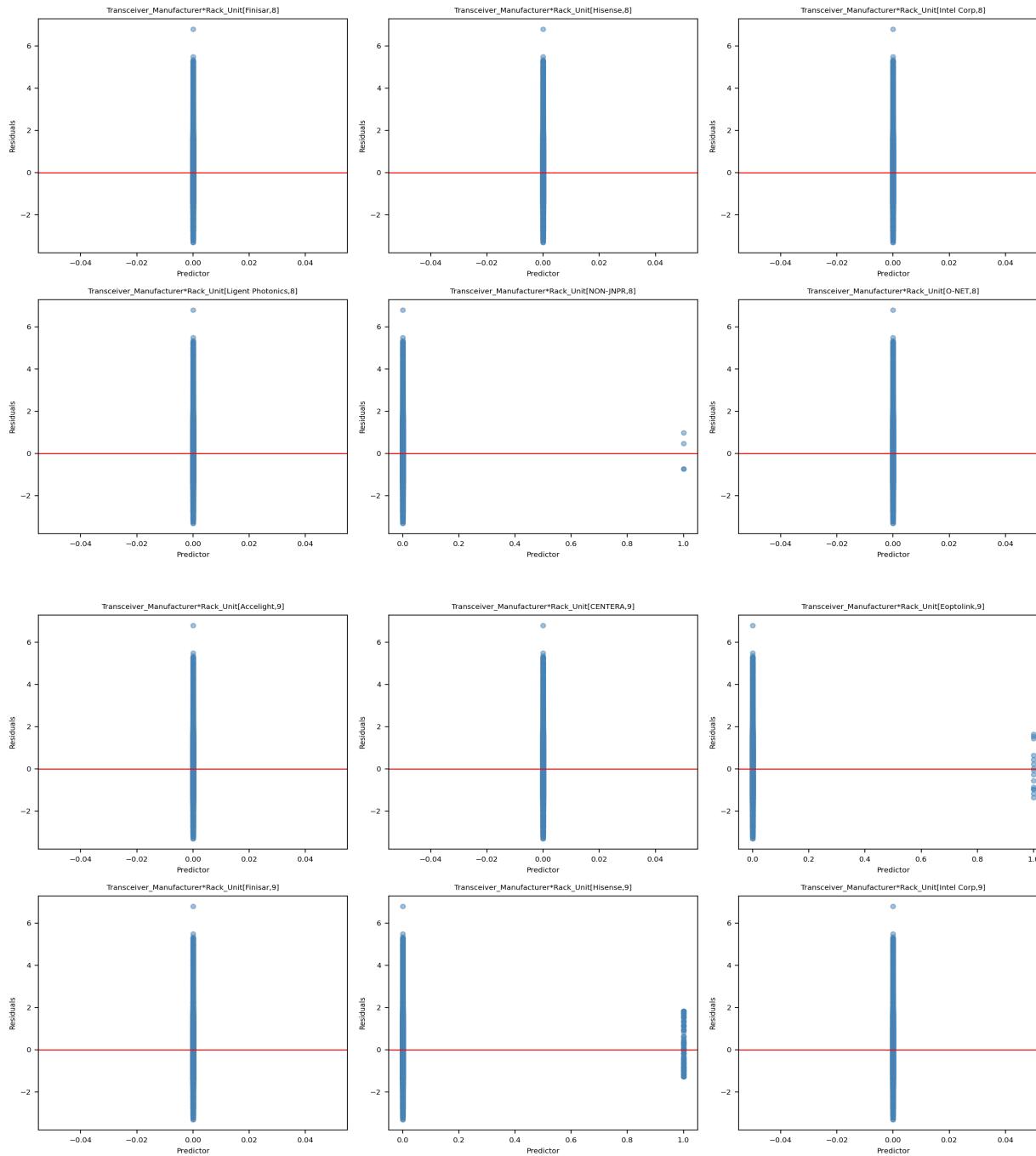


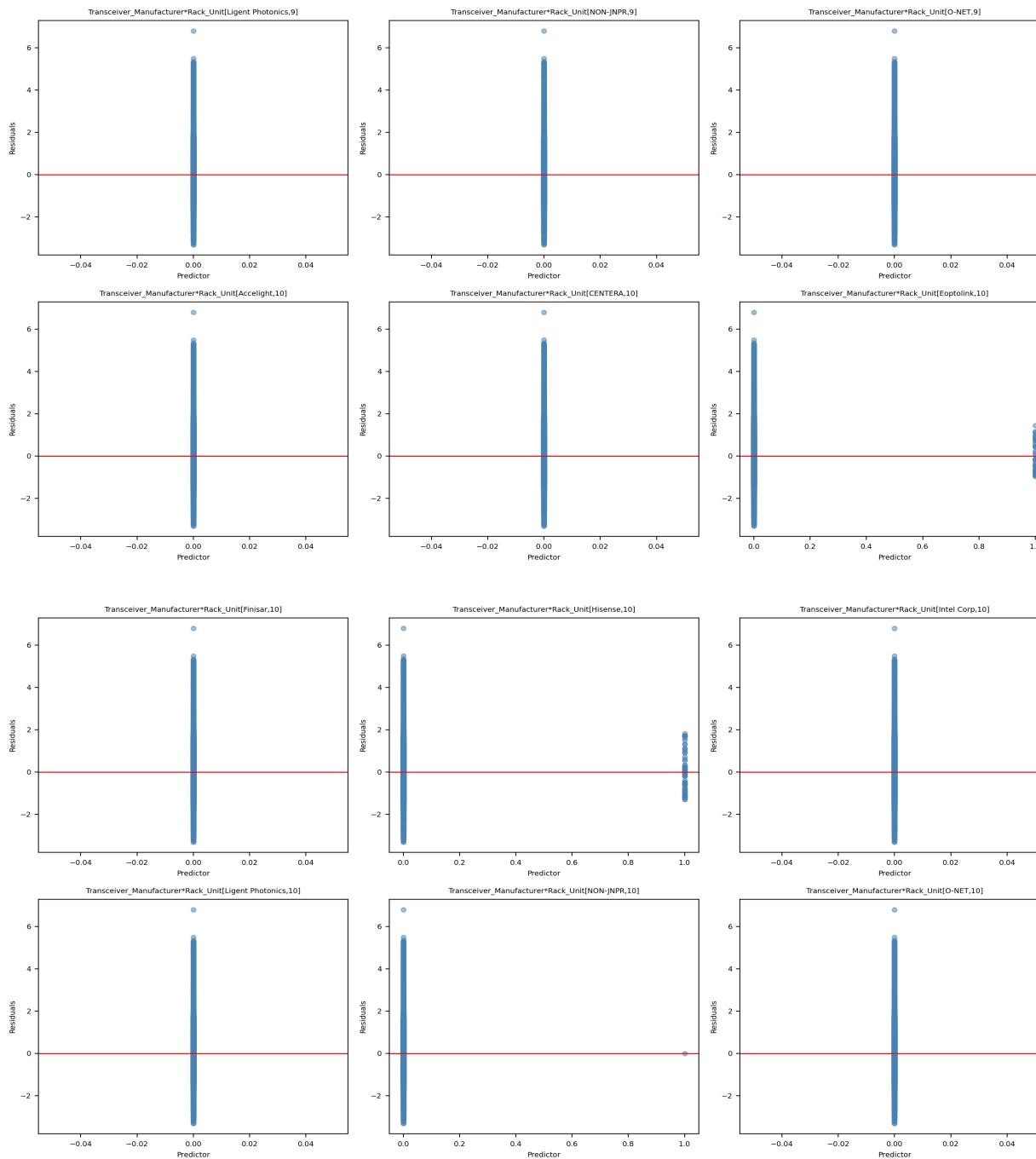


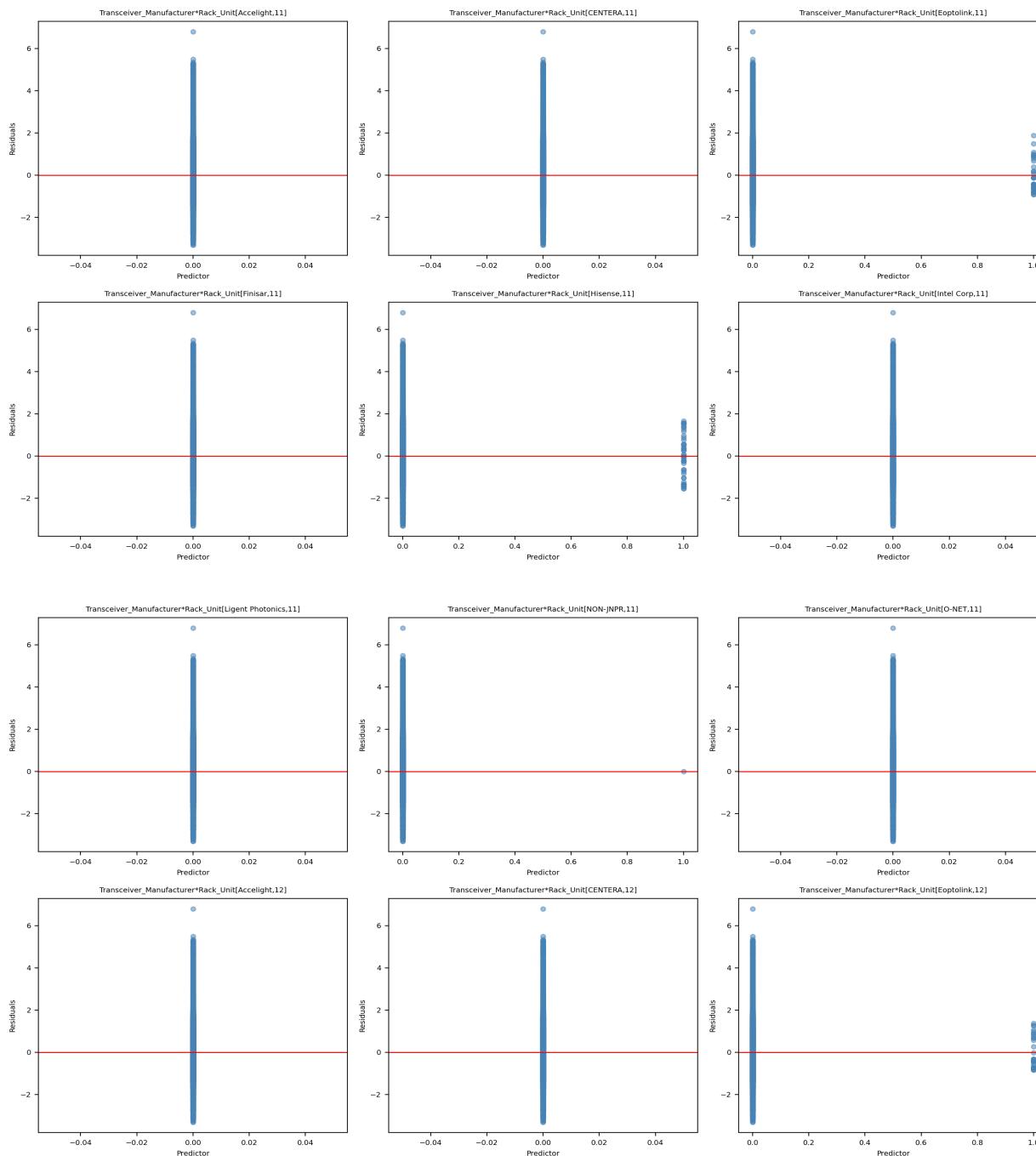


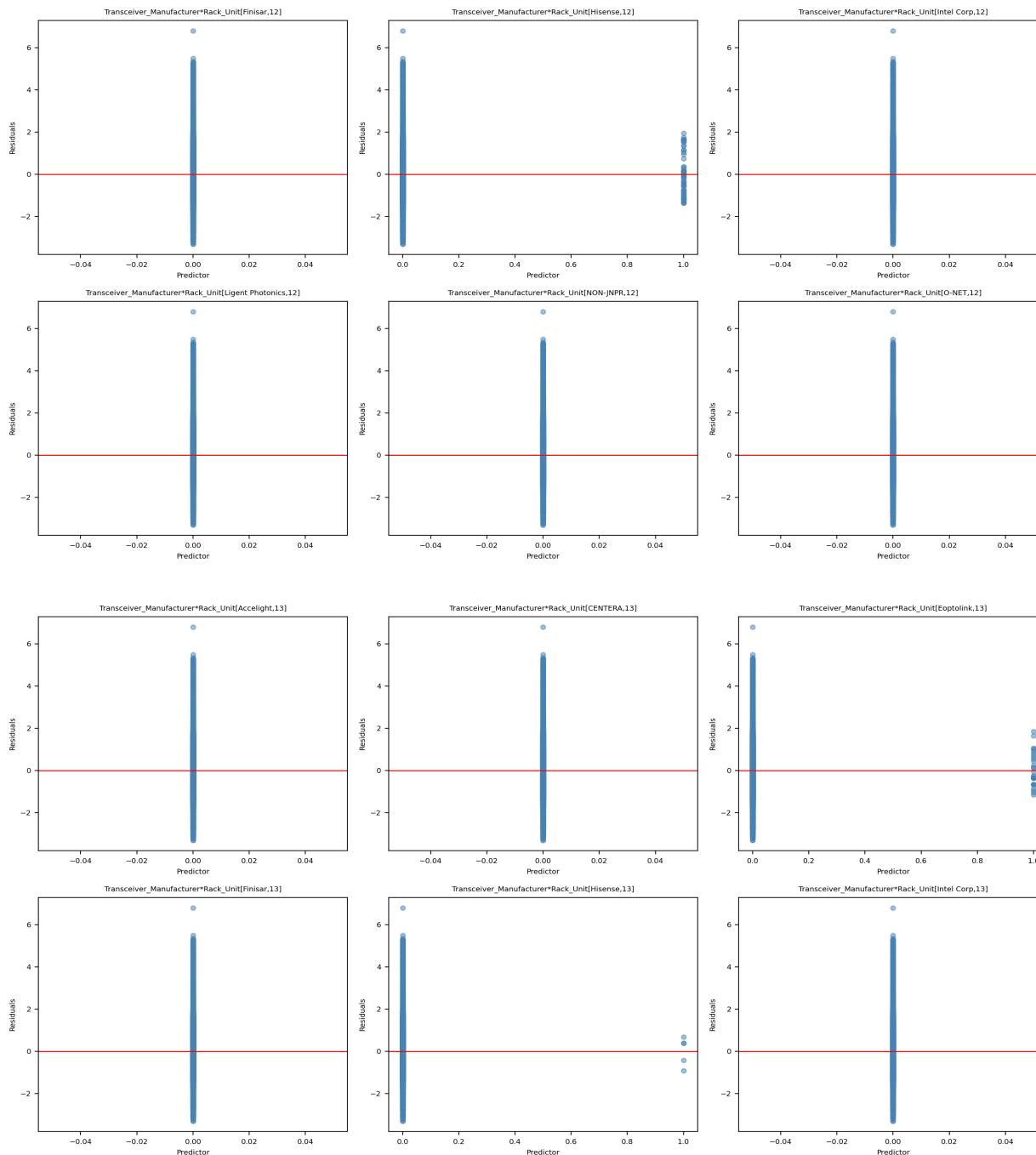


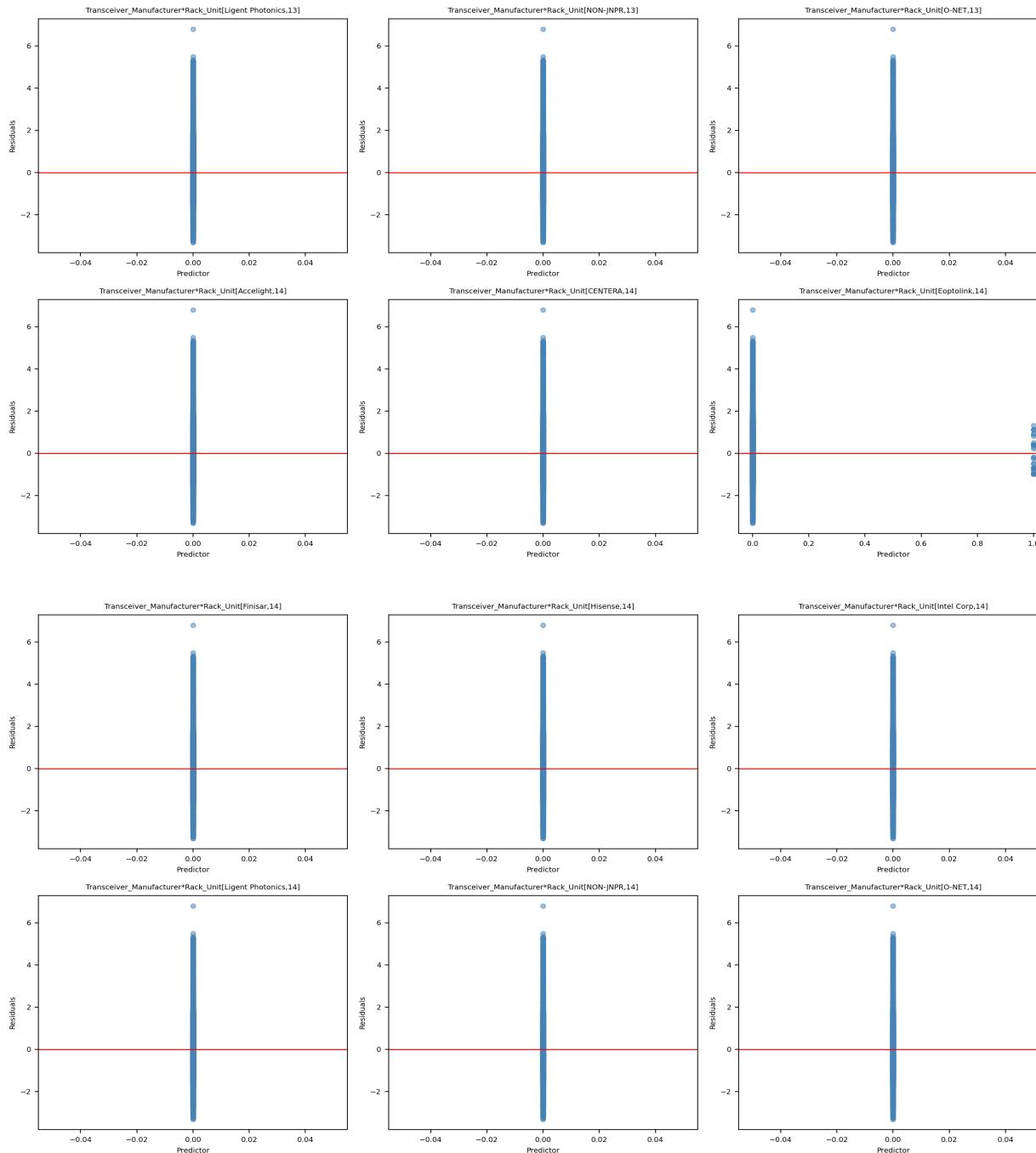


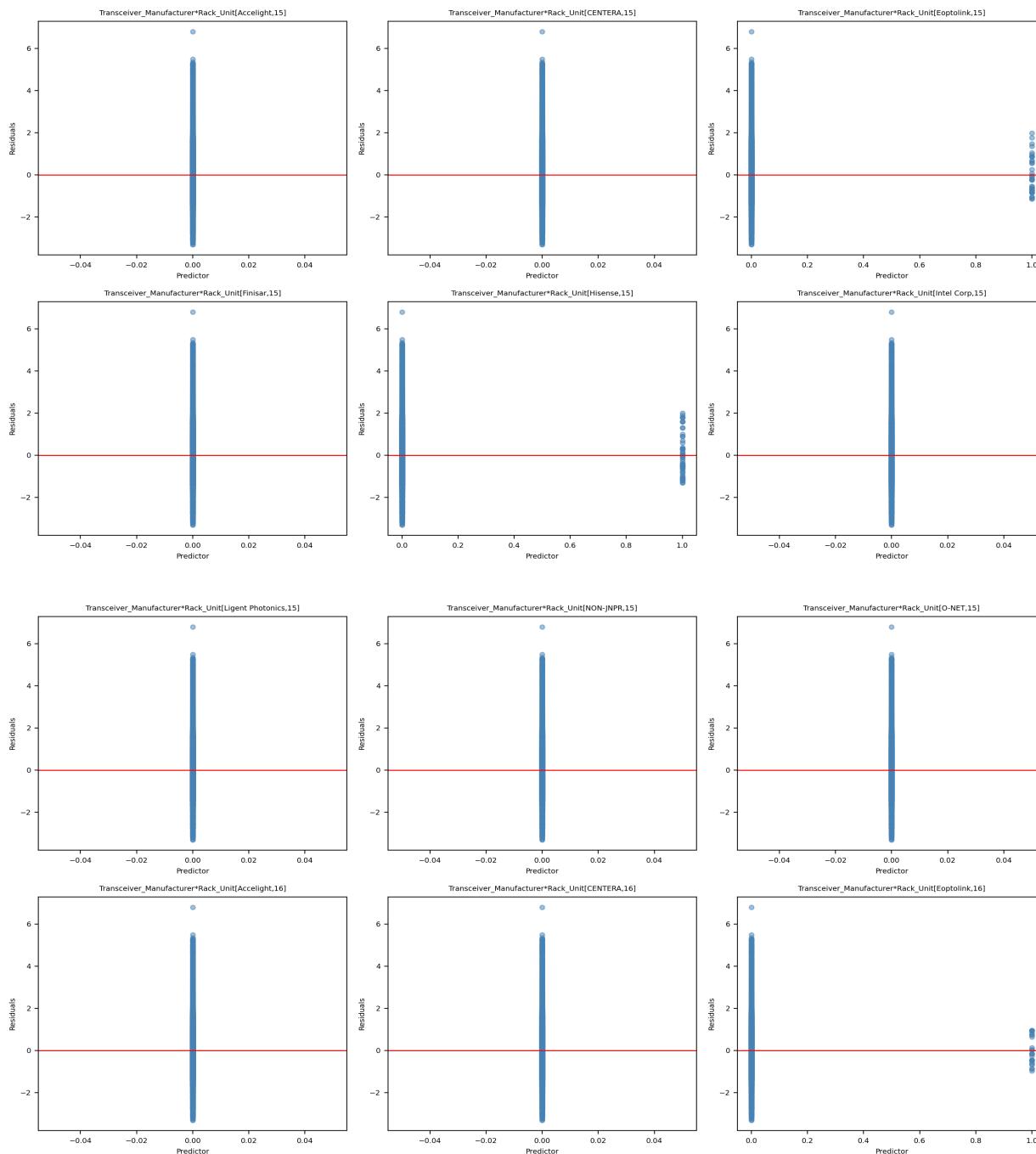


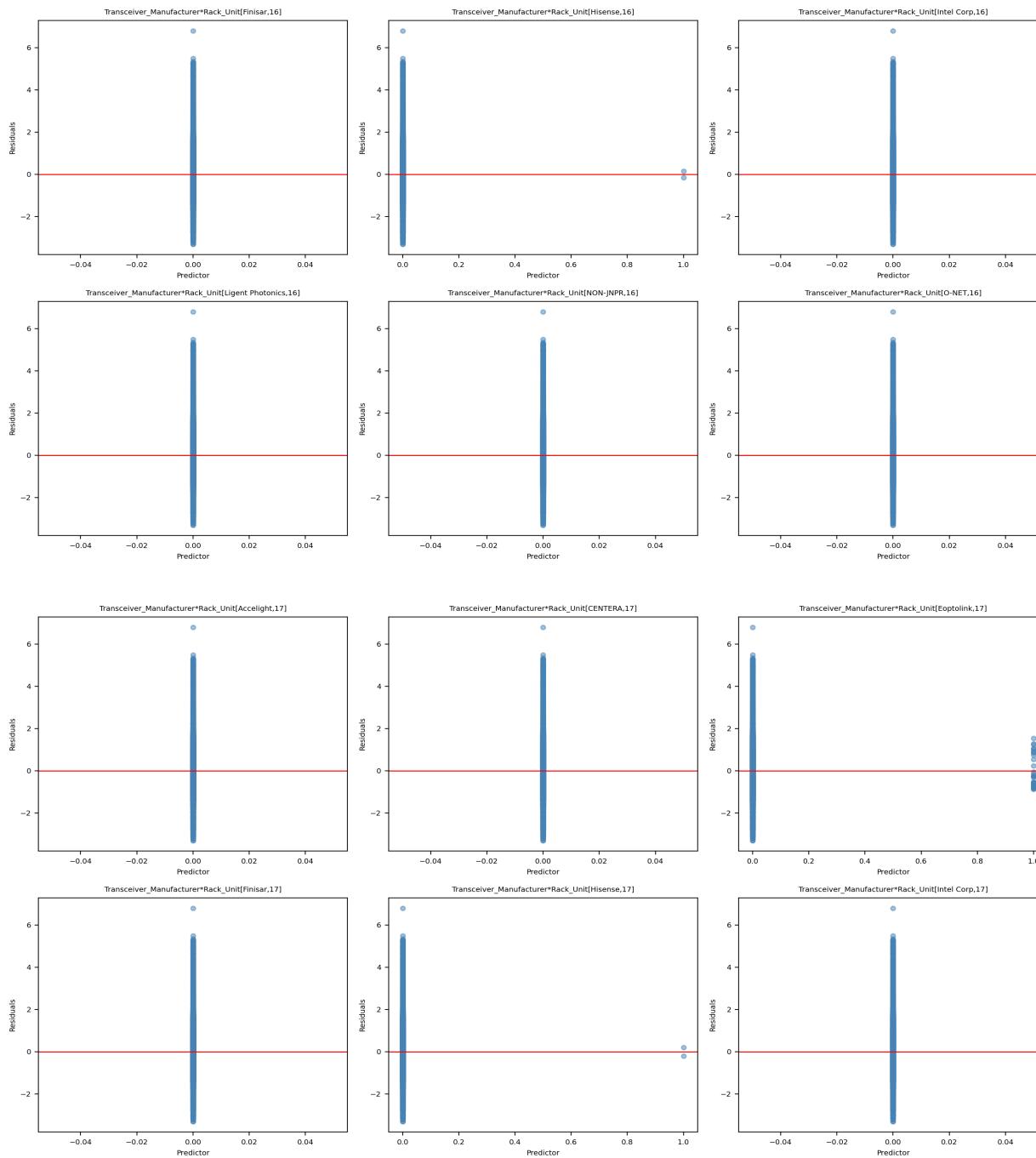


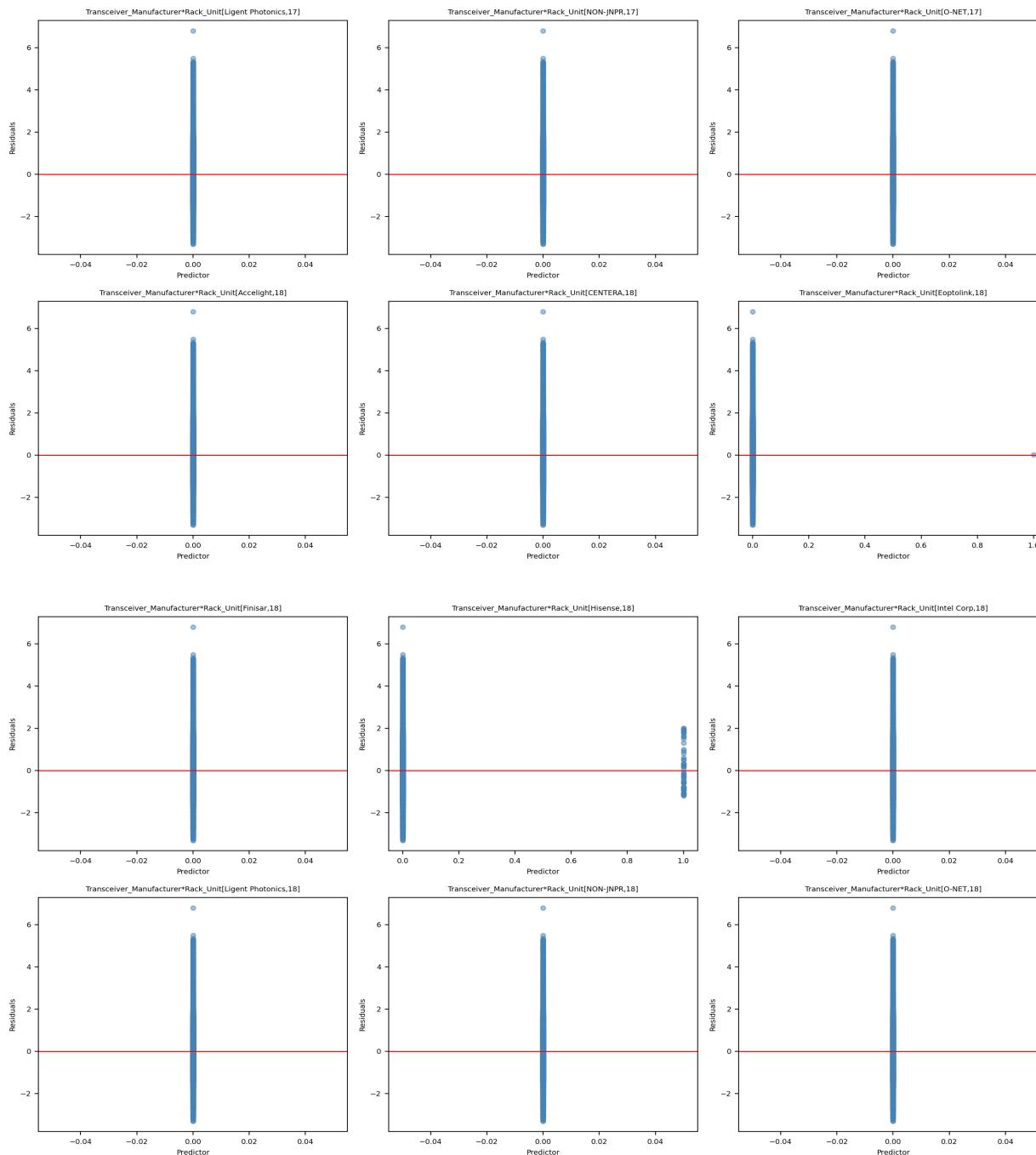


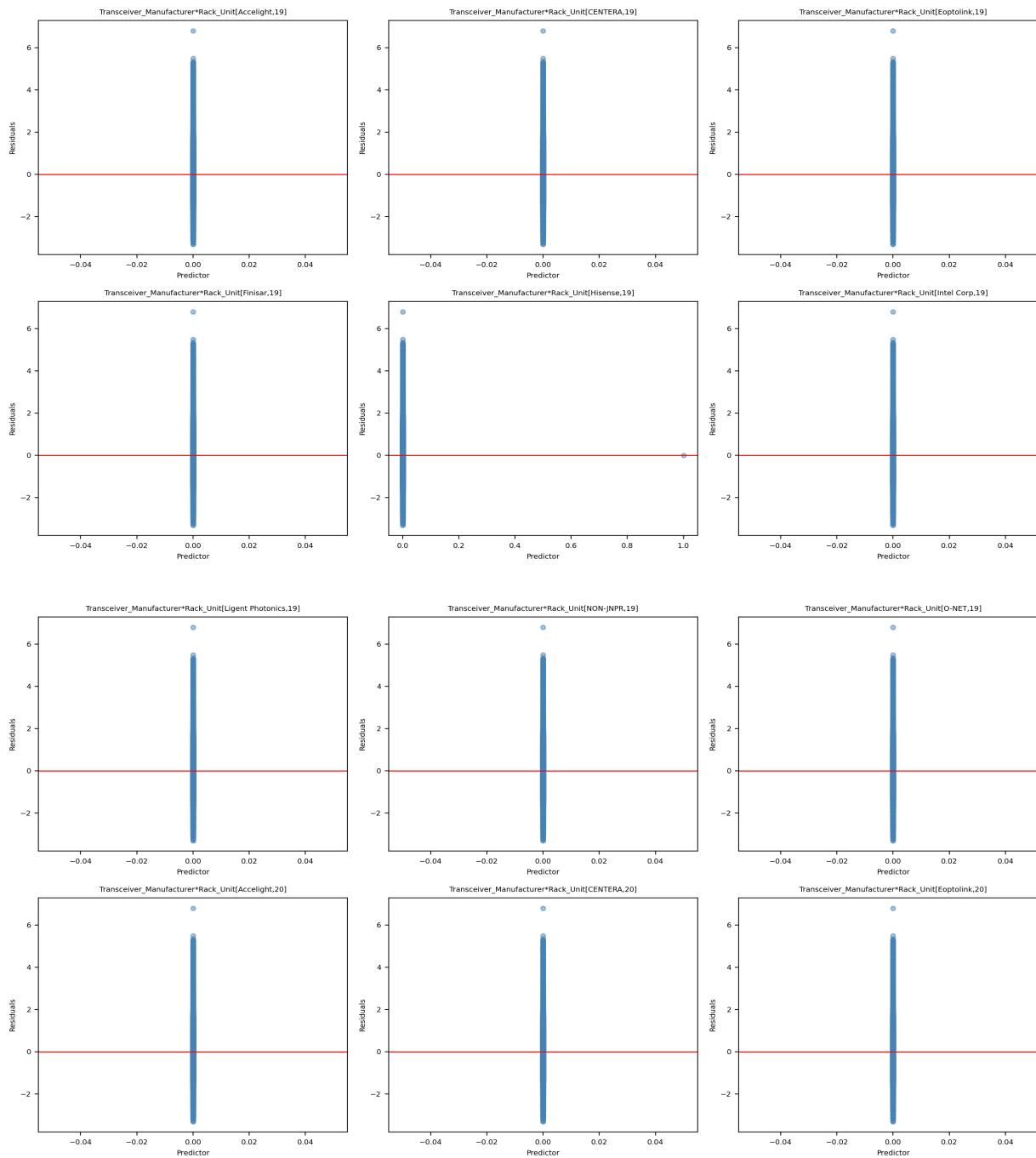


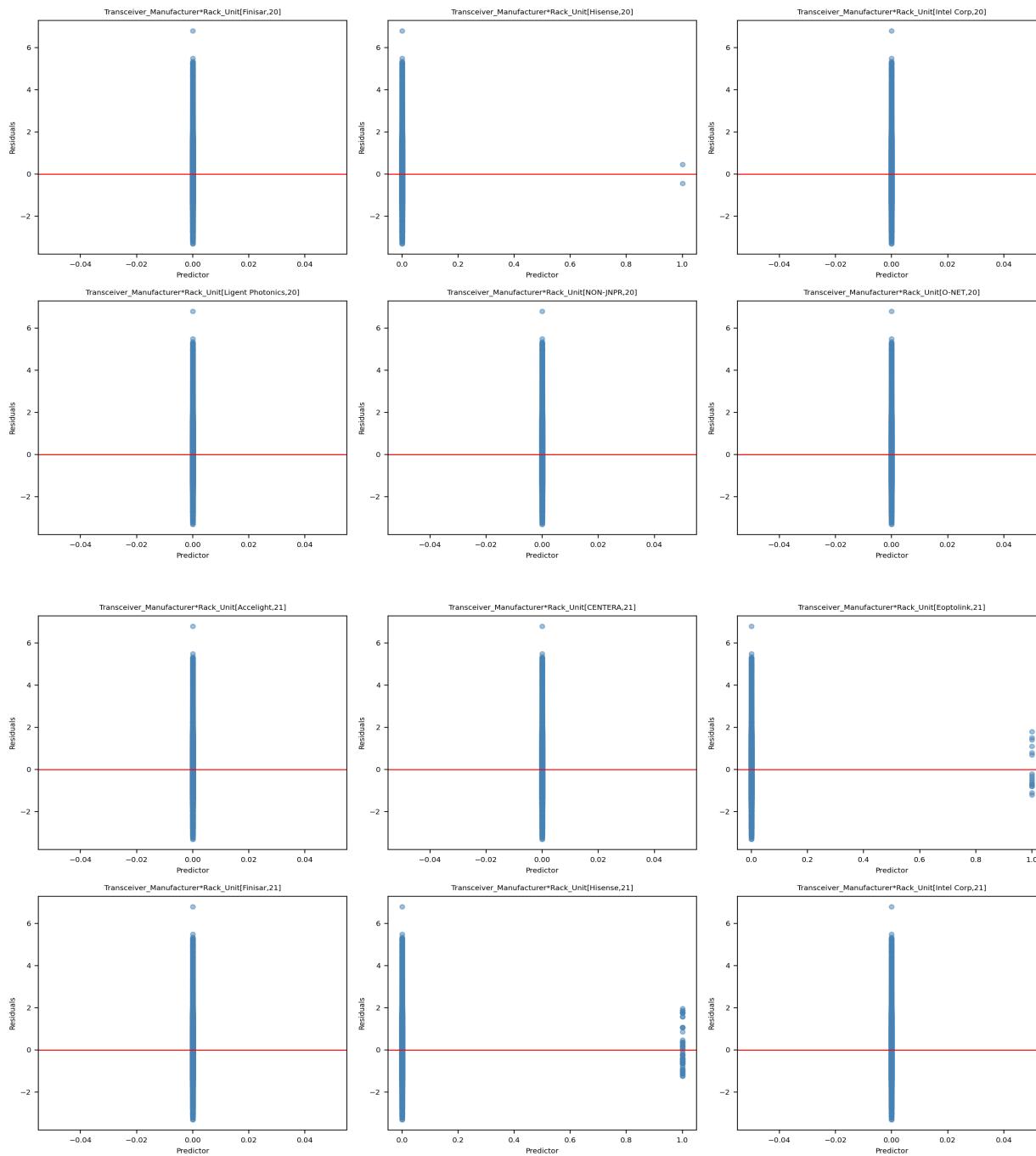


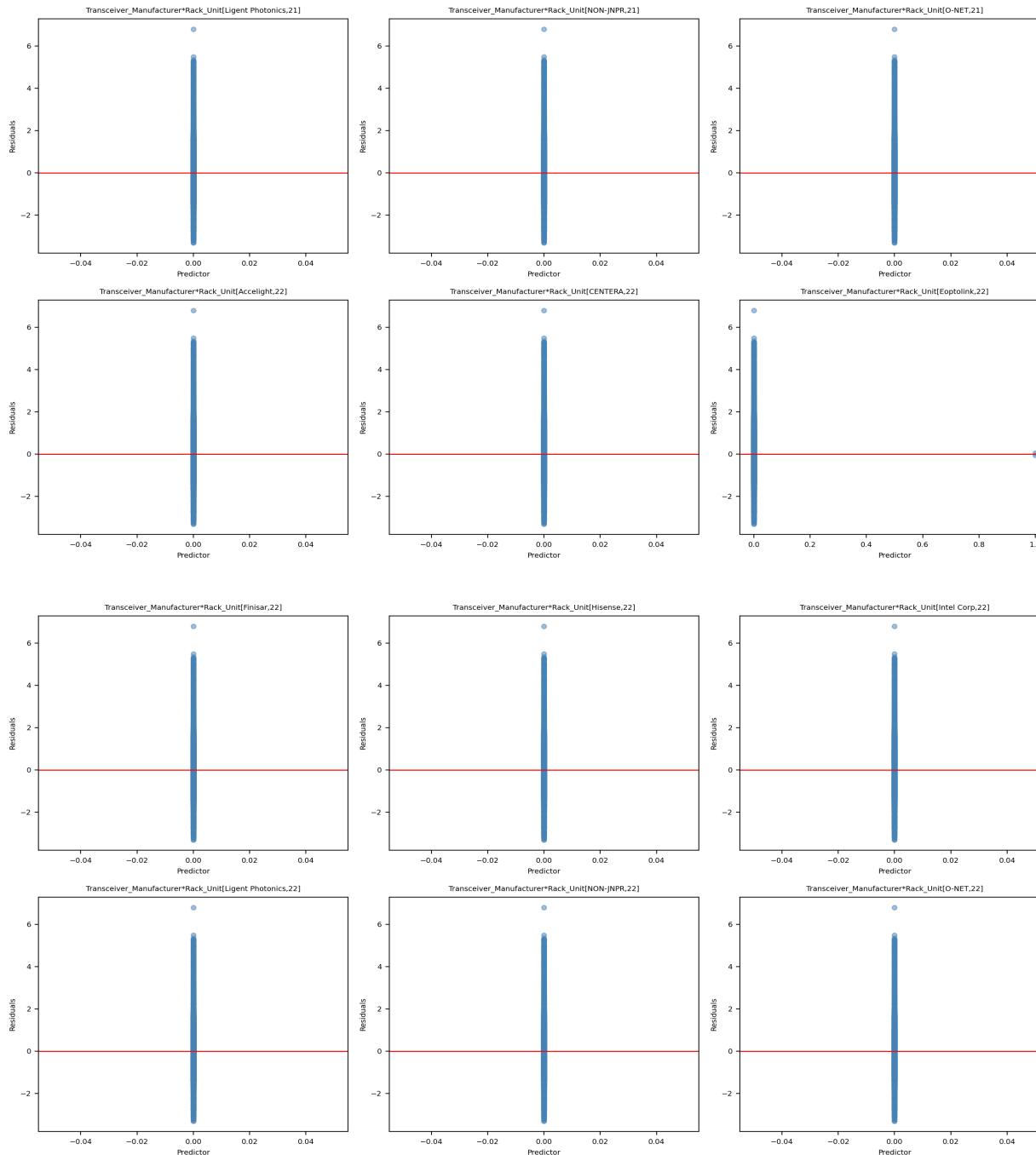


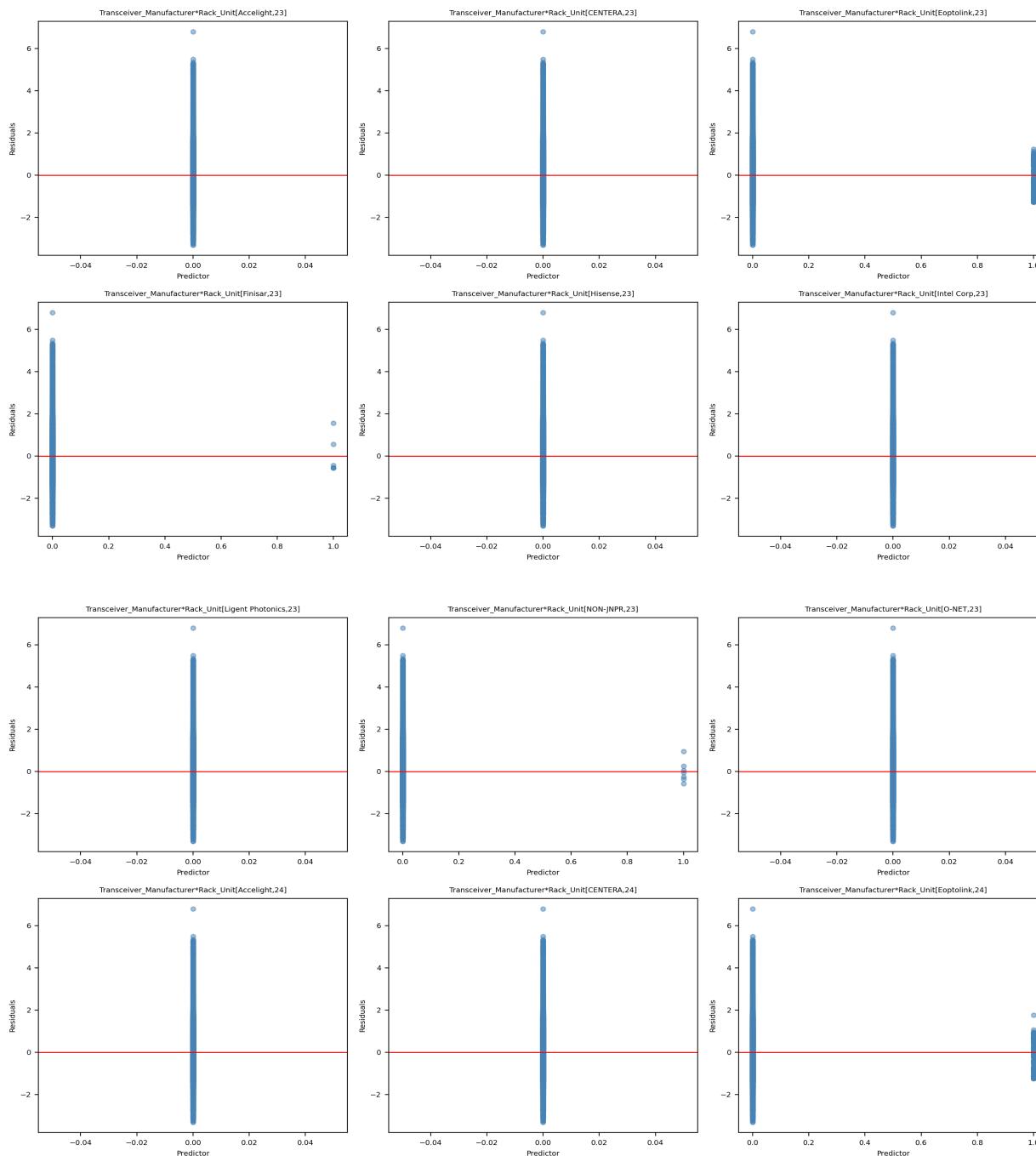


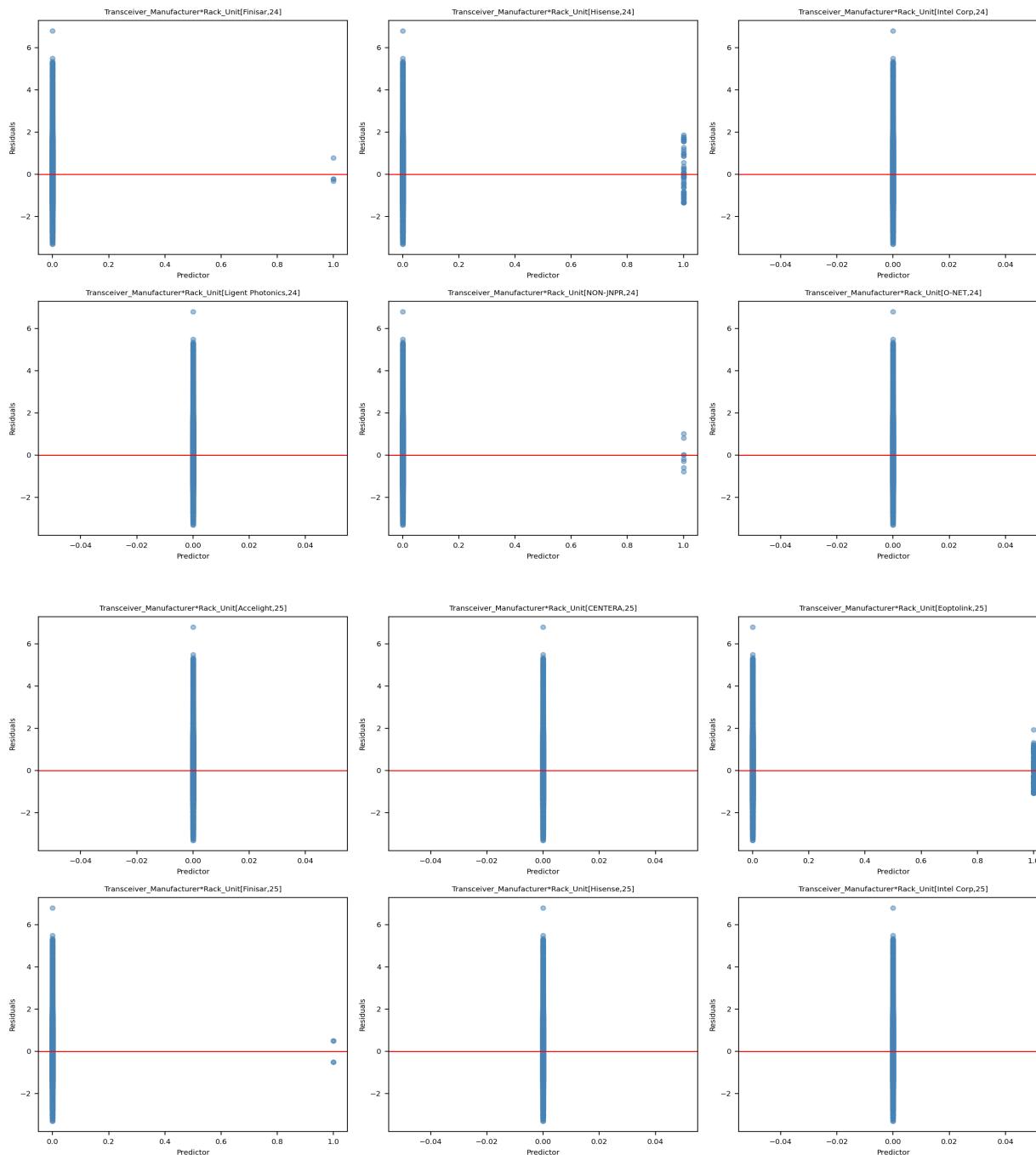


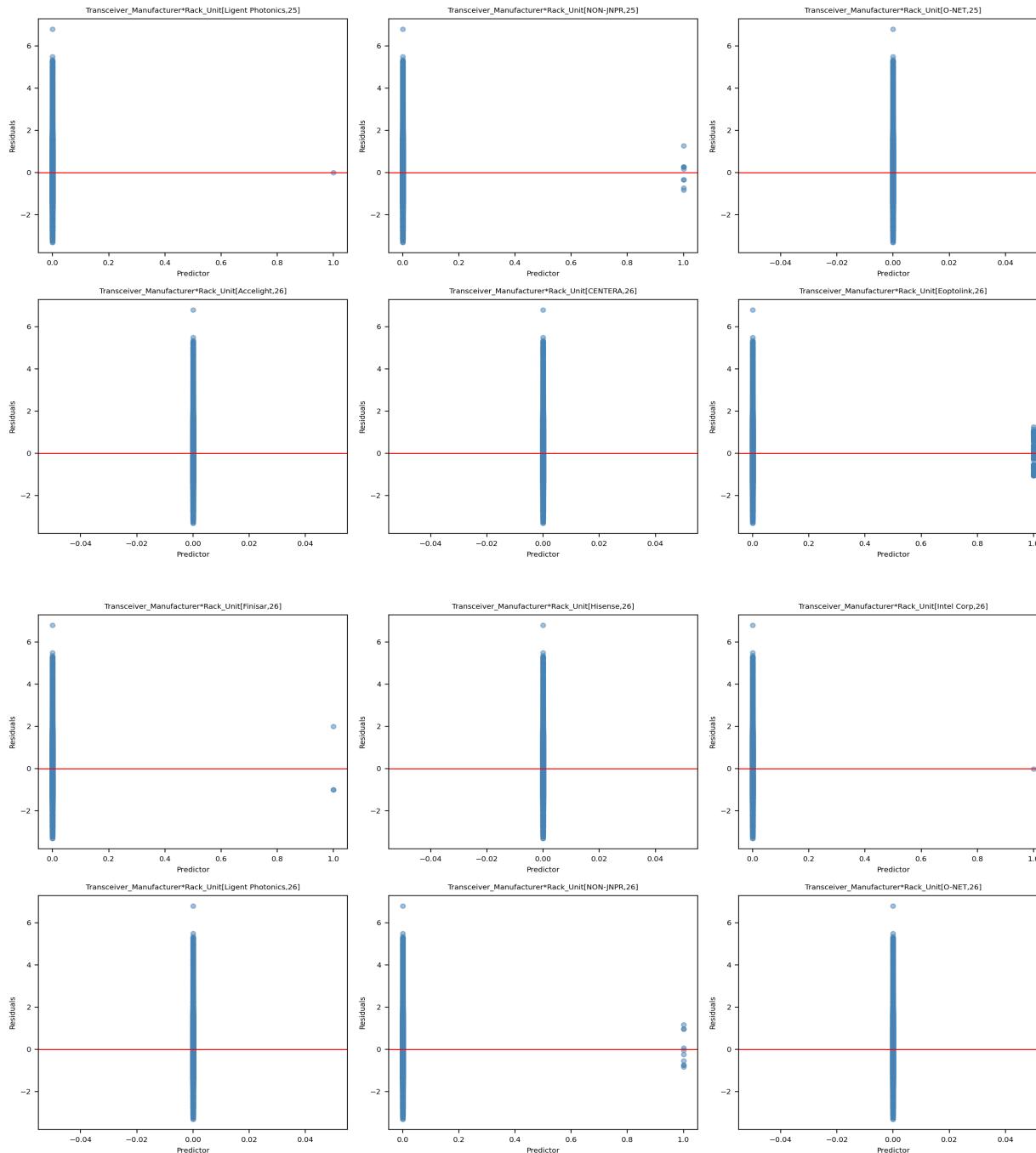


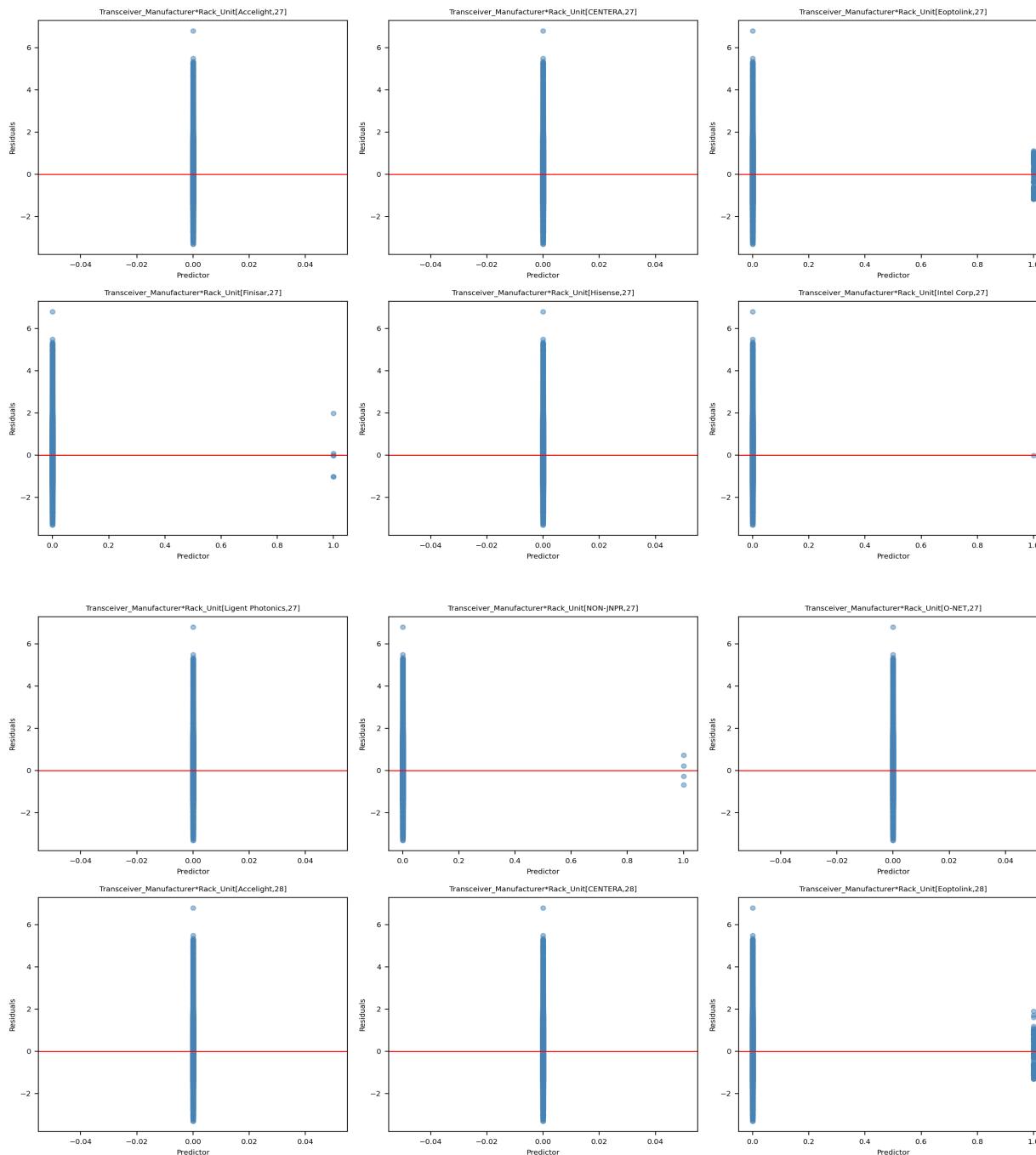


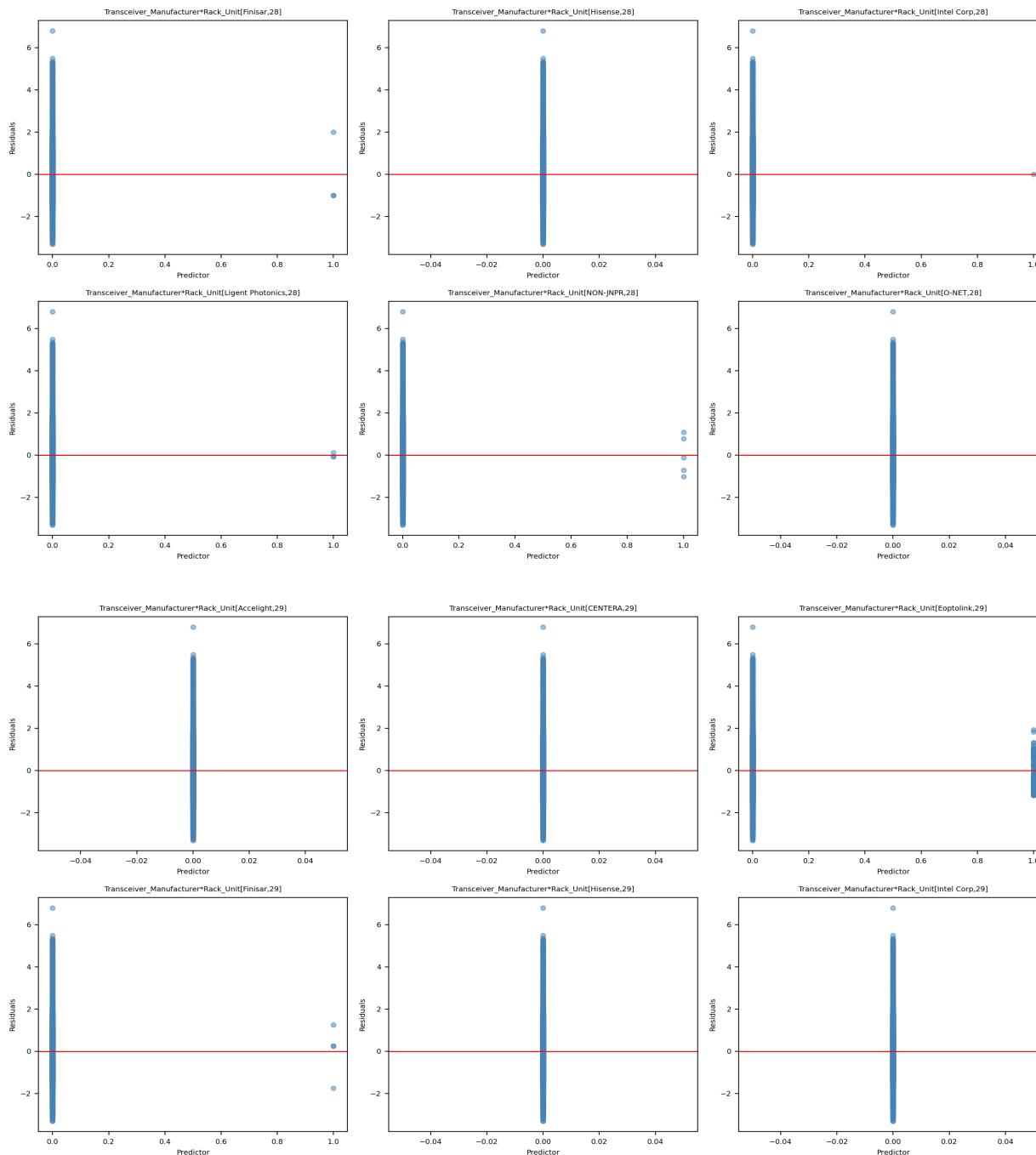


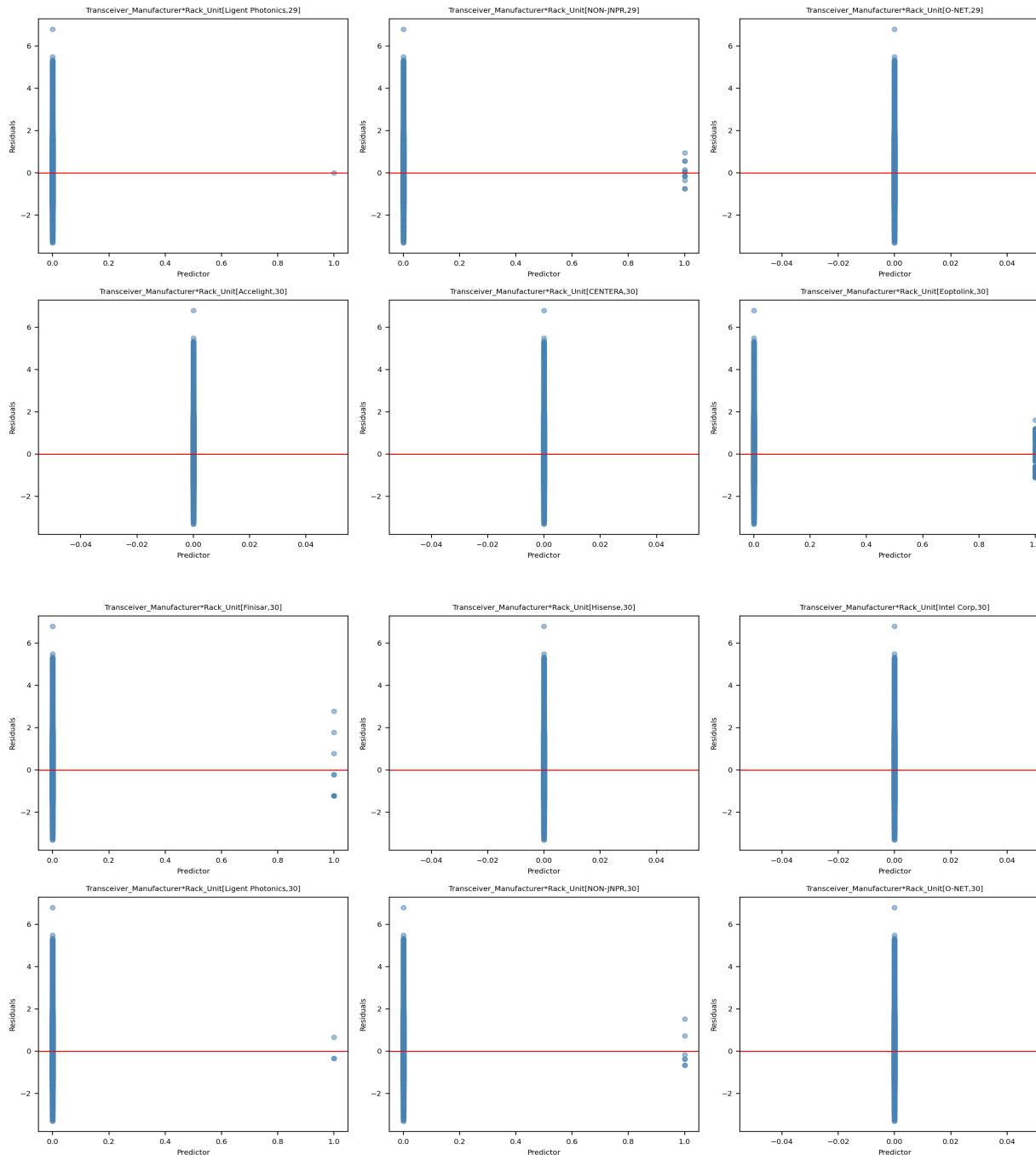


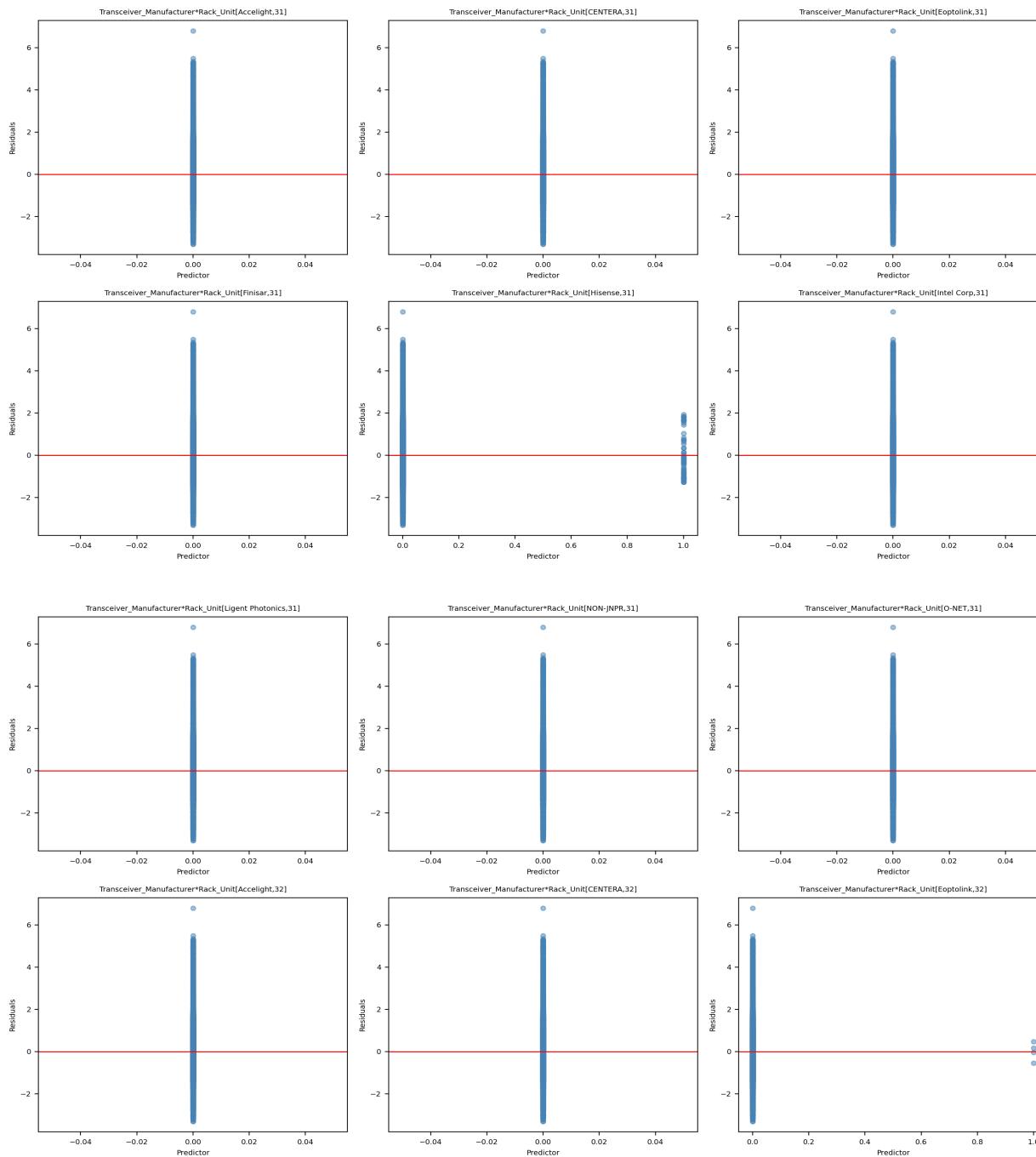


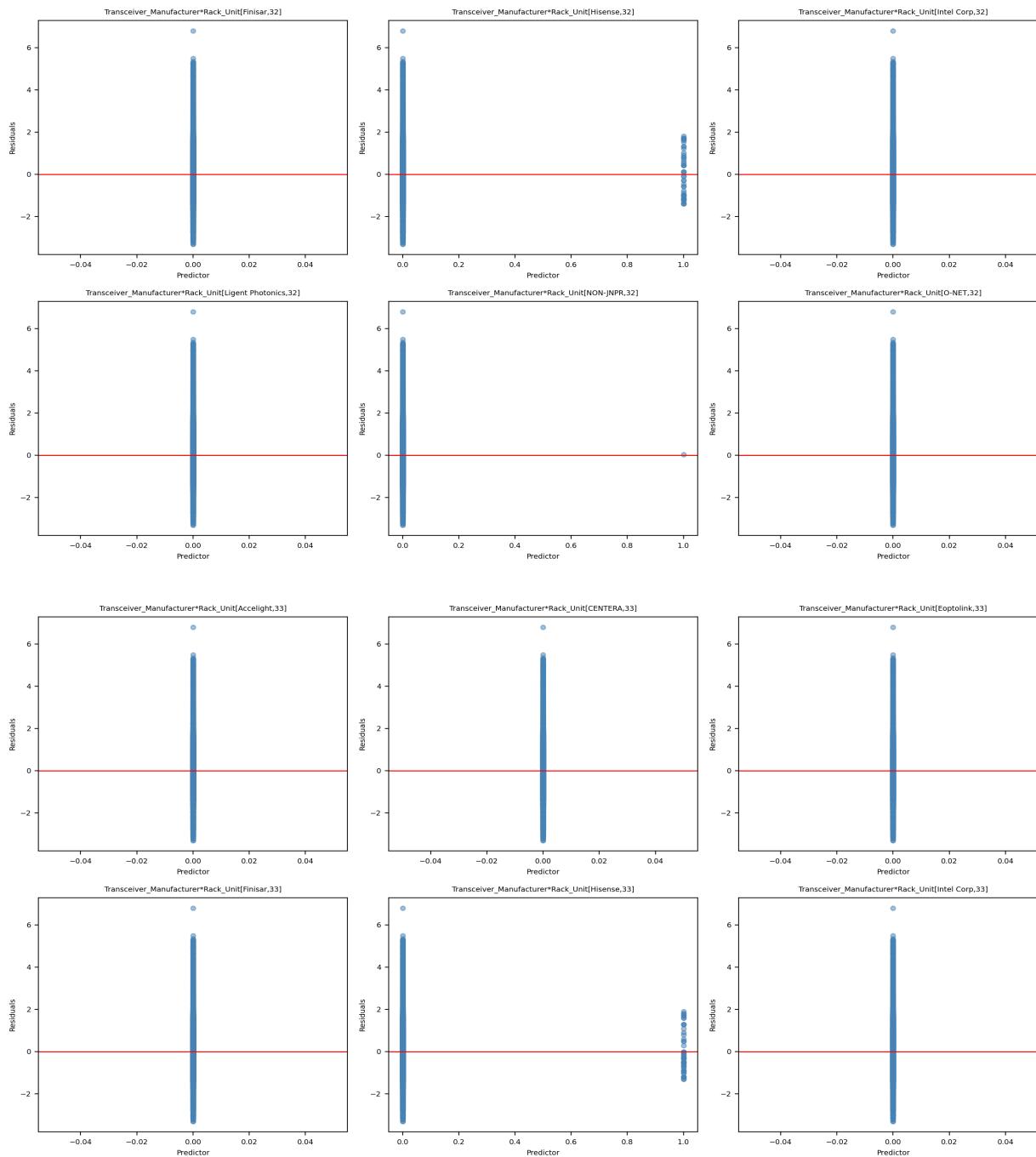


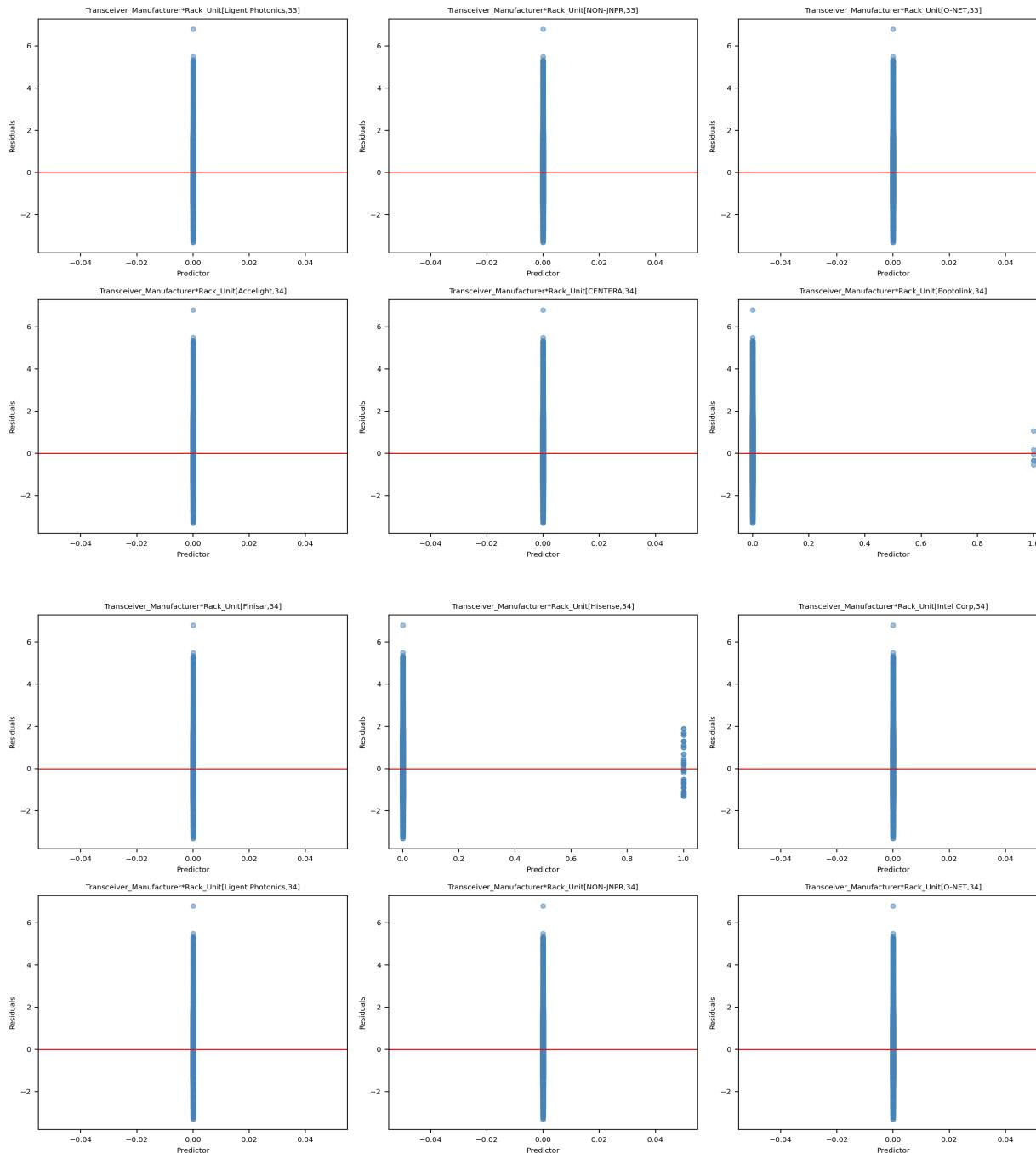


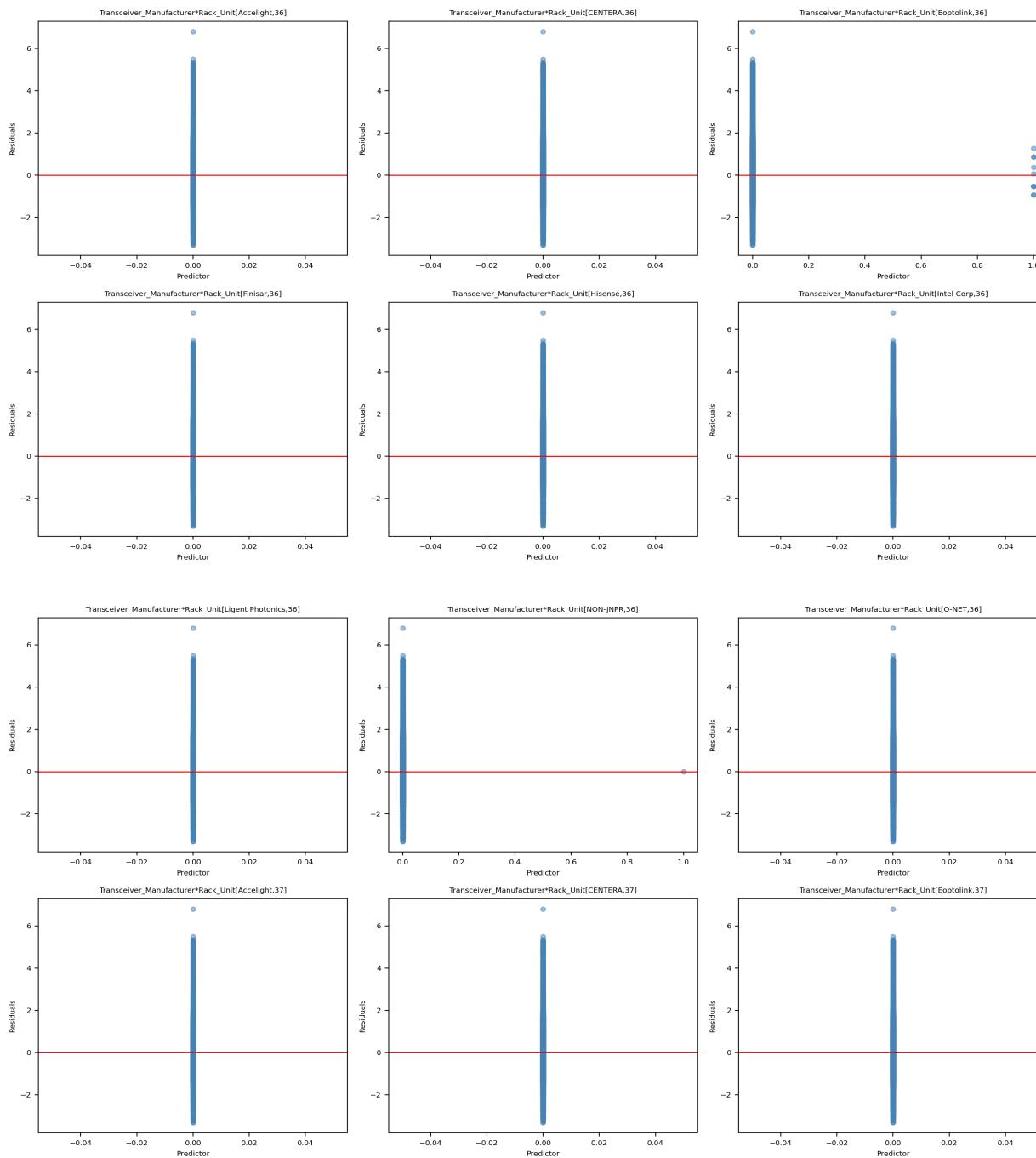


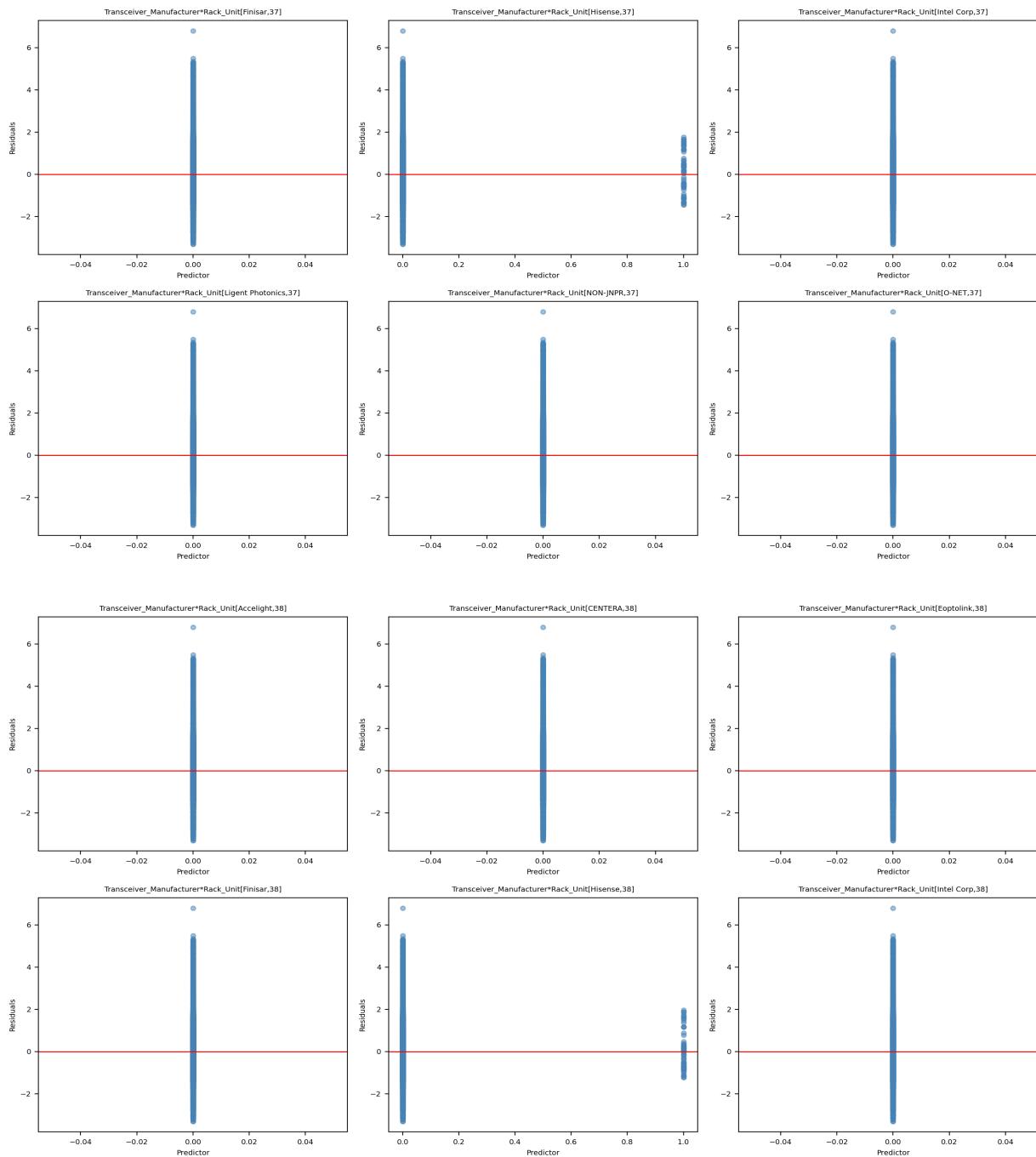


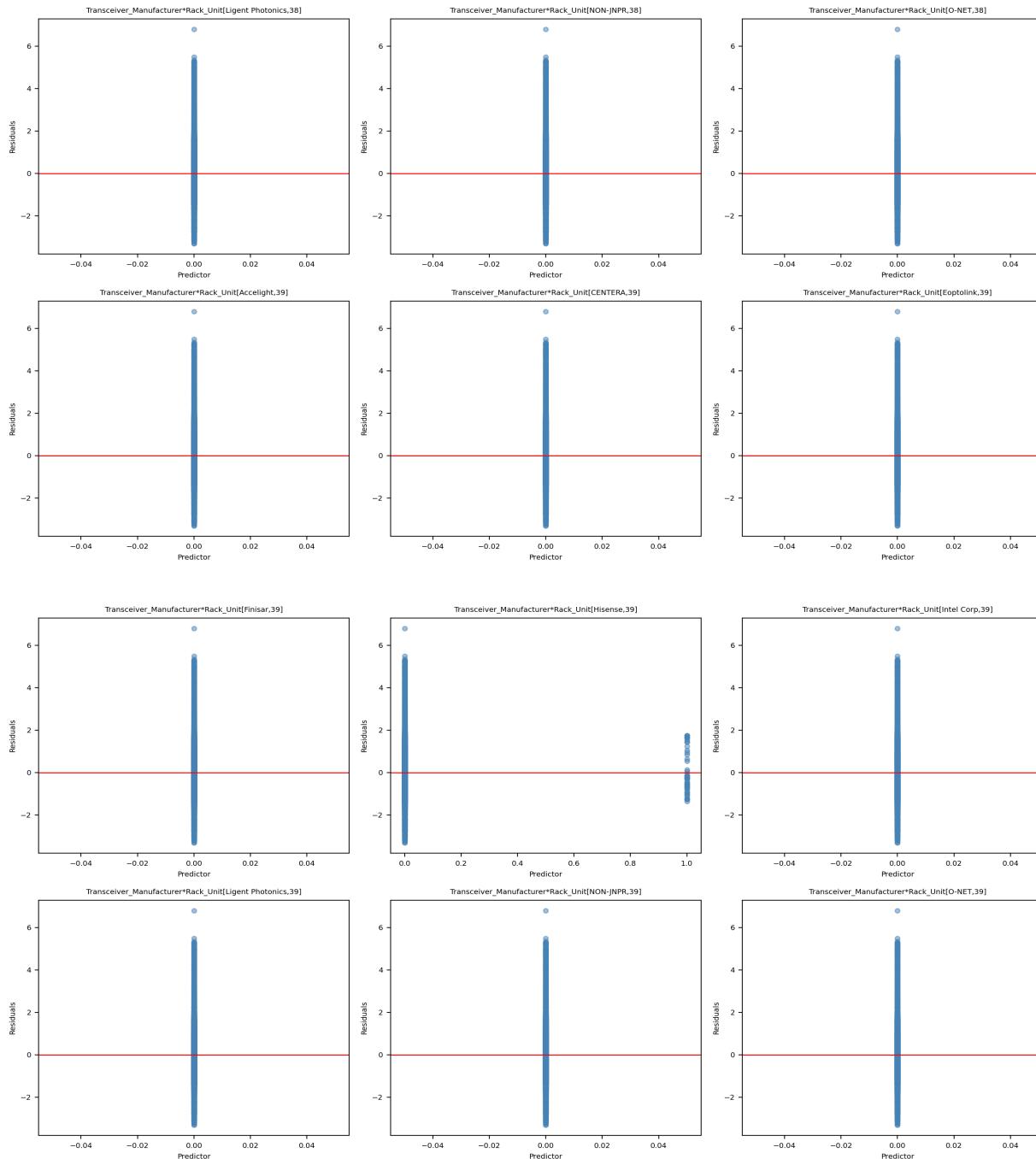


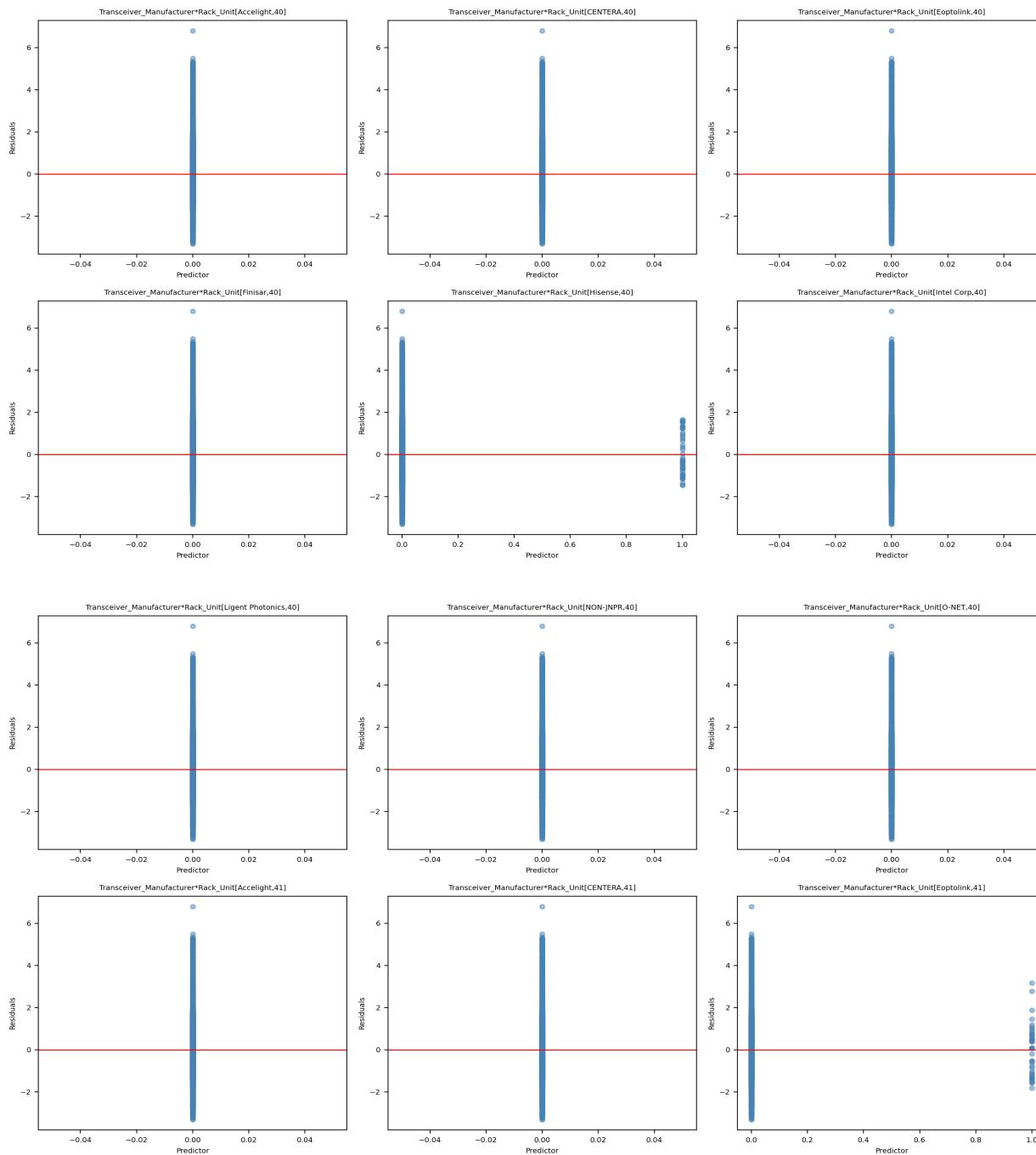


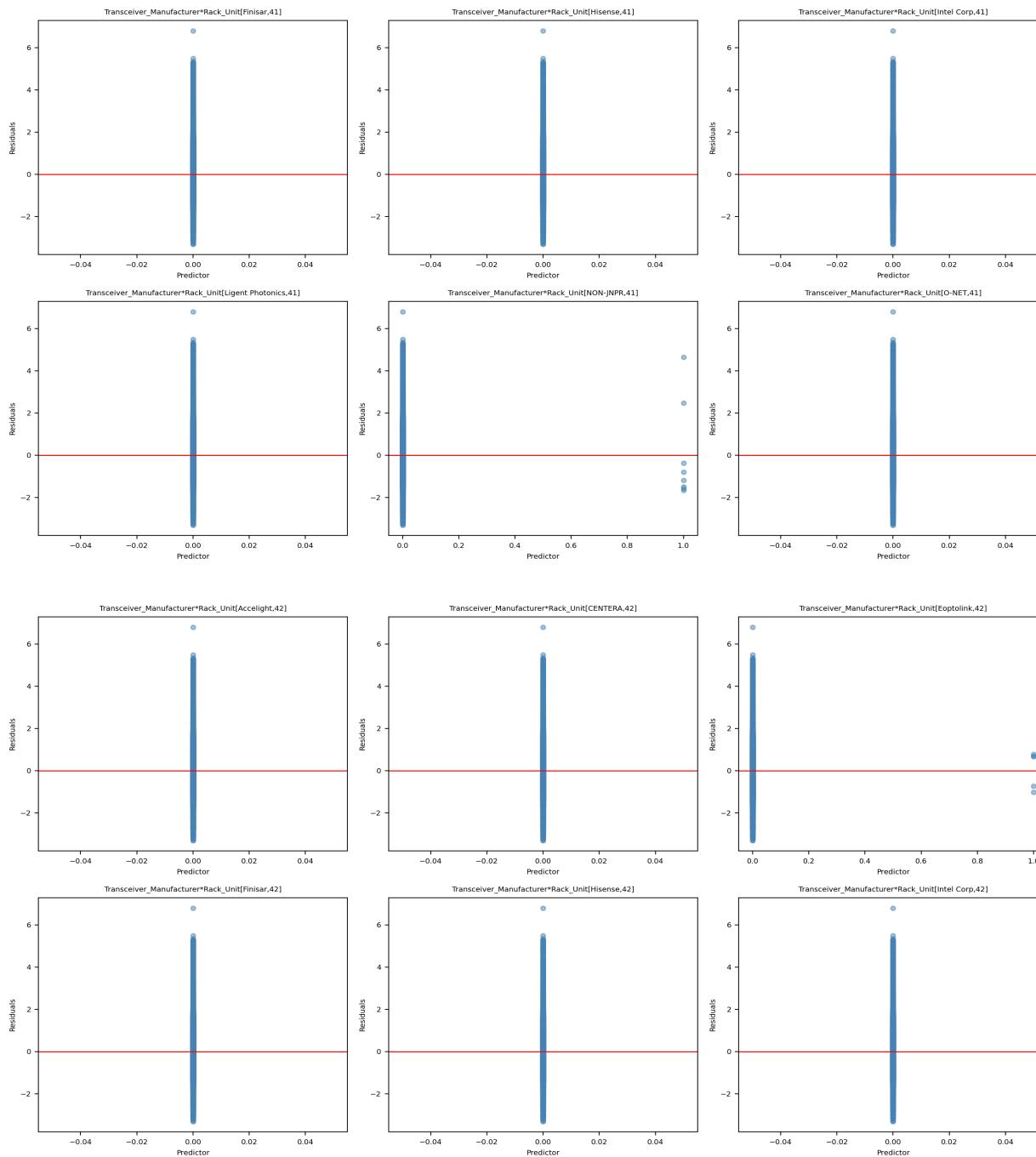


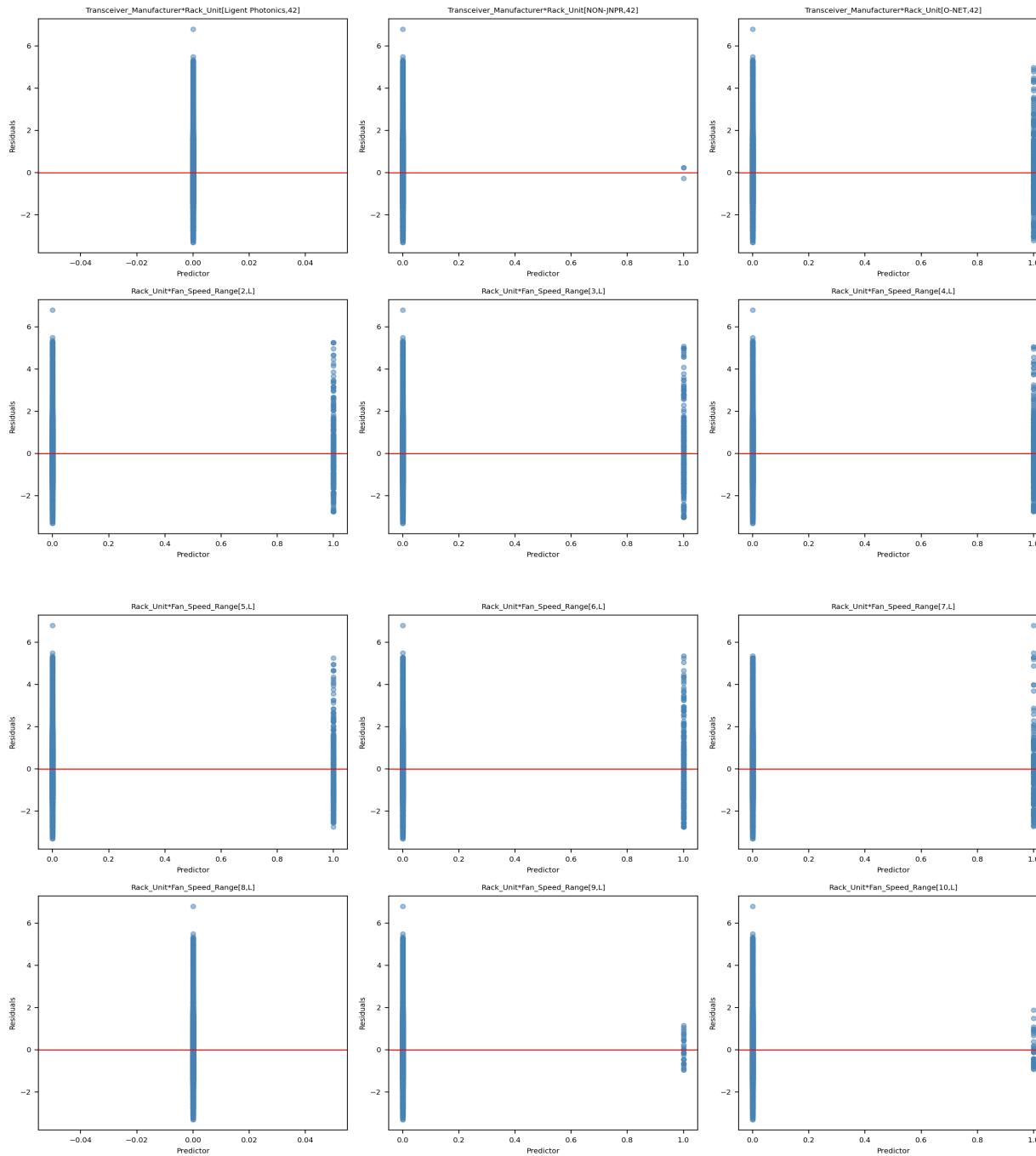


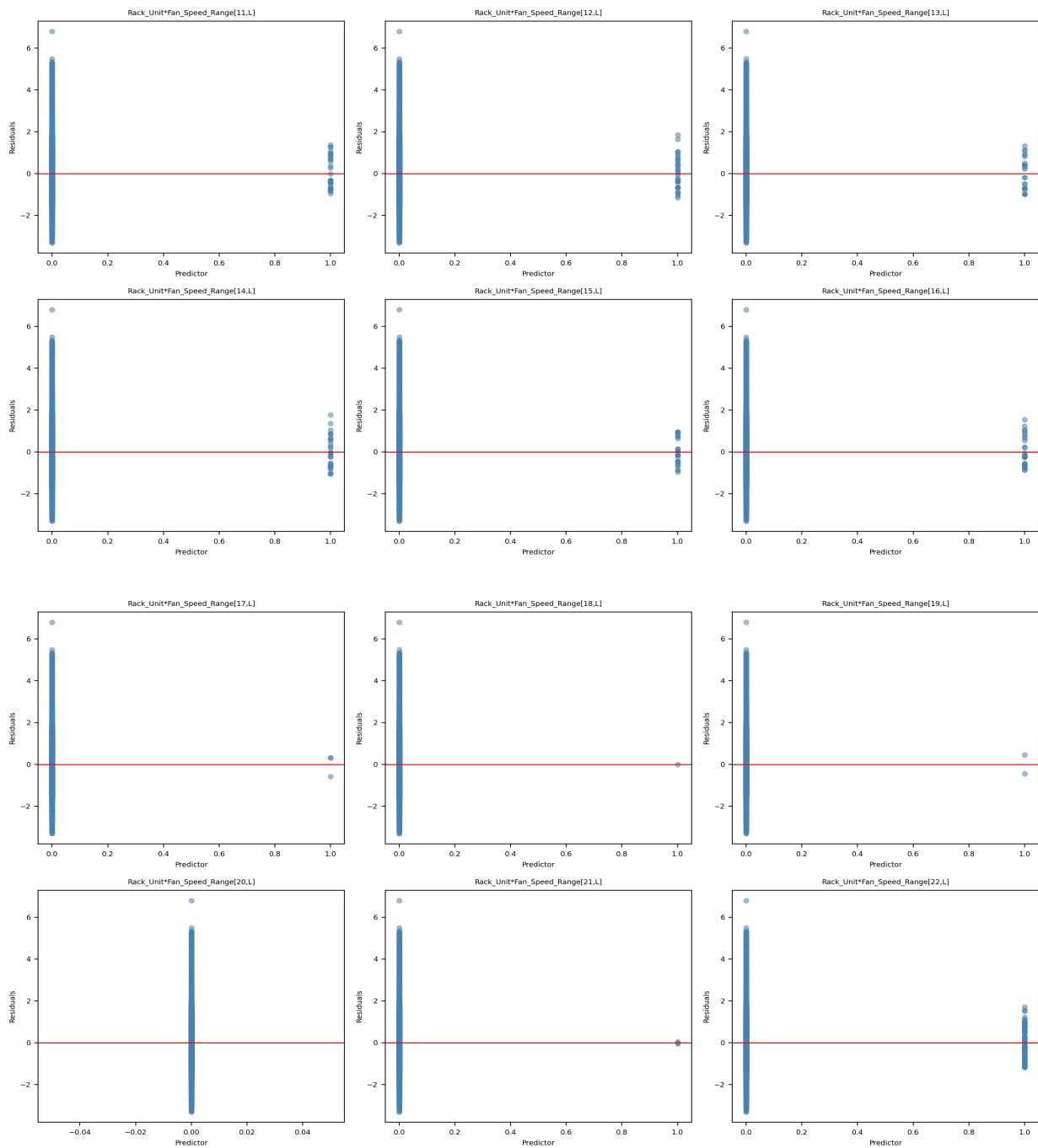


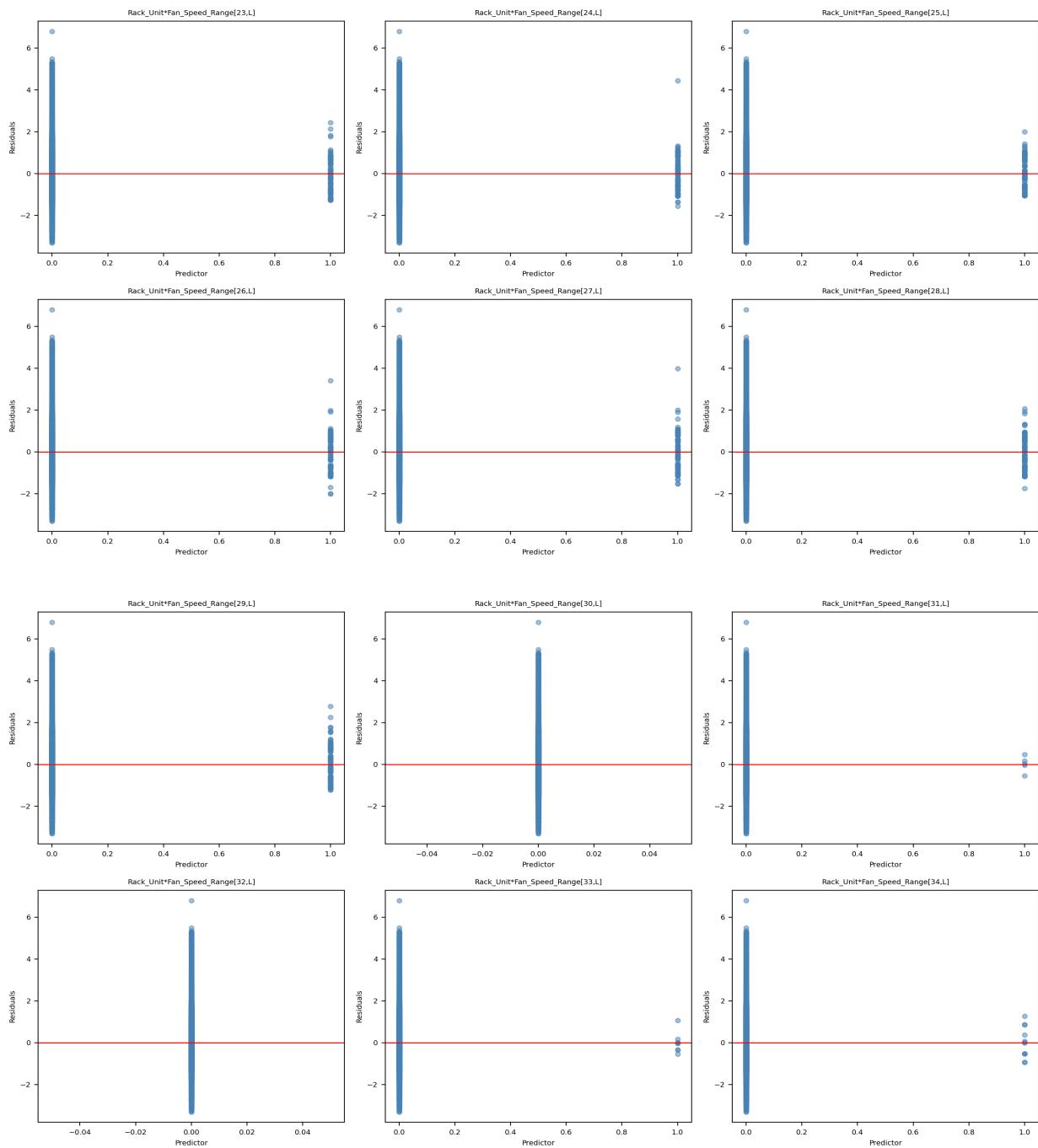


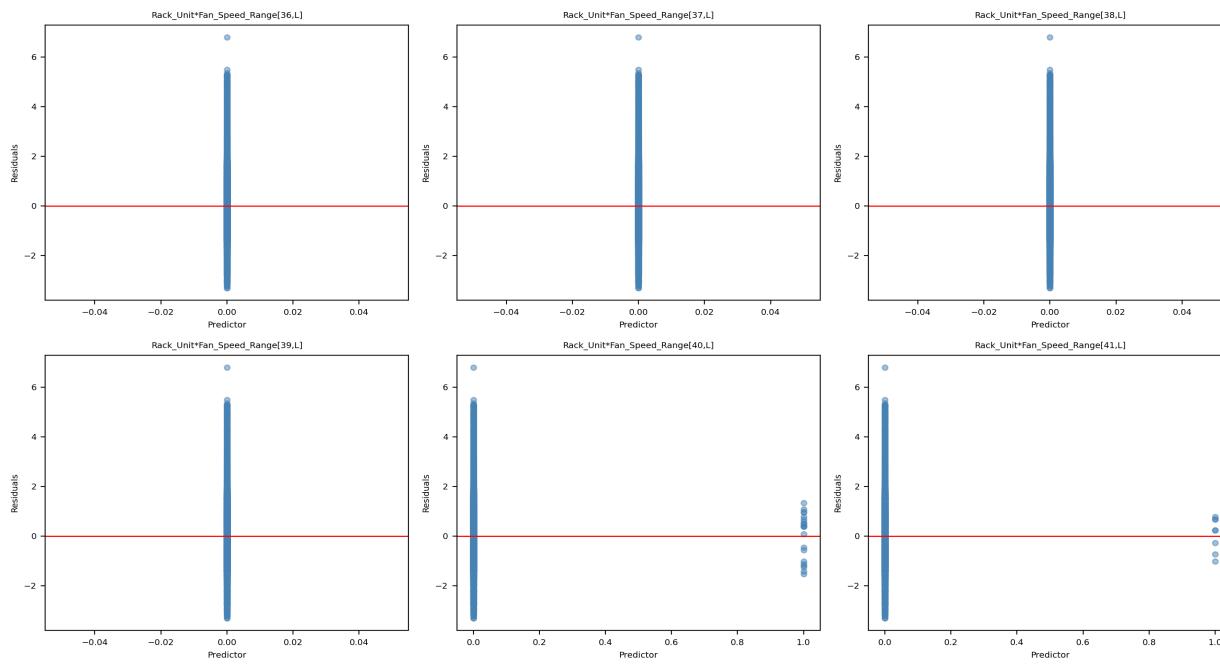














## Reduced Model Statistics & Comparison

Metric	Full Model	Reduced Model	Change
Parameters	820	451	-795 (-97%)
R-squared	0.3897	0.3852	-0.0045 (-0.12%)
Adjusted R <sup>2</sup>	0.3718	0.3709	-0.0009 (-0.02%)
F-statistic	21.72	26.90	+5.18 (+24%)
Residual Std Error	1.3208	1.3214	+0.0006
LOF F-statistic	0.000	1.2541	significant
LOF p-value	1.000	0.121	adequate fit

### Lack-of-Fit Test (Using Duplicate Observations)

The LOF test indicates adequate fit ( $F=1.2541$ ,  $p=0.1213$ ) with 451 retained parameters, removing 795 non-significant terms. The Actual vs Predicted plot above shows predictions vs observed values with 95% confidence interval bands. Leverage plots show residuals vs each predictor to assess model assumptions.