MANUFACTURING ANALYTICS

Manufacturing Quality: Objective

- SandMan Corporation continuously looks to improve its manufacturing quality.
- SandMan monitors quality of input materials (physical and chemical properties) on a daily basis.
- SandMan monitors quality of output material of every batch and output rejection rates are available on a daily basis.
- SandMan wishes to develop a **early warning system(EWS)** to predict likely rejections for a new day, given the input quality for that day.
- This early warning is required since the rejections can be observed only after 4-5 days due to additional processing on the castings. If rejections are predicted to be large, the foundry can produce more castings to maintain supply to their customers.

Manufacturing Quality: Data

Total size : 388 x 13
Data file : sandman.csv

Variables Description

Predictor Variables (in order as in dataset)	***Description***
CLAY_COMPOSITION_1	*Composition of clay in the sand mould in %*
COMPRESS	*Dimension of standard sample after compression (cm)*
STRENGTH_1	*Strength of standard sample, (N/m**2)*
LAYER_ANALYSIS	*Measure of distributed particle size, no - Higher = finer grains*
CLAY_COMPOSITION_2	*Composition of inert material, %*
IGNITION	*Measure of ash content, %*
HUMIDITY	*Composition of water content in the sand sample, %*
ACIDITY	*Measure of acidity, no unit*

Manufacturing Quality: Data

Total size : 388 x 13
Data file : sandman.csv

Variables Description

Predictor Variables (in order as in dataset)	***Description***
PRESSURE	*Measure of permeability and porosity of sand sample, no unit*
STRENGTH_2	*Strength of standard sand sample under shear, N/m**2*
GASES_HOT	*Composition of volatile matter and combustible content, %*
STRENGTH_3	*Strength of standard sand sample when heated and loaded, N/m**2*
TOTAL_DEFECT_PERCENTAGE	***Total rejected/total produced***