INFEED OPTIMISATION
CASE STUDY

key

Our Goal:

A client's infeed circuit was controlled solely in manual mode.
The operator had the responsibility to control each individual Apron feeder from a set of five hoppers in order to control the rate into the main infeed conveyor belt.

As a result of manually controlled Apron feeders the main infeed conveyor rate will oscillate between exceeding the nominal capacity of the conveyor and virtually constraint the plant then the Apron feeders were left running at low speeds.
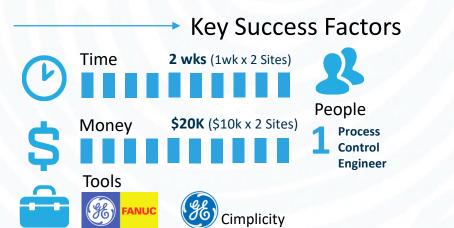
Our Solution:

> Understand the current production requirements and the desired behaviour in order to maximise throughput without affecting reliability or safety for people and/or equipment.

> Developed and implemented a control philosophy that consisted of:
1. Rate prediction for each Apron feeder: Using process modelling to determine the product rate on the conveyor due to change on apron feeder speed therefore determining the right moment to vary the Apron feeder speeds in order to reduce rate variations on the infeed conveyor.
2. Implementation of a feed percent targets to be allocated to each of the infeed hoppers: The shift supervisor will now adjust the individual rate setpoint of the five different hoppers to effectively allow blending.
3. PID loop tuning: The inclusion of predictions eases the effects of dead time in the process therefore allowing the loop tuning to be aggressive enough to control the infeed rate at its desired setpoint.

Unlocked Potential:

Once implemented, the client was able to automatically control the rate on the infeed conveyor.
After a decrease in variability in the rate took effect, the infeed conveyor rate's setpoint could be then increased.

Andre Gibson

Co-founder & Director
Principal Process Control
Engineer

Key Insight:

"With the newly implemented control philosophy, the infeed system is now able to respond dynamically to the forever changing conditions of the process"

Key Success Factors

Time — **2 wks** (1wk x 2 Sites)

Money — **$20K** ($10k x 2 Sites)

Tools — GE FANUC, GE Cimplicity

People — **1** Process Control Engineer

Identify
Analyse raw data available

Design
Design new control philosophy

Implement
Implement solution within automation

Coach
Coach/Train Operators

Measure
Measure Success