Optimization of Stock Usage in RTP Powder Production

Introduction

A hard metal insert is constructed with Tungsten powder mixed with Cobalt. Sandvik Coromant produces different RTP (Ready to Press) Powder with different grade (mix) of raw materials to have different characteristics on the finished insert.

All these grades have directives that states the maximum and minimum amount of a specific component that are allowed within the grade.

All Raw material are unique in the composition and can include different percentage of components depending on raw material batch. They also have different cost and the amount in stock is not consistent.

Today the powder production optimizes this using a Sandvik Coromant made system called CoroLP, that uses the simplex method (LP) to optimize the raw material usage to be within range of the directive, have the correct weight of the batch and to lowest cost. The algorithm that optimizes the solution is a bought and needs to be replaced.

The Goal

Find the best suited way to optimize the problem described above. With the approach to optimize the use of raw materials for all batches planned rather than one at each time as it is currently done.

Project Steps

- Project Planning
- Collect data from production databases
- Formulate the Function with input from Production Engineers.
- Look at different optimization methods for the problem
- Compare the results of the different methods
- Find software libraries that contains algorithms that support optimization methods for the problem
- Report the results

Practical Details

Prerequisites
It is expected that students working on this project have experience in optimization and numerical analysis. Programming skills is beneficial.

Tools
Sandvik Coromant will provide hardware and software for the project members to be able to perform the project tasks. The software used will be Oracle SQL Developer, GNU Octave.

Working Routines
Will be set during Project Planning

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