

Project Abstract for UBC Mechanical Engineering Capstone Design Course

Submitted by: Fluor Canada
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Project Title: FEA Analysis and Structural Optimization of Conveyor Chutes

Introduction

Fluor Canada provides engineering, procurement, fabrication and construction services for clients throughout Canada and around the world. For further information on the company, please visit <https://www.fluor.com/canada>.

Project Description

Conveyor chutes generally direct dry material from a conveyor discharge to place onto another conveyor. Fluor uses traditional conveyor chutes made of thick plates and rib stiffeners for their design in order to accept material loads. As a result, chutes can become very heavy and costly. This project involves a computational FEA analysis of several chute types using potential loads imposed by the materials in various scenarios. The objective is for Fluor to understand if the traditional chute design can be optimized and designed more economically without compromise of safety or reliability.

Expected Tasks and Outcomes

Some suggested tasks:

- Create FEA models of 3 to 5 different types of traditional Fluor chutes
- Examine and calculate different load scenarios on the walls of chutes based on existing material flow theories
- Investigate different alternative structural designs for the chute
- Provide recommendations for optimization of the chutes and implication

Resources Available from the Customer

Fluor Canada has completed a number of capstone projects with UBC Mechanical Engineering and will provide mentorship/consultation with the students and feedback as required over the duration of the project.

The primary project contact is: Paul Li (Paul.li@fluor.com)

Customer Requirements

To be clarified and developed further as project gets underway.