

# Sweetline: Tailor-made mixing and packaging solution

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**Specialization** Preparation program for Master of Electromechanical Engineering Technology

## Introduction

Bewel is a Belgium-based sheltered workshop that employs people with disabilities separately from others. They perform a process at the site in Pelt that mixes and repacks candy. The process is **labor-intensive** and takes a heavy toll on the body throughout the day. The mixing of the candy is done by hand, this is not the most hygienic solution

## Objectives

To design a mixing and packaging unit that **safely** reduces the labor-intensive work without replacing workplaces for the people that work at Bewel.

## Requirements

- The worker remains the center of the progress.
- The design needs to be easily operated by the worker.
- The design needs to be easy transportable.
- The design needs to meet food-grade standards and machining guidelines.
- The design needs to ensure ergonomic working.
- The design needs to be demountable and easy to clean.
- The design needs to process a maximum workload of 40kg.
- The design will be in use 8.5 hours/day.

## Supply table

The worker can sit at a table that has the same **ergonomic** height used at Bewel. They open the containers and feed the candy through the table's hole. A chute will guide the candy into the processing unit. The tabletop is made out of stainless steel because of **food safety** regulations. Two workers can side at each side of the table and feed the candy into the chute.



Figure 1: Supply table

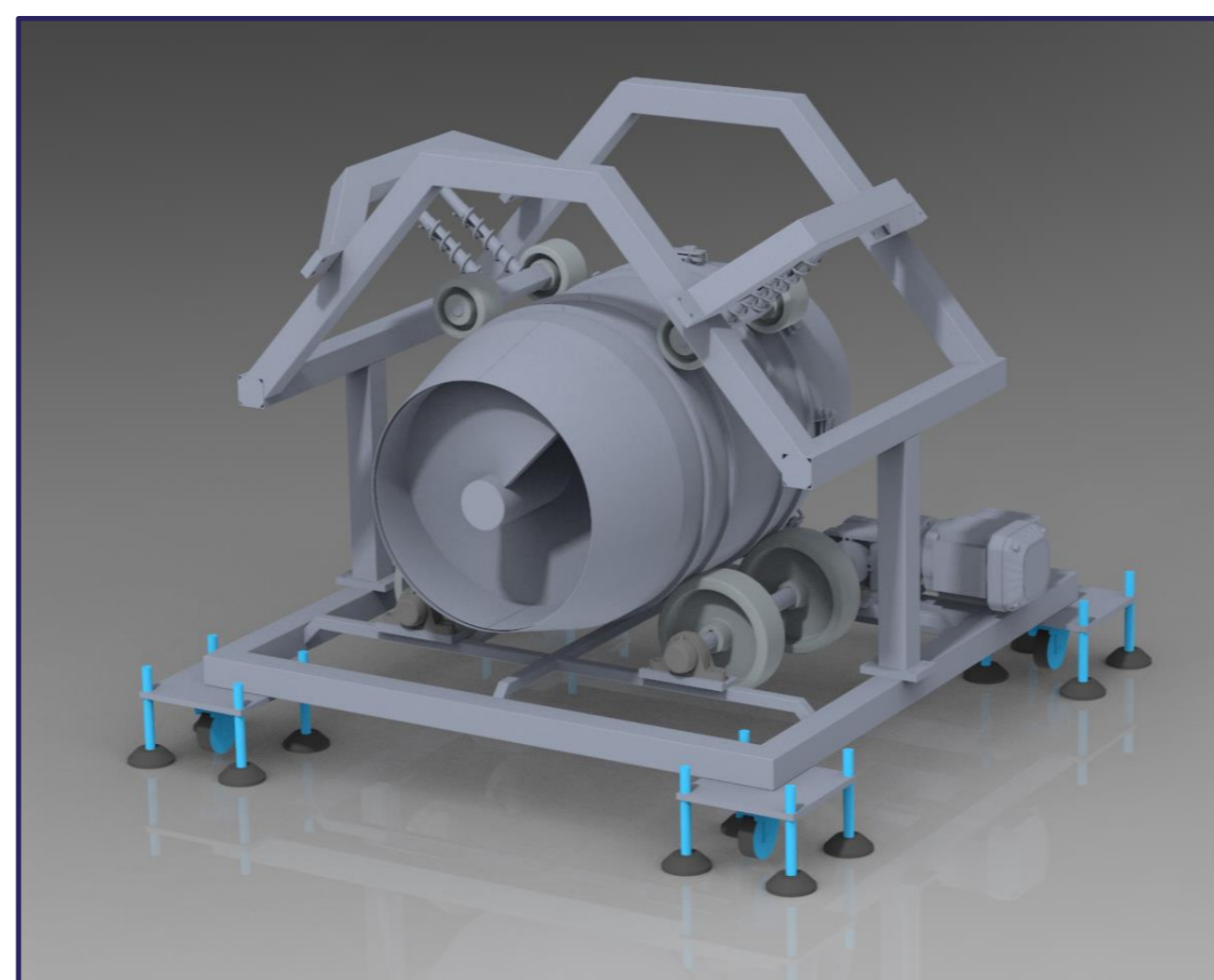


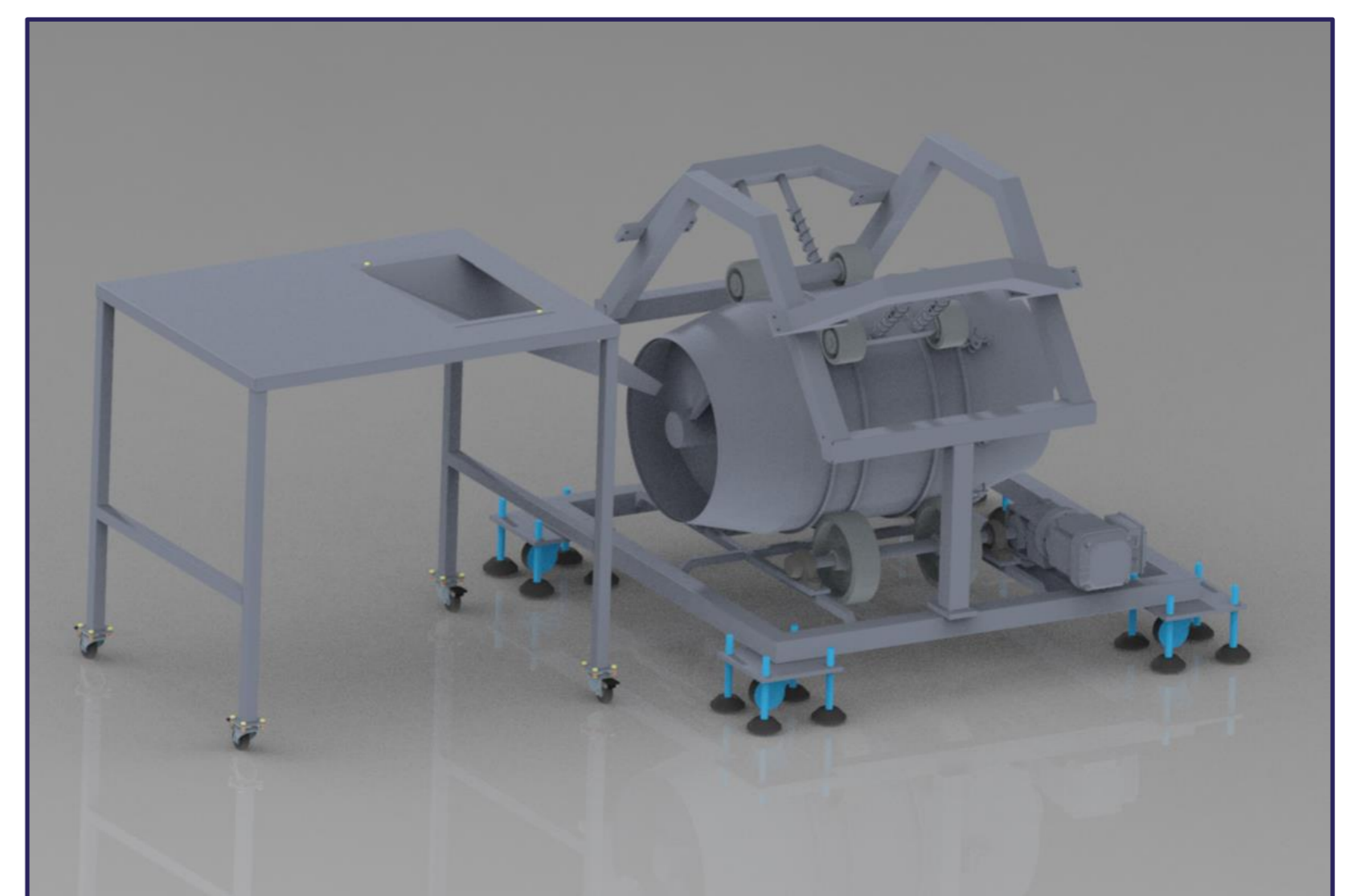
Figure 2: Processing unit

## Processing

This unit provides the means to mix the candy. A central tub is locked in place by four guide wheels. One pair of the guide wheels is connected to an electromotor. When the tub turns to one side, the candy will go deeper into the tub and creates a mixture of the different kind of candies. When turning the other side, the candy will feed out of the tub and go to further processing. This mechanism is based on the Archimedes screw. All the rotating parts will be shielded for safety. The inside tub is made out of a perforated metal plate allowing the sugar that falls off the candy to collect in the secondary tub.

## Results

Our design creates an ergonomic environment that is safe to operate. No working positions will go lost in the process. The mechanism ensures that the machine is easy to demount and wash. All materials used are food graded to ensure a hygienic process. Wheels at the bottom of each component make it easy to transport and store the design after the workday.



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