

Sorting Machine "Dummies and attachments"

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1. Situation

As part of the Integrated Project, a challenge was identified at Oerlikon Balzers, a company specializing in coating machining tools. The manual sorting of coated dummies and attachments after the coating process proved to be an inefficient and time-consuming task.

Problem:

After coating, the dummies and attachments end up in a bin, where they are manually sorted back into their designated spot in the shelving unit. Sorted by length and diameter. This process slows down the production process and requires valuable human labor.

Solution:

To improve efficiency and reduce dependence on human labor, efforts are being made to develop an automated sorting machine. This machine will be able to accurately sort dummies and attachments by length and diameter, putting it in the shelving unit after doing so. This will consequently enhance the productivity and quality of the sorting process.

2. Requirements

- Maximum Dimensions 2.10 m x 1.20 m x 2 m (LxWxH)
- Input of the machine consists of unsorted batch dummies / attachments (10 kg, 150-200 pieces)
- All parts equal to or smaller than 150 mm in length should be sortable.
- Sorting machine runtime per unsorted batch maximum 30 minutes.
- Possibility to add unsorted batch dummies or attachments before sorting machine has completed previous batch.
- The sorting machine must comply with the standard safety norm NEN-EN-ISO 12100.
- The sorting machine must not produce more noise than the maximum protection limit (75dB).
- The output of the sorting machine must be a sorted buffer.
- The sorting machine must be adjustable and movable for sorting dummies or attachments into corresponding sorted buffer.
- The sorting machine drive must be electric (3 phase L1, L2, L3, N 380V/230V) or pneumatic (standard installation).
- Machine operator is present who can intervene in case of machine error.

5. Results

5.1 Total Sorting Machine

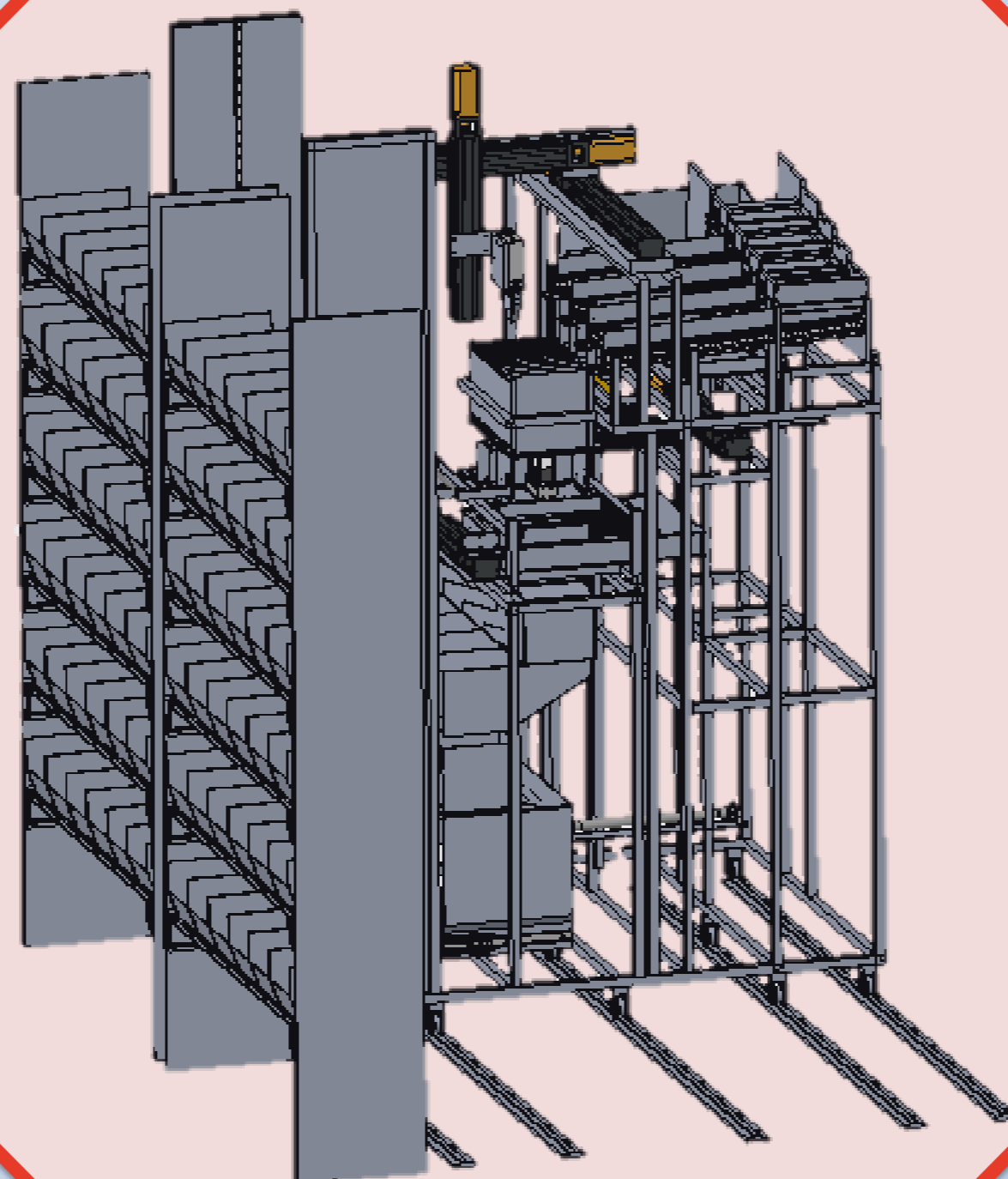


Figure 4: Main assembly total sorting machine

5.2 Total Feeder

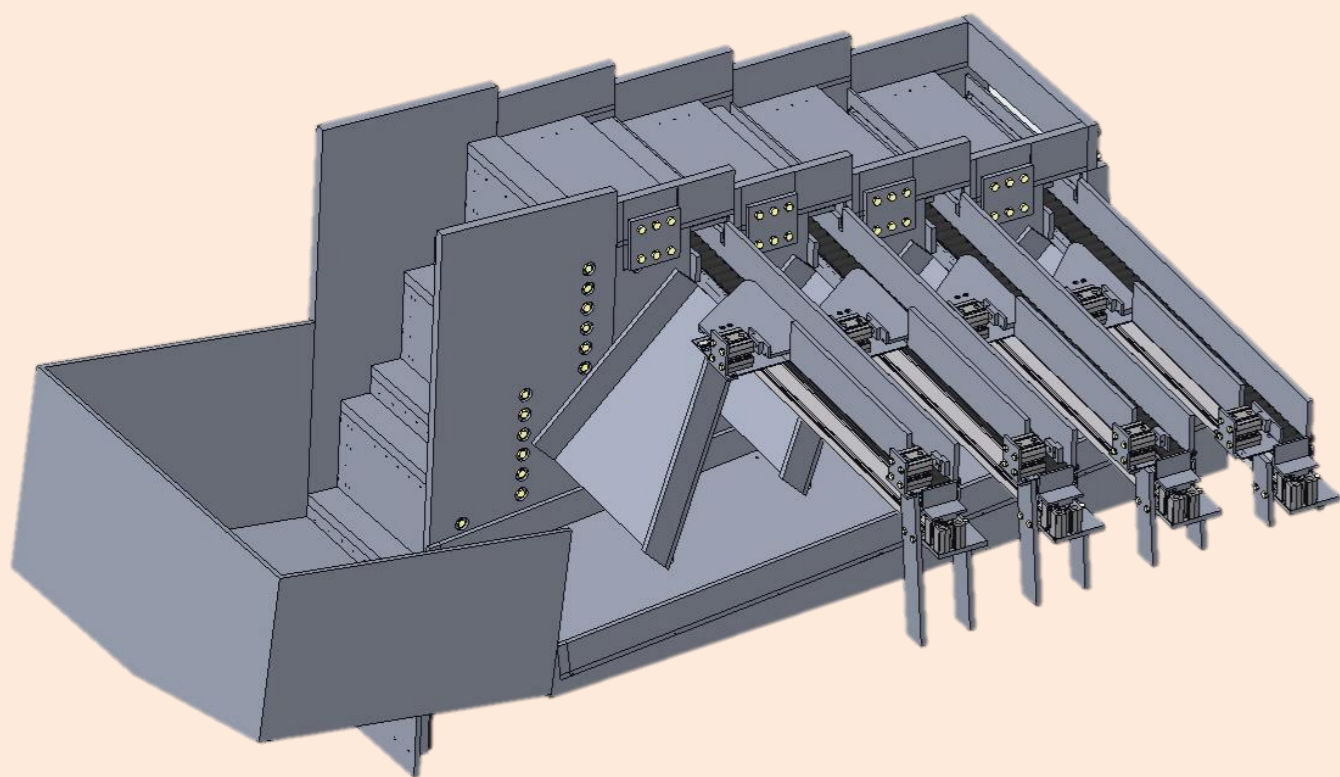


Figure 5: Subassembly feeder total sorting machine

5.3 Total Length Sorter

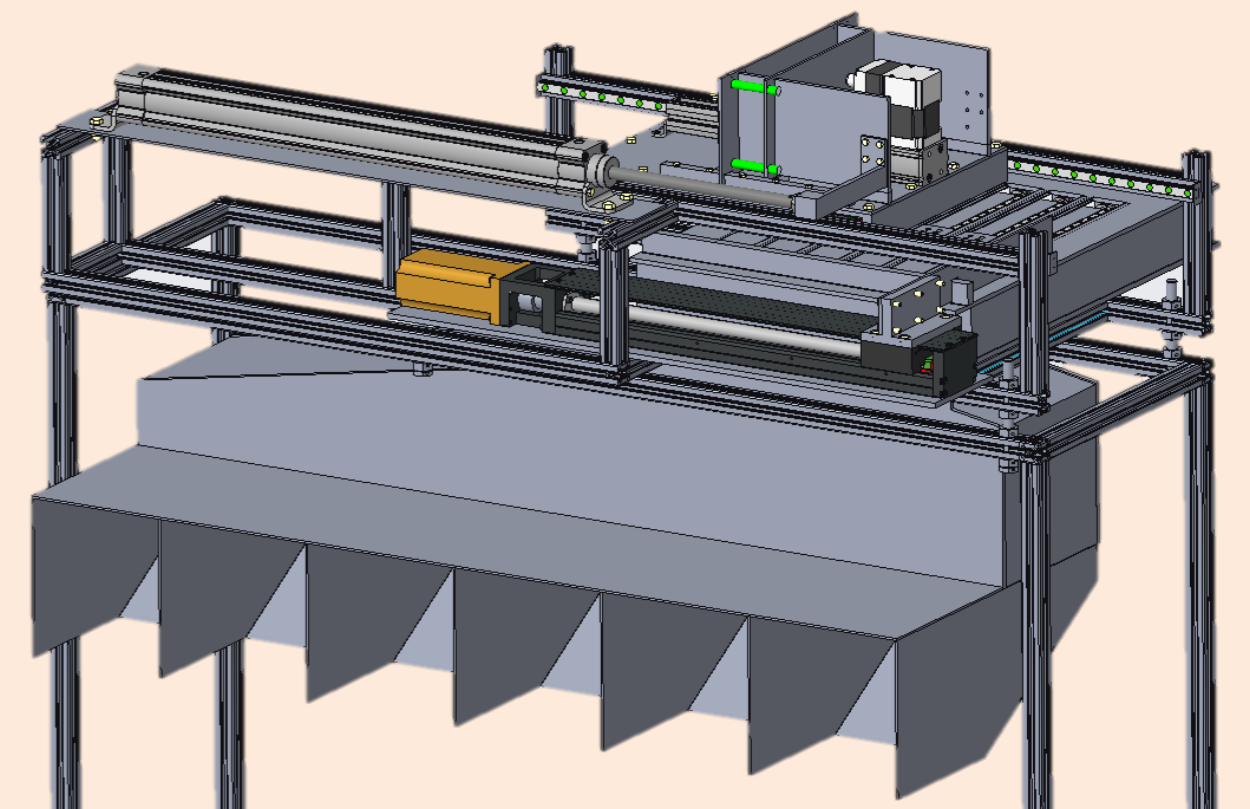
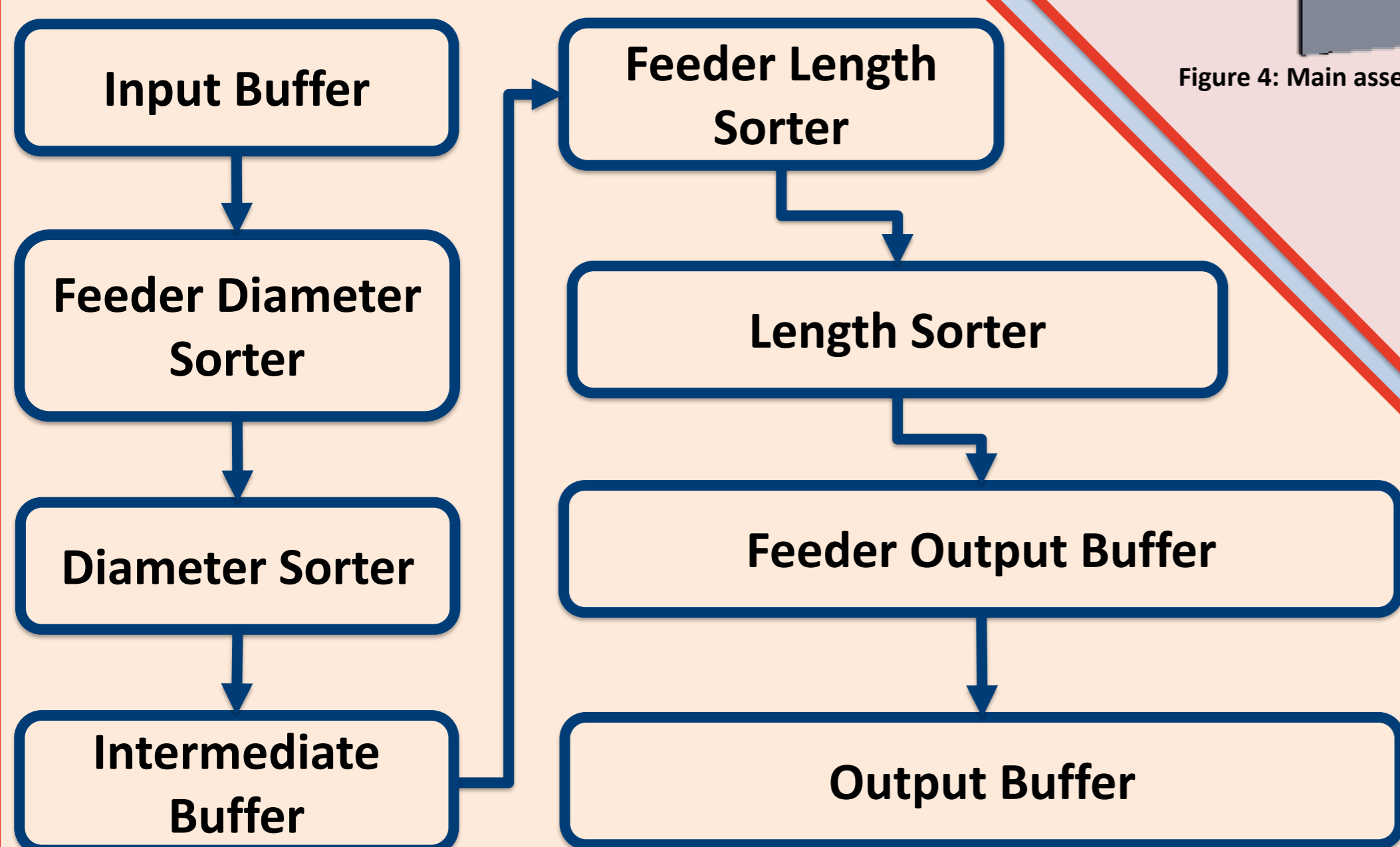
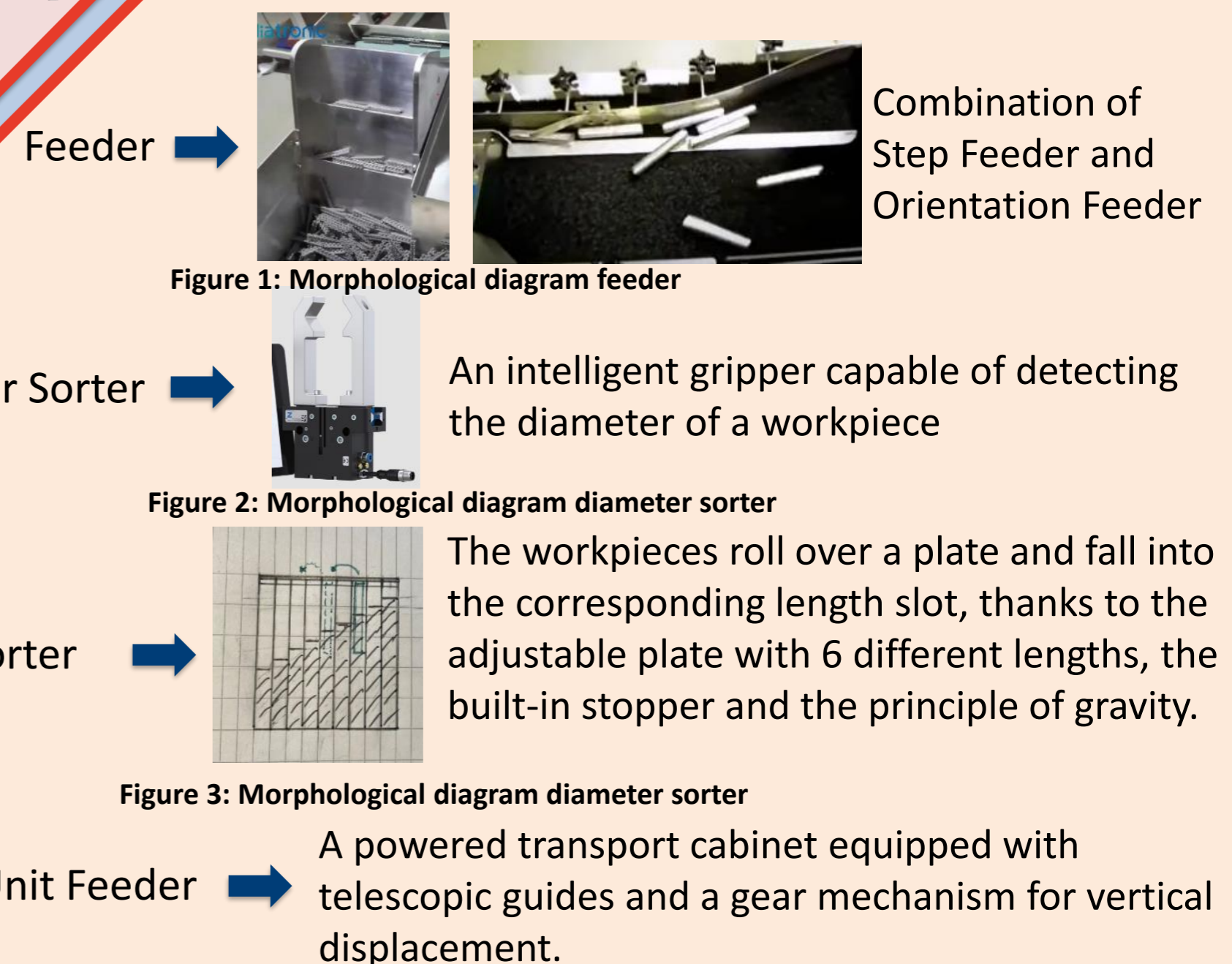


Figure 6: Subassembly length sorter total sorting machine



3. Function Block Diagram

4. Morphological Diagram



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