

Library Visit Report

**Group 1: Nikolai Semin, Zdenek Nevim, Hannes Badura, Roman
Evseev**

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1 System layout

The team has visited Lappeenranta City Library to study their system of books distribution. The overall layout is following:

1. Two scanning devices
2. Two small conveyors for the abovementioned devices
3. Main conveyor
4. 6 pistons
5. 6 sensors
6. 13 boxes with capacity sensors



Figure 1.1



Figure 1.2 Scanner

2 Logic behind the operation

Our team has come up with following potential logic:

1. An item is first scanned either by barcode or by RFID tag.
2. Both conveyors start working.
3. If scanning is failed the main conveyor is stopped (and reversed)
4. Then the system should decide to what side should an item go.
5. After that sensors should be triggered:
 - a. If an item should be **pushed** by a cylinder than the closest sensor should be triggered
 - b. If a cylinder should **drag** an item, then a cylinder is activated by a sensor that is adjacent by a previous cylinder

The logic is operated by PC underneath the sorting machine. The software, however, is custom and developed by a Finnish company.



Figure 2.1

3 System testing

The system was tested by many ways, such as: removing a container, putting two books on the scanning stage (the one on the bottom was a “decider”; we assume it is because its RFID tag was scanned last and overrode a tag of the first book) and etc. No bugs have been diagnosed, but rather some physical imperfections: a CD disk has stuck on the conveyor because of void space in the construction.

Due to the conveyor’s design the team cannot provide a video of an operating system: the conveyor is covered with reflecting plastic panels that made filmed videos of a very pure quality.

Our group does not have any questions to the system, as its logic and the way of functioning seem pretty clear and easy to understand, taking into account our background.