Bachelor's Thesis Engineering Technology

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BUFFERING AND MACHINING OF RAILS

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Specialization Electromechanical Engineering Technology

Situation

- Vansichen in Hasselt → Linear technology
- Rails: 4 m long → maximum width : 65 mm
  →Delivered in boxes

Fig. 1: Rails in packaging [1]

- Operations:

1. Manually placing rails on roller conveyor by multiple workers
2. Sawing the rail in requested lengths
3. Chamfering by grinding the edges

Problem

- No constant working speed of employees
  → No certainty if the order of the costumer is ready on time
- No ergonomic workload
  → The largest rail has a weight of 80kg
  → Unhealthy to carry these rails constantly from one machine to another
- High labour costs
- Not accurately
  → Sawing and chamfering is not automatic

Solution

- INPUT: Buffer system

→ Manually insert rails in this system → Start of automated process

From buffer system to 1st conveyor:

1. Capacitive sensors are positioned on the downside of each level.
2. When these sensors are activated, the actuator removes the rail that touched the sensors from this system.
3. The other rails move down by gravity so it is possible that the next one can be pushed by the actuator.

- PROCESS: Sawing + Chamfering of rails
  1. 1st conveyor: the rail will be positioned on the conveyor → Sawing machine (very precisely)
  2. Sawing machine → 2nd conveyor
  3. 2nd conveyor → Chamfer machine

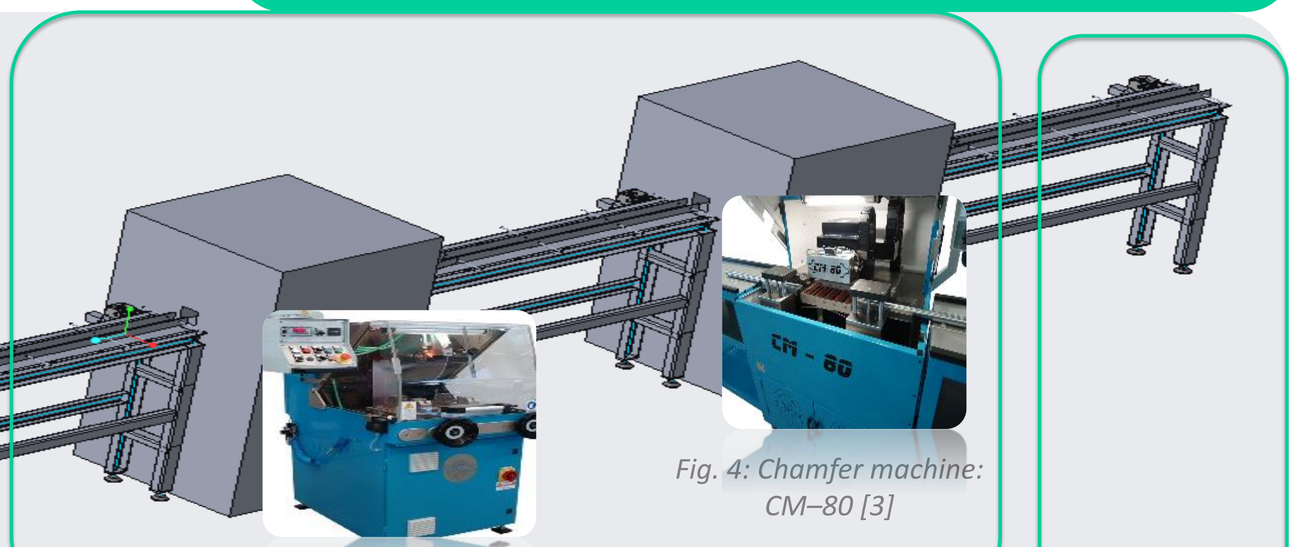

Fig. 3: Sawing machine 353HT [2]

Fig. 4: Chamfer machine: CM–80 [3]

- OUTPUT: From chamfer machine to 3rd conveyor

→ Manually packing machined rails

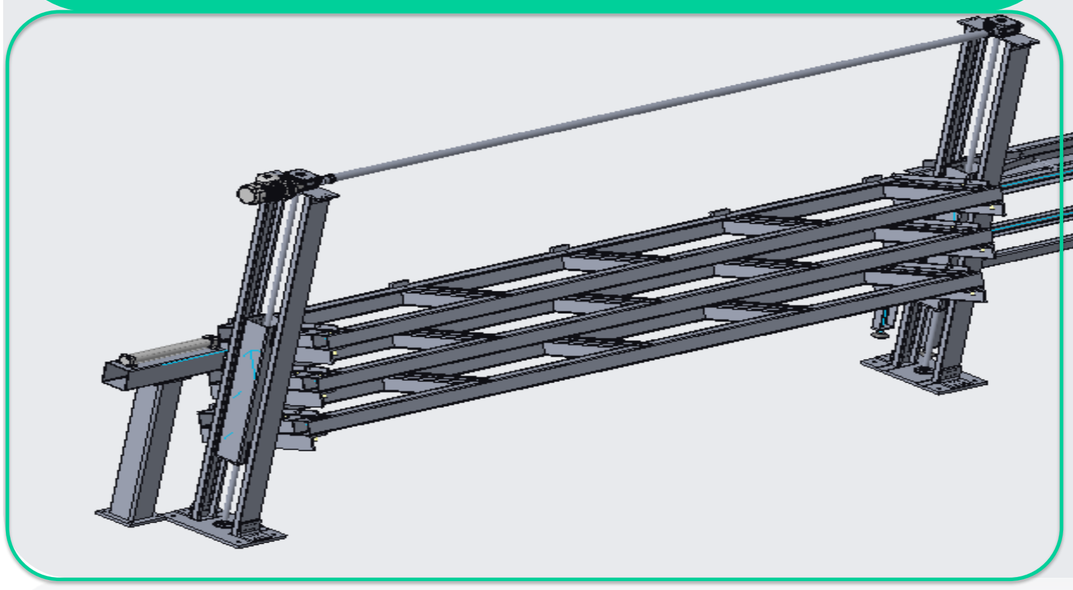

Fig. 2: Installation

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Prof. dr. ing. Karel Kellens

[1] Pieter Vansichen
[2] Casalin: 353HT, https://www.casalinsrl.com/product/353ht-3/?lang=en
[3] Casalin: CM-30, https://www.casalinsrl.com/product/cm-80-2/?lang=en

VANSICHEN LINEAR TECHNOLOGY

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