

AI for profile recognition

Johan Van der Straeten
17 oct 2024



**Why would we
need AI in a
simple product
as a window or
door?**

Introduction of Reynaers group

Projects



Residential



Reynaers Aluminium

HQ Duffel

Forster (steel)

HQ Switzerland



40+
Countries



5000+
Partners



2600
Employees



+ 700 m€
Turnover

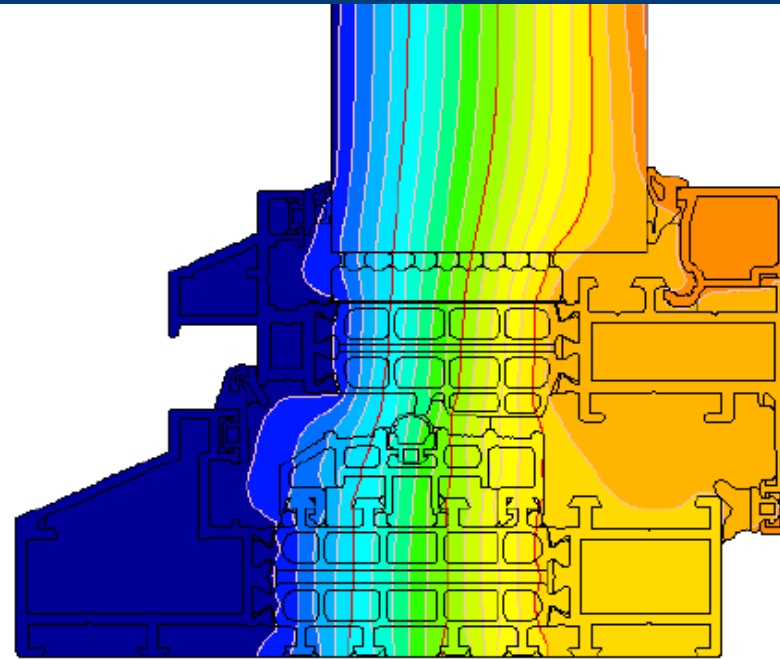
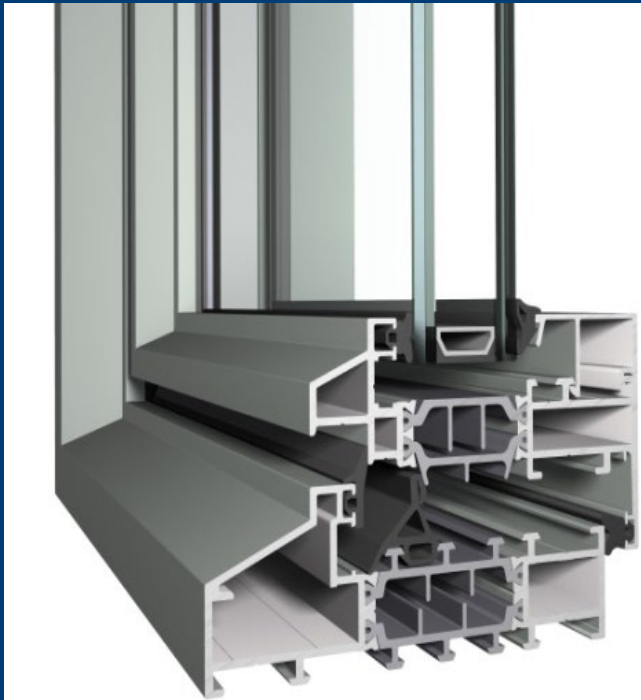
Together for better

Our activities

Research & development

Services

Marketing & sales



1. **We design** our profiles ourselves but **outsource** the **extrusion**
2. **Insulation** = We assemble the **halfscapes** with a **thermal break**
3. **Surface treatment** = **powdercoating** or **anodisation @ Alural**

Operations

Sourcing materials

Insulation

Surface treatment

Distribution & logistics

General challenges in our powder coating sites



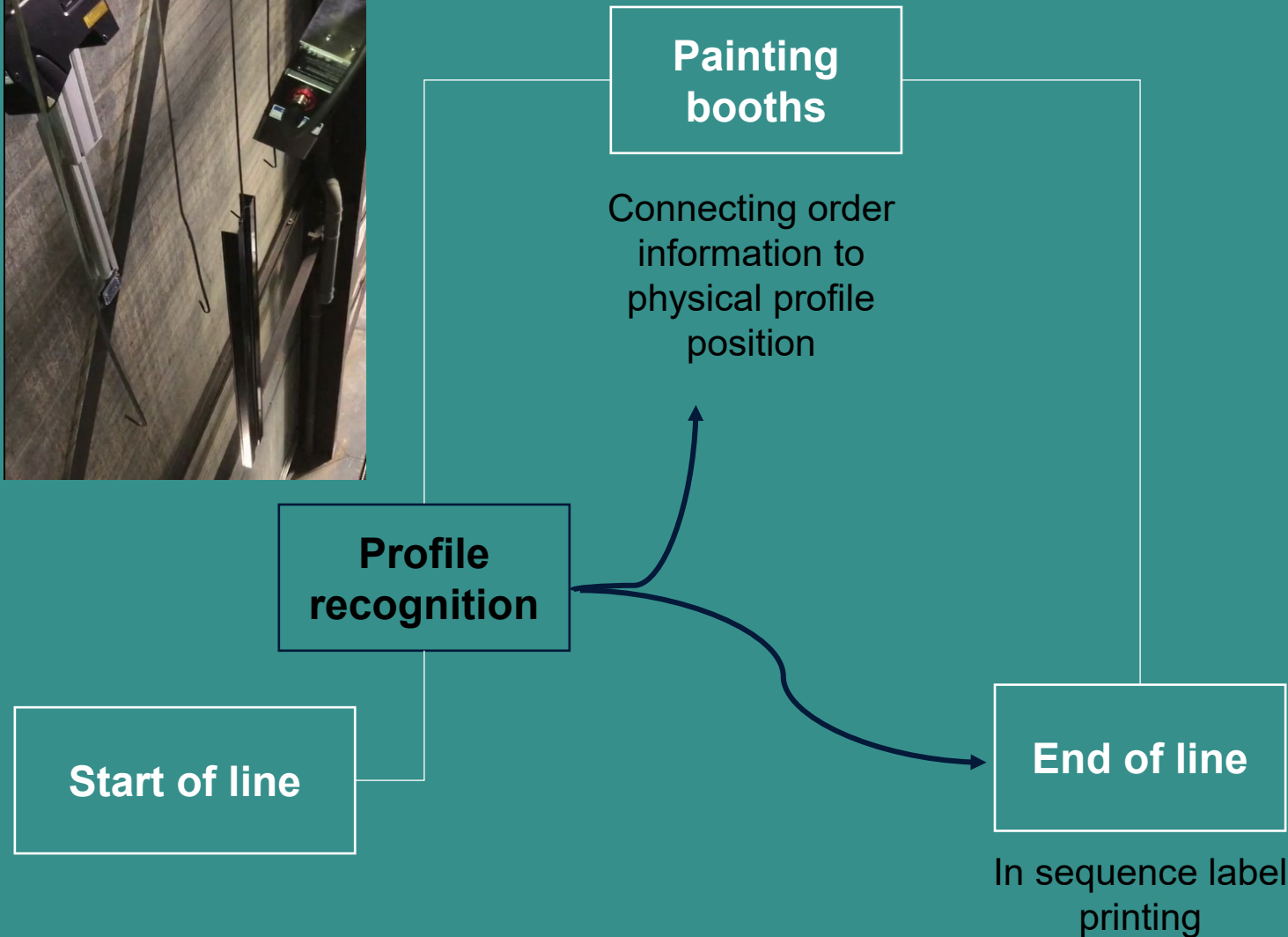
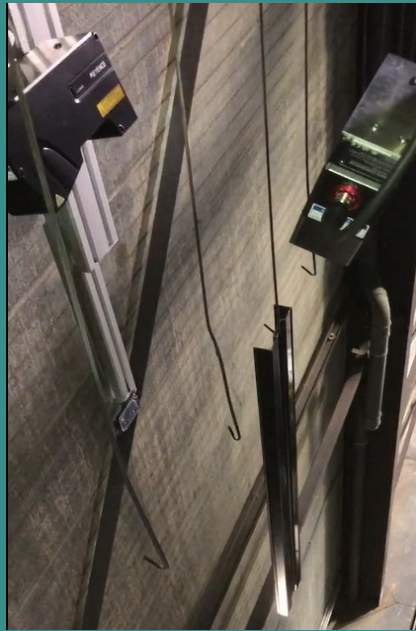
1. Chain with **2.500 positions**, up to **25.000 m²/day**
2. **Turnaround time = ~6 hours**, including pre-treatment, powderspraying + baking
3. **Portfolio complexity: > 2500 profiles, >850 colours**
4. **High Quality** expectations
5. **“Spraying = art”** (process industry)

Problem statement

When profiles are put on the chain, we loose the link with our ERP data

This means we cannot provide the spraying operator with the right information on technical drawings, quality attention areas (= visible sides) or customer specific information during spraying

Profile recognition – Starting small



1. **Each profile is scanned with a camera => Every position on the chain is identified and matched with a customer order and underlying information**
2. **Relevant information is shared to the painting booth so our operator can adjust settings as required**

... **Sounds easy, right?**

Reality check 1 - distortion

What is seen by the camera



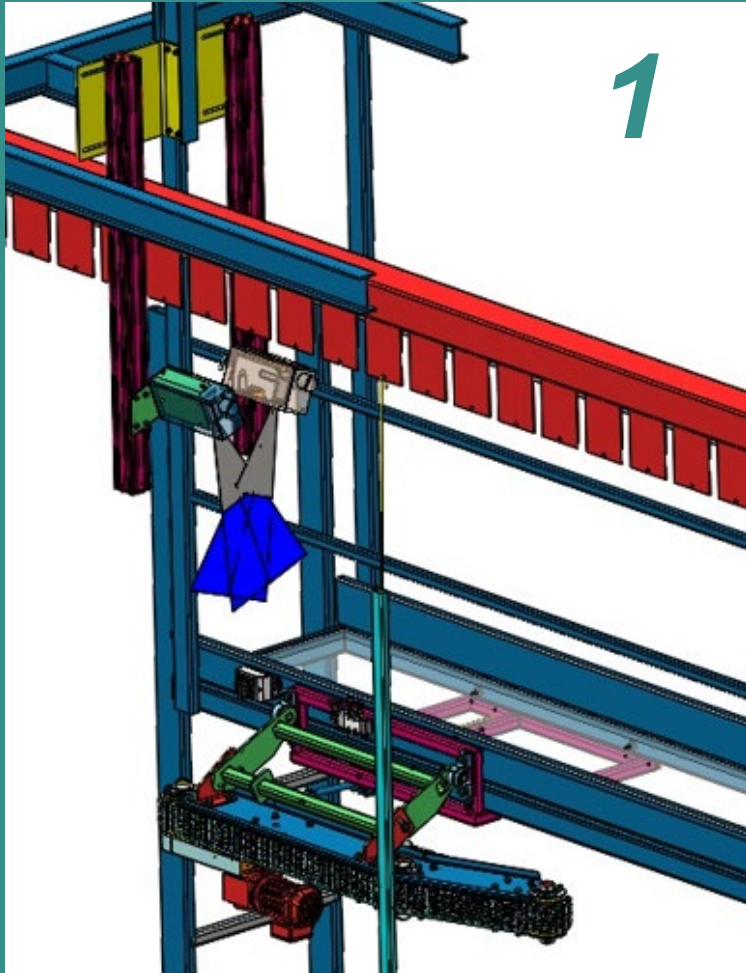
Technical drawing



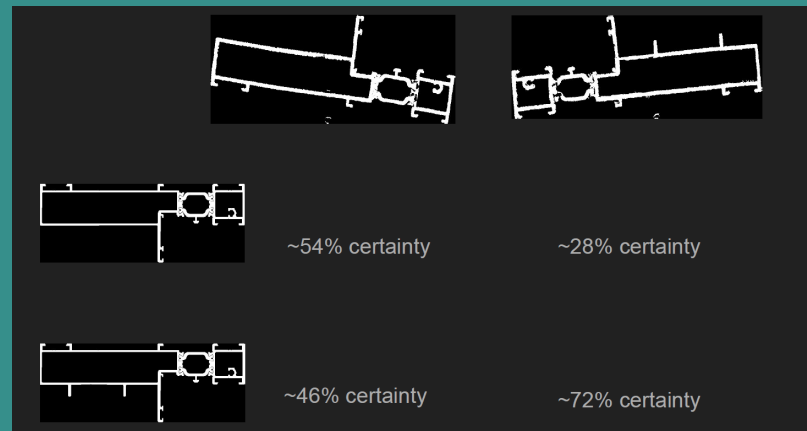
Reality check 2: look-a-likes



Pilot implementation – Profile recognition

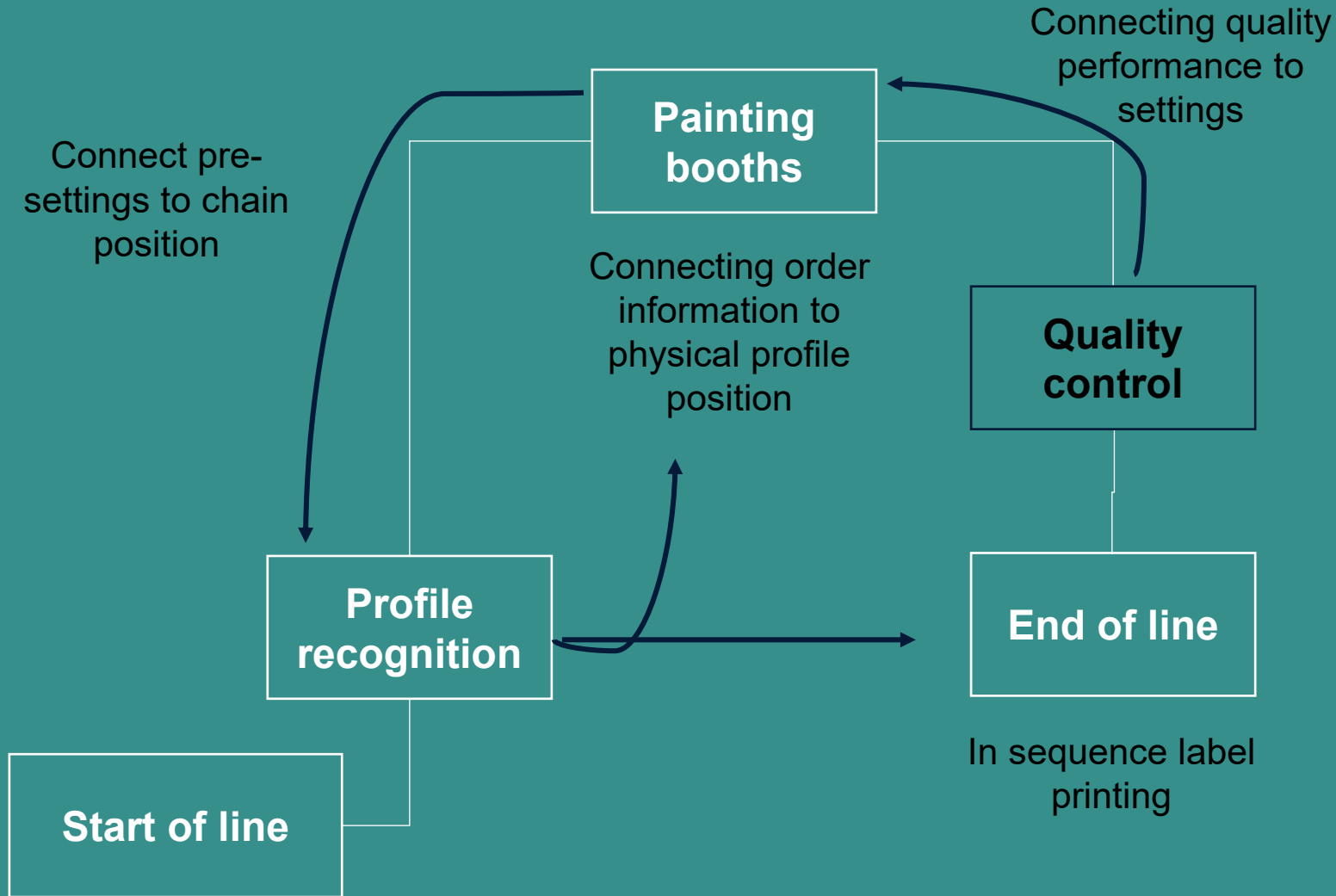


2



1. **Stabilising** the movements by **extra conveyor belt**
2. **Algorithm provides probability of matching => operator has to take the final decision** (algorithm will learn over time)

Profile recognition – Thinking big



1. Roll out to all our painting lines
2. Add automated quality inspection after painting
3. Link quality results with process parameters of spraying booth
4. Embedding knowledge into the system: standardised PRE-SETTINGS
5. Define better settings

THANK YOU!

Together for better