

ROSAS

Simple and Smart predictive maintenance solutions for Elevators

Date : 03.02.2021

Presentation : 6th Conference R&D about "Industry 4.0"

Speaker: Yvan Jacquat

iSIS

Institute of Smart and
Secured Systems



Haute école d'ingénierie et d'architecture Fribourg
Hochschule für Technik und Architektur Freiburg

Hes·so

Haute Ecole Spécialisée
de Suisse occidentale
Fachhochschule Westschweiz
University of Applied Sciences and Arts
Western Switzerland

Objectives



Digitalisation objectives

Maintenance costs ✓

Quality

Energy ✓

Productivity

Improvement objectives

Maintenance costs

- Doors
- Break
- Cables
- Transportation comfort
- Motor & Frequency converters

Energy

- Inefficiencies

Challenges:

- Every elevator is different
- Every automation architecture is different
- Existing automation architecture not able to deliver the required data
- IT policy restricting the external access to data

Consequences:

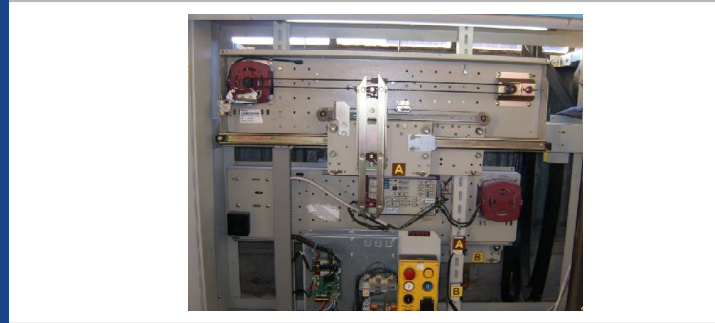
- Cost of data vs. benefits economically not justifiable

Question:

- Can we develop a scalable smart architecture allowing meeting our digital objectives?

Installation

Basic concept



Commercial building
(7 floors)

Residential building
(5 floors)

Office building
(4 floors)

Residential building
(4 floors)

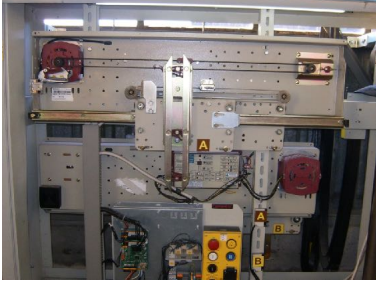
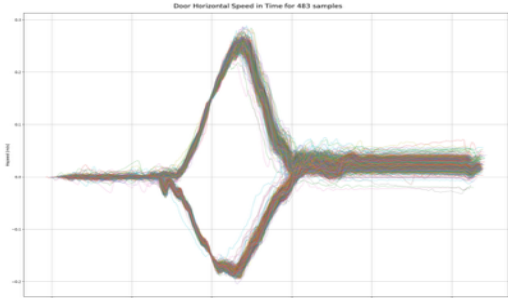
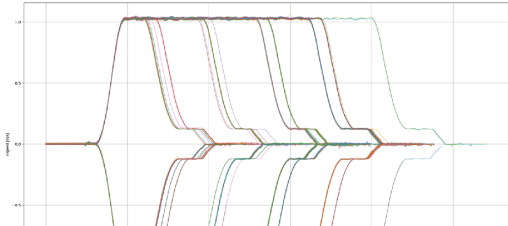
Residential building
(6 floors)



One solution valid for almost all type of elevators

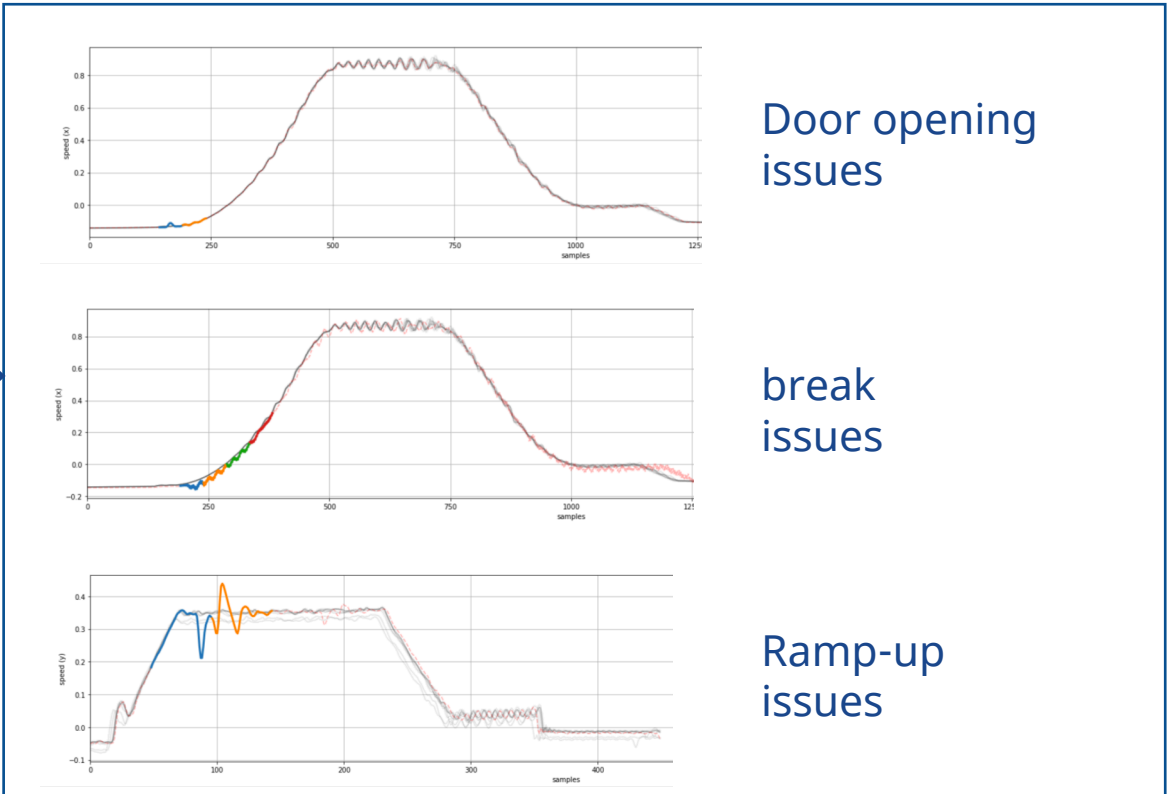
Installation costs: 0.5..1hour per application, including sensors installation, cloud connection & testing

Results

Improvements objectives	
Doors	
Break	
Transportation comfort	



Automatic failure recognition:



Summary

Improvement objectives

Maintenance costs

- Doors
- Break
- Cables
- Transportation comfort
- Motor & Frequency converters

Energy

- Inefficiencies

Improvements

Maintenance costs

- ✓ • Doors
- ✓ • Break
- ✓ • Cables
- ✓ • Transportation comfort
- Motor & Frequency converters

Energy

- Inefficiencies

Proposed solution

- Installation one sensor on the door opening system
- Automatic data acquisition
- Data processing and automatic failure recognition



Other applications



Industrial Partners

- Ascenseurs Menétrey: Elevator manufacturer
- Gradesens: Technology and Implementation
- Contrinex SA: Sensors manufacturing

Contacts:

HEIA-FR – Yvan Jacquat

yvan.jacquat@hefr.ch / 076/589 61 91

