Paris Session 2022

Hyperspectral camera for condition assessment of painted metallic towers

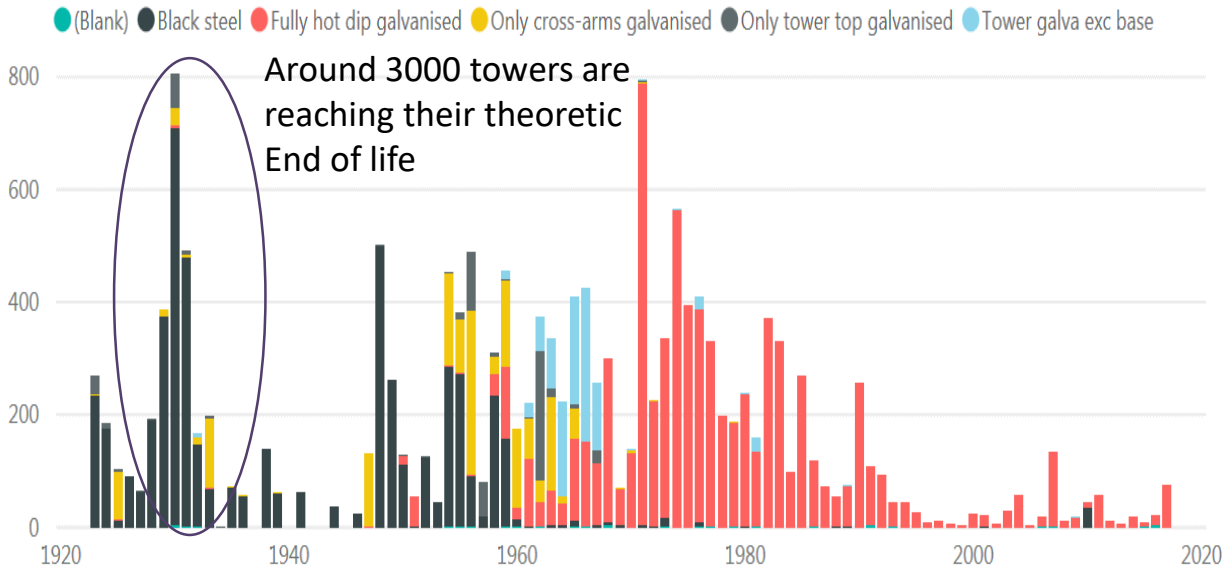
Overhead lines - PS2

Question 2.1: **How this technology (hyperspectral scanner) can be used on the line (onsite) when the line is energized?**

Bernard Risse (Belgium)

Context of the study

Tower replacement needs



Actual condition depends on several factors : fleet material/protection system, steel quality, maintenance history, environment, etc.

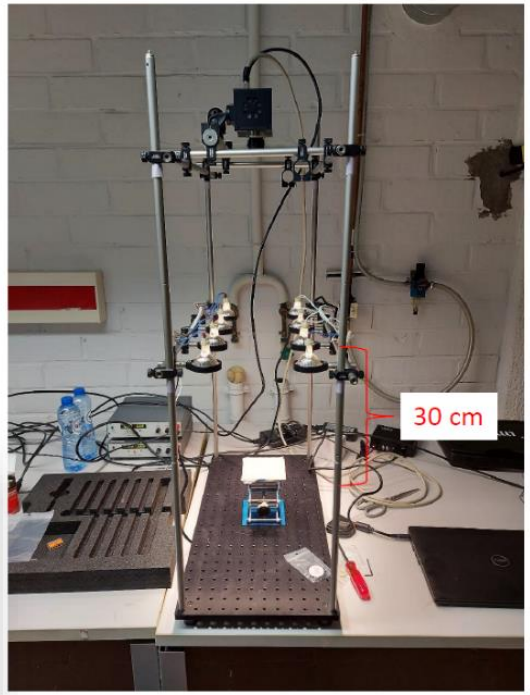
Today's inspection methods

	Manual Efforts Required	De-energize the line	Detection of corrosion on surface	Classification of Corrosion
Climbing Inspection		Yes	✓	✓
Inspection with VLOS Drones + AI		Not required	✓	*30% accuracy*

Reliable condition assessment is crucial

Need for non-invasive & remote inspection method

Project description



Objective : explore the possibility of using the hyperspectral camera on drone

Proof of concept in 3 steps:

1. Technical feasibility (ended 31/12/2021) => laboratory testing

2. Practical utilization (Q3-Q4 2022) => on-site testing

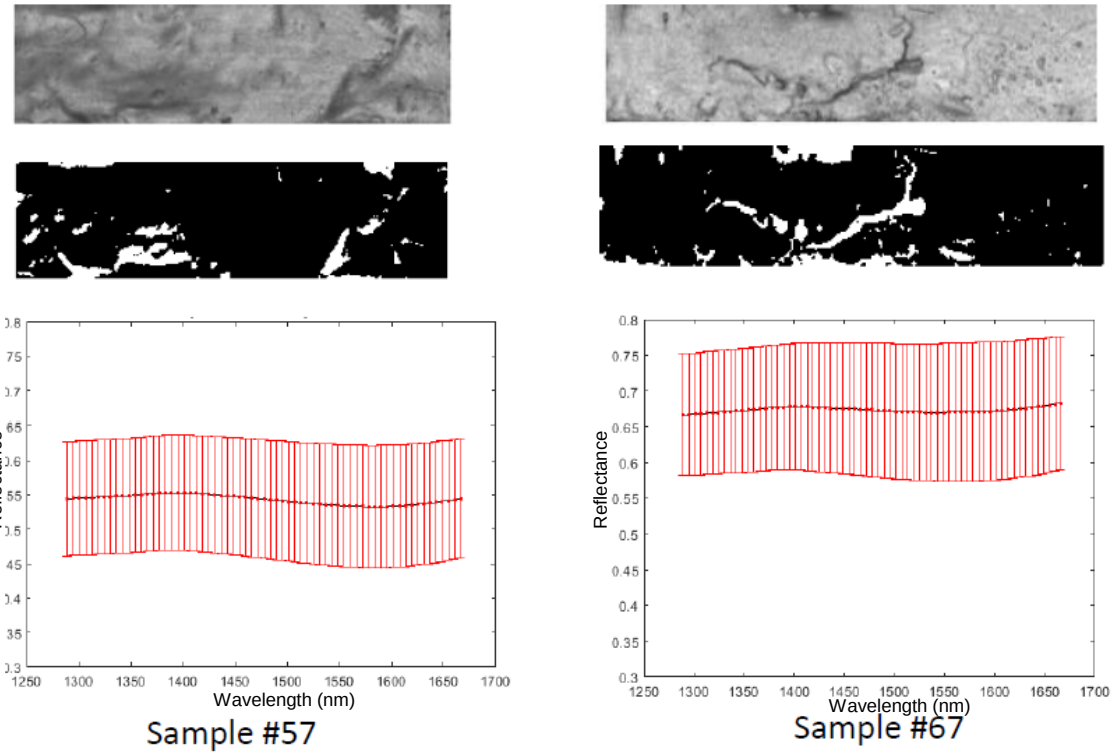
3. Prototype of drone integration(Q1-Q2 2022) => mounting on drone

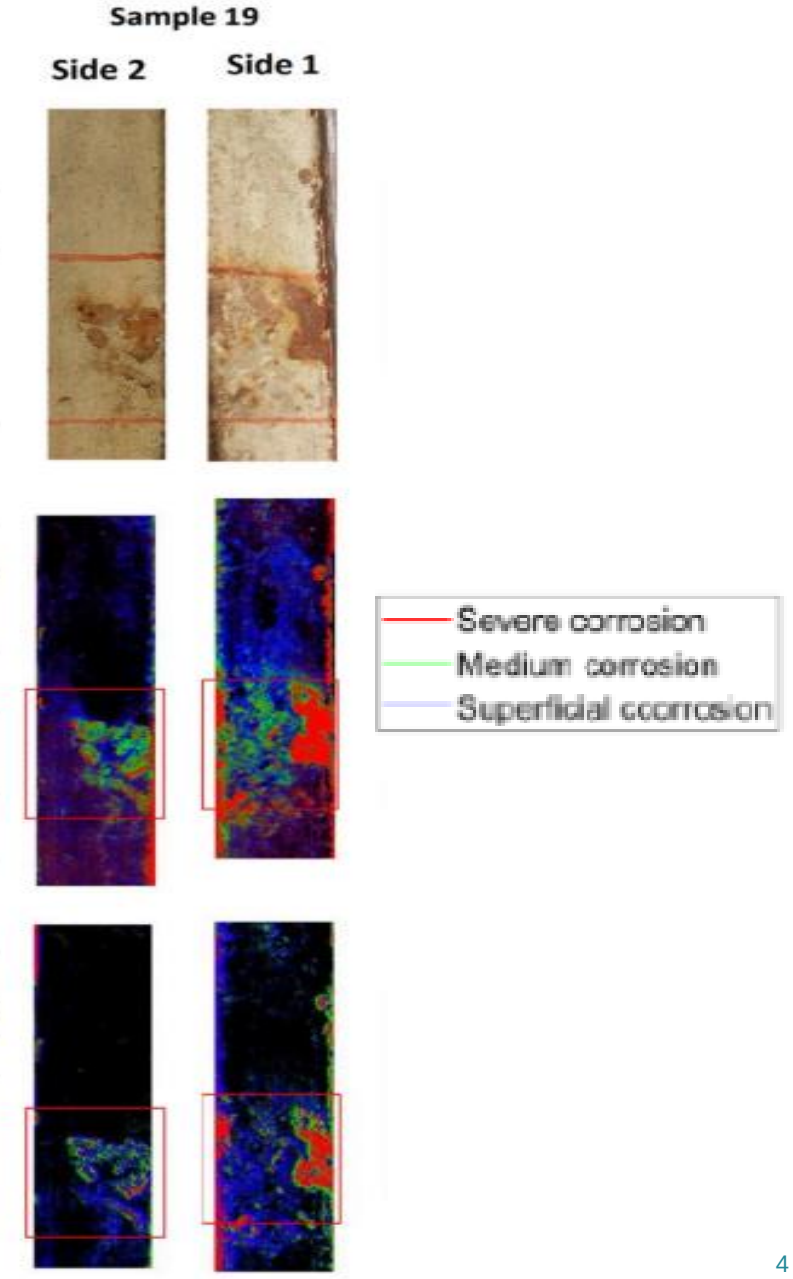
Highlights from Laboratory testing (2 approaches)

Method 1 (IMEC): Empirical classification

- Development of corrosion classification
- More than 80% match with traditional method
- Good identification of coating morphology

Coat surfaces with high morphological change

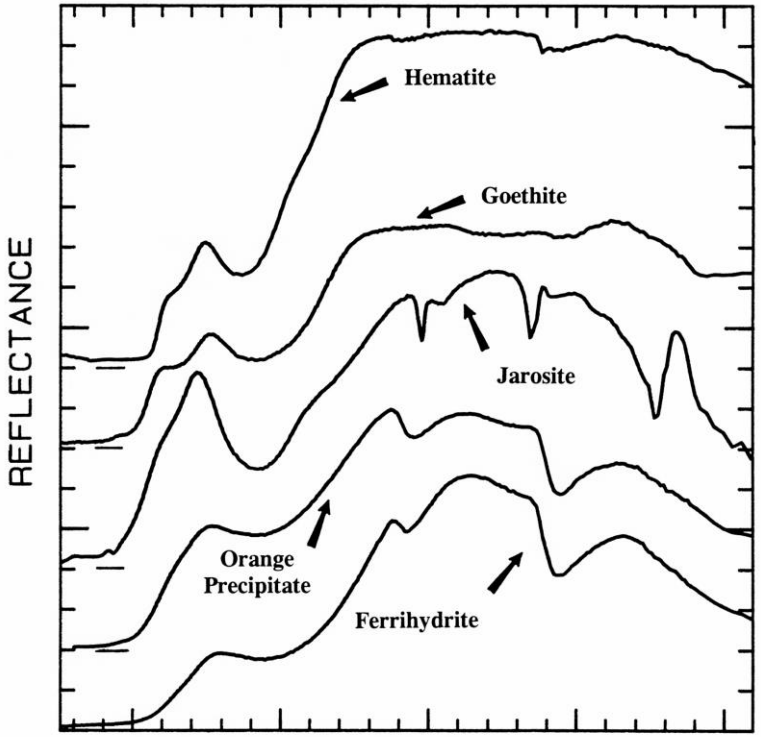


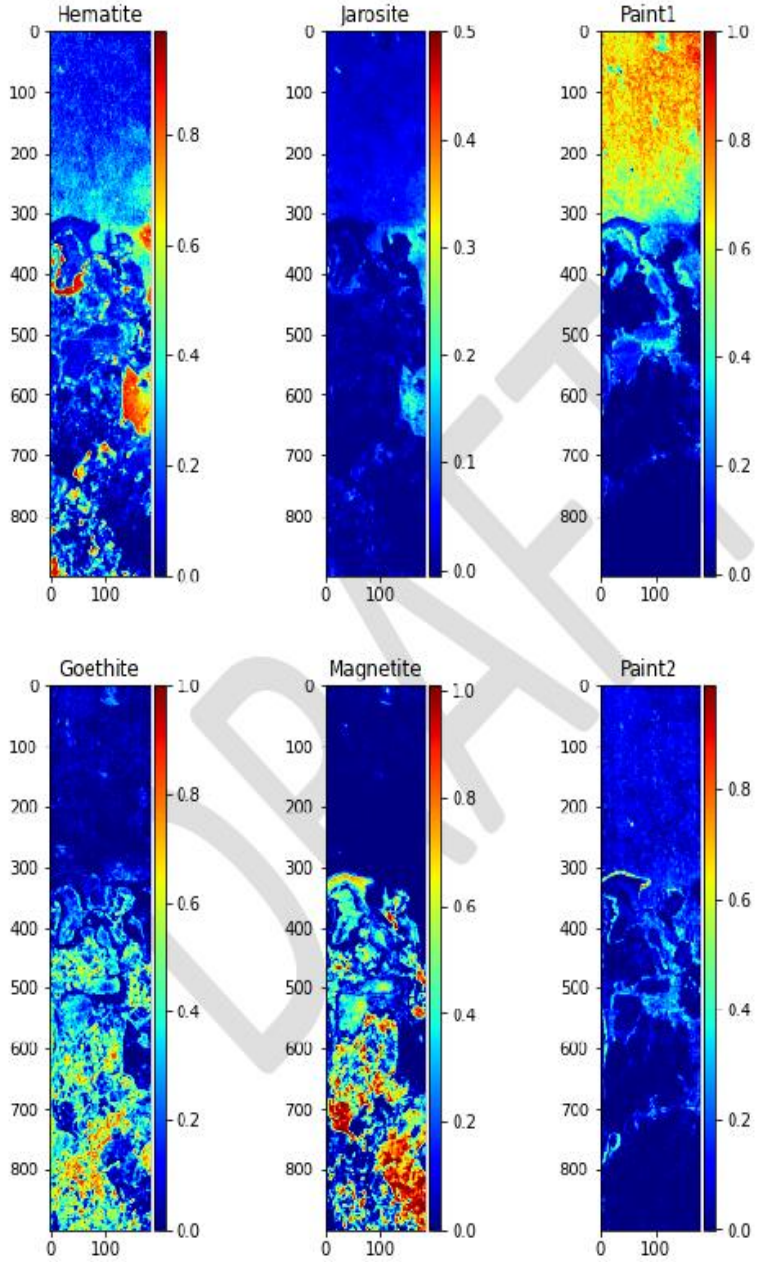


Highlights from Laboratory testing (2 approaches)

Method 2 (DNV) : Classification based on spectral library

- Possibility to see different type of corrosion products
- Potential to penetrate beyond the paint surface
- Distinguish different type of paints under the surface
- Algorithm able to handle pixel mix (corrosion + paint)





Based on the promising results of step 1, Elia will pursue the investigation and is looking for interested parties