

#### MANUFACTURING INTELLIGENCE WEBINAR

# What Manufacturers can learn from the Maintenance of Critical Infrastructure.



#### Claus Scheel Hincke

Infrastructure Director Banedanmark



Michael Bosson

Senior Content Manager Factbird

#### AGENDA

- 01 Introduction
- 02 About Claus Scheel Hincke
- 03 Top maintenance challenges
- 04 Reactive to intelligent maintenance
- 05 Examples of good maintenance strategies
- 06 Maintenance in 10-15 years
- 07 Tips for small and large companies
- 08 Audience questions



#### **Claus Scheel Hincke**

Infrastructure Director at Banedanmark

- Copenhagen Airport
- Banedanmark
- Heads up around 785 colleagues ٠

R

### What are the top challenges with the maintenance of critical infrastructure?

What are the top challenges with the maintenance of critical infrastructure?

- Many are still in fire-fighting (reactive maintenance).
- . Top management doesn't have maintenance capabilities.
- No-one asks the right maintenance questions.
- Management is focused on short term performance.

## How can organisations move away from reactive maintenance?

STAGE 1 Firefighting	STAGE 2 Planned	STAGE 3 Preventive
Repair and replace on fail	Time-based according to authority requirements Time-based according to supplier's specifications	Repair & replace on condition Repair & replace according to RCM analysis
Siloed operational responsibility Insourced organized		Siloed with a tactical level Centralized planning unit Cross functional asset capex prioritization board Centralized Strategic Asset Management unit Both in- and outsourced
Siloed investment prioritization		Cross functional investment prioritization
Replace/Renew/Expand with focus on low capex costs		Replace/renew/expand with focus on Total cost of ownership (TCO) OPEX/CAPEX costs
Manual registration paperwork	CMMS system that facilitate maintenance processer	MS Excel used for investment portfolio. And for prioritizing risk, performance, and costs
Decisions led by emotion		Decisions led by analysis

STAGE 3 Preventive	STAGE 4 Predictive	STAGE 5 Intelligent
	Popair and roplace on data analysis	
Repair & replace on condition	tools and techniques.	Use AI & machine learning to adjust maintenance approach for desired outcomes, as well as intelligently schedule and plan asset maintenance.
Repair & replace according to RCM analysis	Detect (IOT/UT/Vision/Scanner) and plan optimal maintenance approach, before they result in failure	
Siloed with a tactical level		
Centralized planning unit		
Cross functional asset capex	Change management office to promote data and continuous improvement culture	Data champignons
prioritization board		Community of practice
Management unit		Matrix organized
Both in- and outsourced		
Cross functional investment prioritization	Data driven risk-based investment prioritization	Automated generated invest portfolio from AM health register system
Replace/renew/expand with focus on Total cost of ownership (TCO) OPEX/CAPEX costs	Replace/renew/expand with focus on Total cost of ownership (TCO) and sustainability	
MS Excel used for investment portfolio. And for prioritizing risk, performance, and costs	EAM system optimizes utilization of assets throughout lifecycle and reduces operational costs	CMMS/EAM Eco-system with integrated data models and enterprise data (Health Register)
		GIS and location intelligence to asset problem solving
Decisions led by analysis	Decisions led by data and analysis	Decisions led by data

## What are some examples of good maintenance strategies in action?

*What are some examples of good maintenance strategies in action?* 



# What do you think maintenance will look like in 10-15 years?

*What do you think maintenance will look like in 10-15 years?* 

## "Within 10 years, 50% of all maintenance positions will change dramatically or simply disappear."

## What do you recommend people do to improve the way they do maintenance?

What do you recommend people do to improve the way they do maintenance?

#### Small companies

- **Get some data** on how your equipment is performing (failures, uptime, output, OEE).
- Establish a simple pen and paper KPI board so you can identify problems early.
- Train some people in **A3 problem solving** and find root causes.
- Coach your managers to be on the shopfloor, so they **ask the right questions**.

#### Large companies

- Build a framework for asset and maintenance management according to ISO 55000.
- Create a **balanced maintenance strategy** with the right spilt between corrective and predictive approach.
- Build a **risk-based approach** where you only prioritize maintenance activities with a clear link to enterprise risk.
- Establish a **LEAN management system** and create a culture of continuous improvement.

# Questions from the audience.





# Thank you for watching