

**TATA STEEL**



# Bowties Making Sense of Safety

Integrating barrier management in daily business

May 2022 PS Congress

**Together we make the difference**



# Agenda

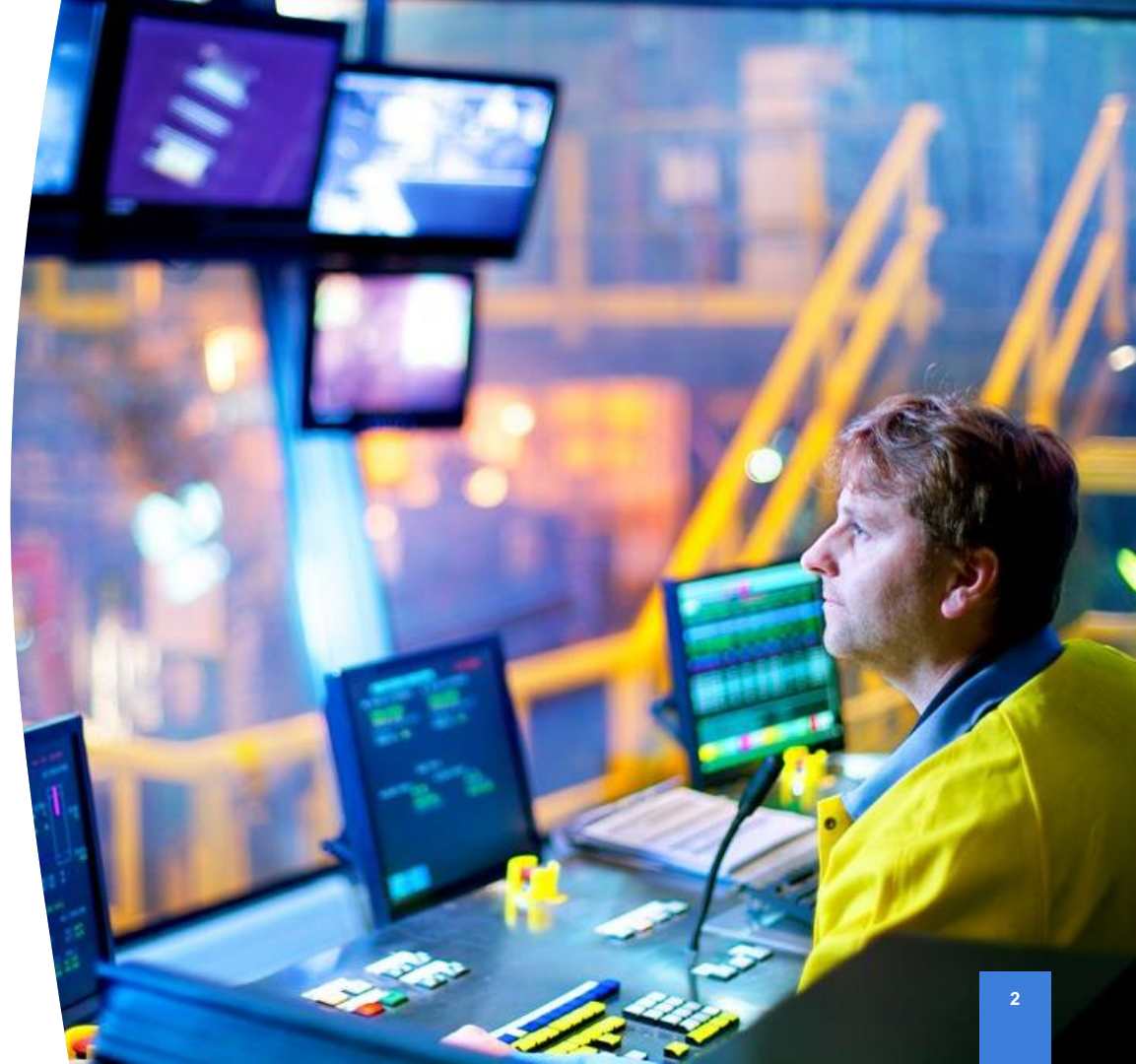
Introducing Daan & Niels

Tata Steel process

Introduction of Bowties in  
IJmuiden

Integration of Bowties in daily  
business

Next steps



# Introduction



**Daan Bergwerff**  
Resilium



**Niels Hollaar**  
Tata Steel

# Tata Steel, aren't they just producing steel?



HOO  
Hoogovengas  
870.000 m<sup>3</sup>/hr



**120 x per dag** een  
hoogovengashouder  
vol

OSF  
Oxygas  
70.000 m<sup>3</sup>/hr



**24 x per dag** een  
oxygashouder vol

KGF 1  
Kooksgas  
60.000 m<sup>3</sup>/hr

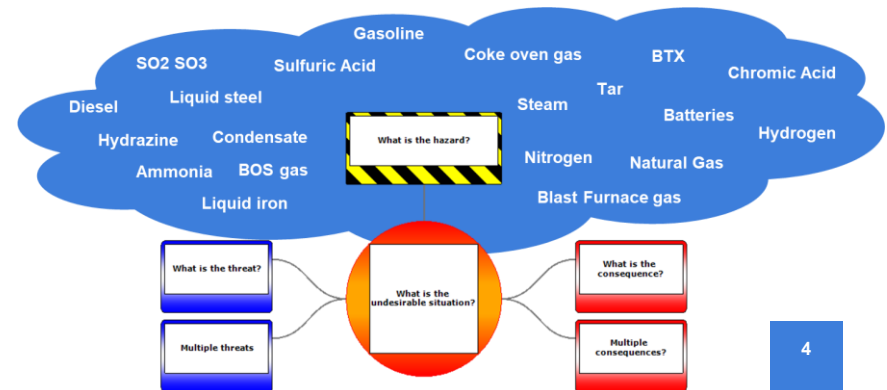


**24 x per dag** een  
kooksgashouder vol

KGF 2  
Kooksgas  
45.000 m<sup>3</sup>/hr

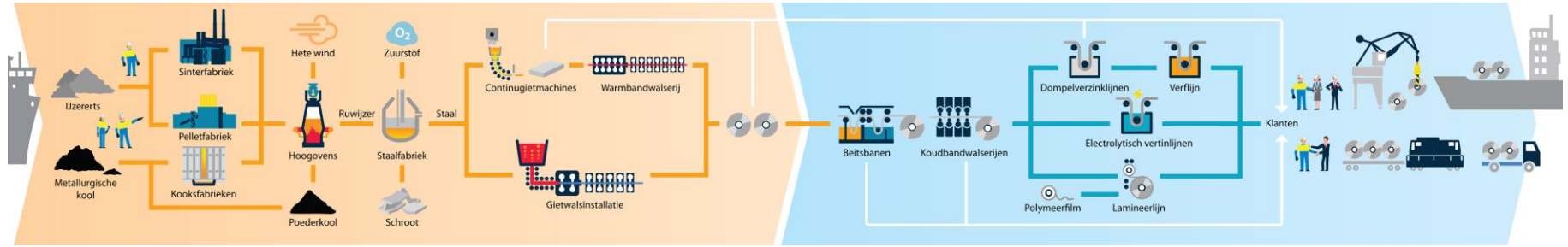


**18 x per dag** een  
kooksgashouder vol

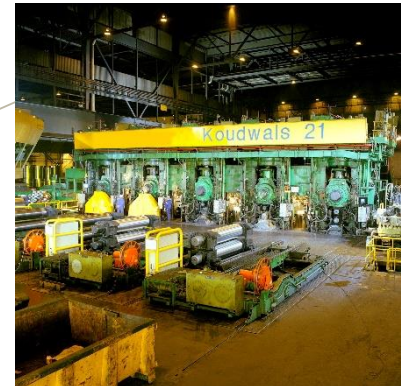




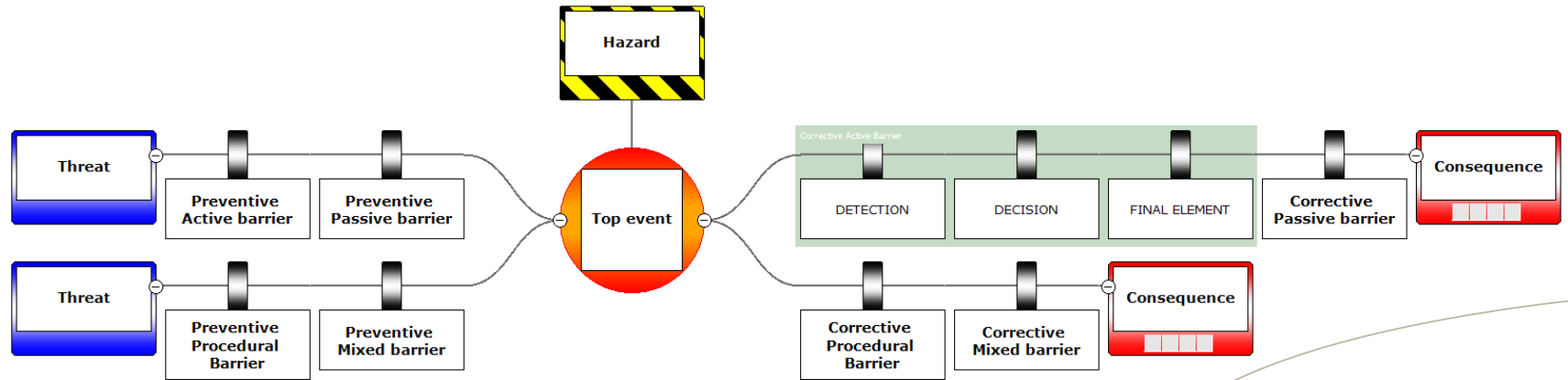
# Tata Steel production process in a nutshell



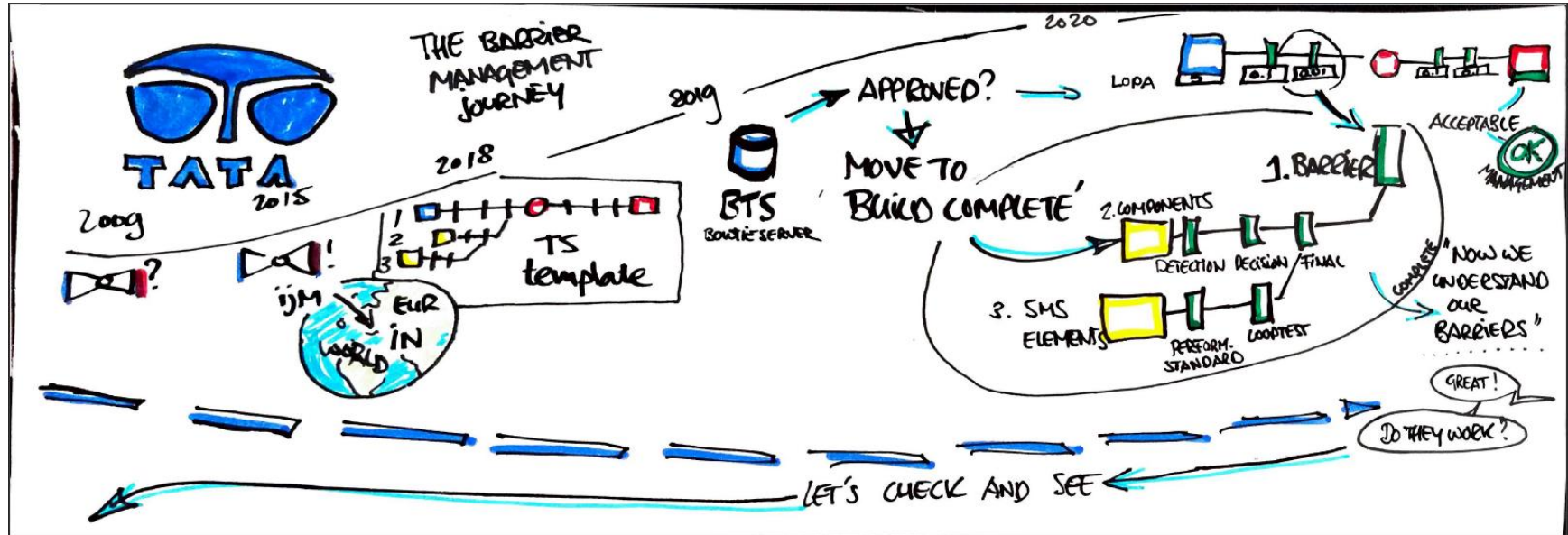
Raw materials - Pig iron - Steelmaking - Casting - Rolling - Coating



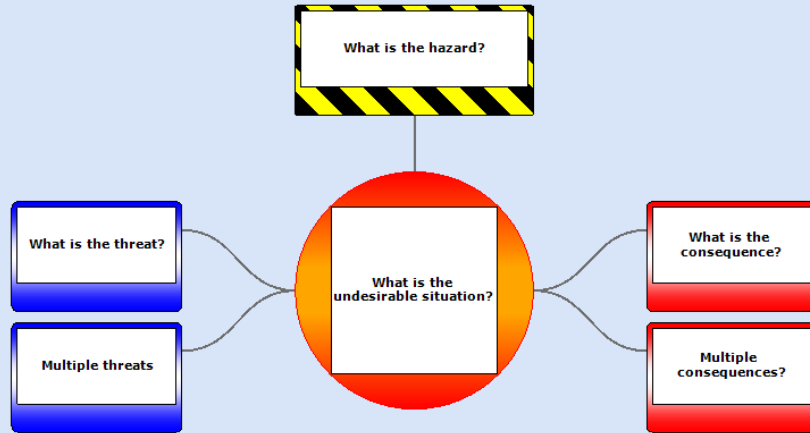
# Bowtie Methodology



# Introduction of Bowties in IJmuiden



# Integration of Bowties into daily business



Integration into mindset:  
**Process Safety training**

Instrumental (parts of) barriers:  
**Asset Integrity**

Procedural (parts of) barriers:  
**DMS & Confirmation interviews**

Managing Change:  
**MoC process**

Management involvement & control:  
**KPI's en steering committees**



# Process Safety training

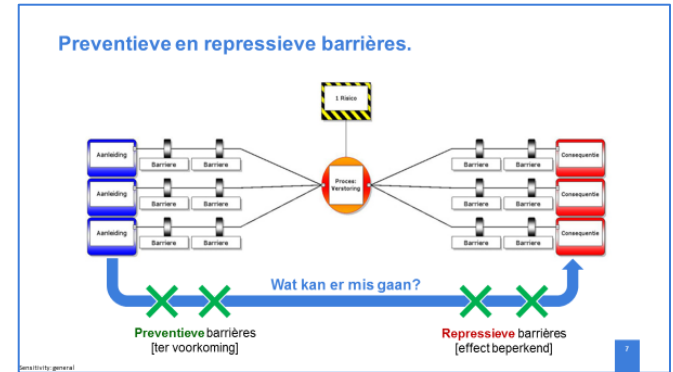
Training at all levels of the organization.

L1 Board and senior management

L2 Specialists

L3 Shift managers

L4 Operators / technical service



**TATA STEEL**

Een veilig proces start met drie keer JA!

**Let op!**

De drie gouden procesveiligheid vragen:

1. Weten we waar het mis kan gaan?
2. Kennen we onze veiligheids-barrières?
3. Weten we of de barrières goed werken?

Risk awareness and thinking in terms of barriers play a crucial role in the training sessions

# Asset Integrity

- Tata Steel works with a regime approach for Asset Integrity. This approach is determined centrally and rolled out in the various business units.
- Regime manager has monthly contact with the business units about progress and current issues related to the regime.
- The regimes are audited by the Process Safety department.

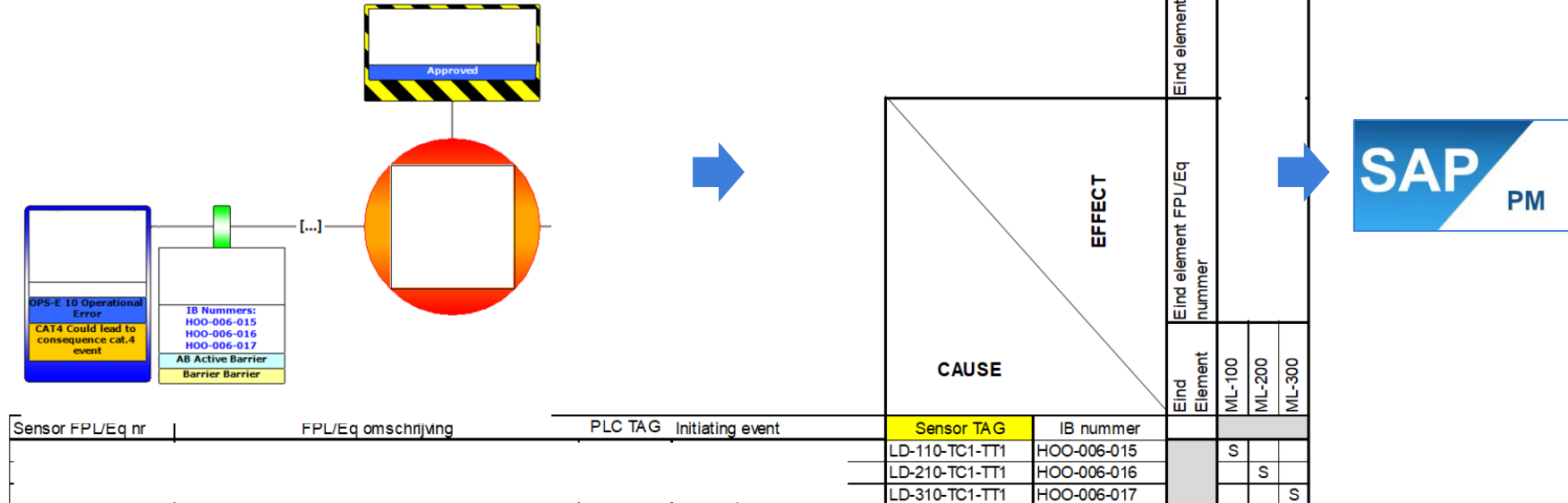
## Regimes

### Regimes

> Dienst Toezicht Drukhouders [DTD]	> DrukHouders Regime hoogovens [DHR]	> Works Arising Gas Systems [WAGS]	> Tank Integriteit Regime [TIR]
> Proces Pijpleiding Integriteit Regime [PPIR]	> Proces Vaten Integriteit Regime [PVIR]	> Hijs- en Hefmiddelen Integriteit Regime [HHIR]	> Constructie Integriteit Regime [CIR]
> ATmosphères EXplosives [ATEX]	> Instrumentele Beveiligingen Regime [IBR]	> Stichting Certificering Inspectie en OH van Stookinstallaties [SCIOS]	

# Asset Integrity -> Instrumental Safeguards Regime (IBR)

- Active barriers linked to IB Regime via IB Number
- In SAP, the corresponding elements can be requested with the IB number.





# Document Management System and Confirmation interviews

- In the case of procedural barriers, the relevant procedure is indicated in the bowtie.
  - The procedure is included in the Document Management System (DMS)
  - In DMS and in the procedure is added: contains 'Process Safety Critical element'. The procedure is included in the confirmation interviews programme.
    - The confirmation interviews are part of the Operational Excellence program.
    - Conversations in which managers confirm with operators in the field whether the procedures are being followed.
  - The specific tasks from the procedure are included in our Learning Management System, in order to demonstrate that employees are proficient.



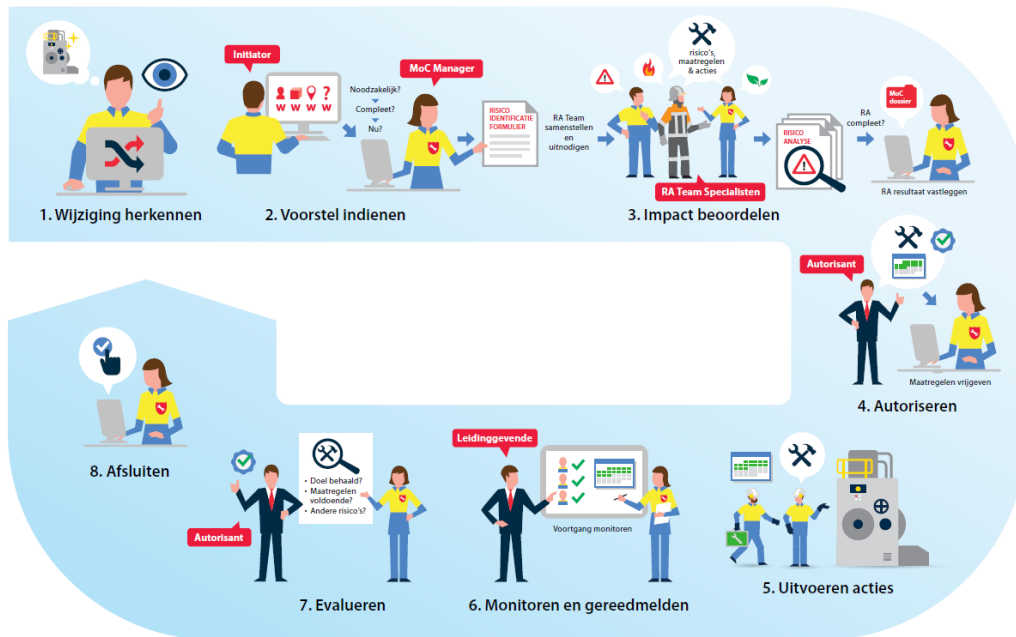
# MoC

- Process integrated in the work units.
- MoC managers and authors are trained by Process Safety specialists.
- Process safety specialists are involved in process safety risks.
- Integration of changes back into the Bowties



MoC

Wijzigingen beheer proces



# Management involvement and control

- Information from the Bowties is reported to management on a monthly basis using PowerBI.
- The Process Safety Steering Committee discusses emerging site-wide issues and policy changes. The operational management is represented in the steering committee.





# Next steps?

- Further integration with SAP
  - Technical Fault information
  - MoCs/temporary overrides
  - Feedback on the execution of planned inspections
  - Review of Process Critical Tasks
- Audit XP
  - Integration with existing observation rounds.
- Incident XP
  - Already in use. Further roll-out for occupational safety.
- Bowtie XP
  - Many new scenarios in the transition to a hydrogen-based production process

# Discussion

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HSSE Process Safety

[www.tatasteeleurope.com](http://www.tatasteeleurope.com)