

# Have a safe visit

Please stay in this room or in its vicinity



It is strictly forbidden to take pictures or recordings without permission



In case of emergency, please follow instructions from the safety responsible



Shared vigilance:  
take care of yourself and others



For your safety, use the handrail



Safety responsible

In case of emergency call 112





Confidentiality level 1 – free distribution

The background of the slide is a photograph of an industrial setting. In the center, a bright, glowing orange and yellow horizontal beam of light, likely representing molten metal or a high-temperature process, passes through a dark, metallic structure. Several workers in silver heat-reflective suits and protective gear are positioned around the beam, some holding tools or rods. The scene is dimly lit, with the primary light source being the intense glow of the beam. The overall atmosphere is one of a high-temperature industrial environment.

# OCAS applied R&D in H<sub>2</sub> economy

18/09/2019



Multidisciplinary approach  
Non standard & novel work  
Accelerating R&D processes of our customers

- OCAS is an advanced R&D centre active in **metallurgy, coating and application development**, providing metal based products and services
- OCAS is part of the FINOCAS holding

# Facts 2019

150  
employees  
highly skilled  
staff



40  
trainees  
internationally  
recruited



>100  
global customers  
active in various  
industrial sectors



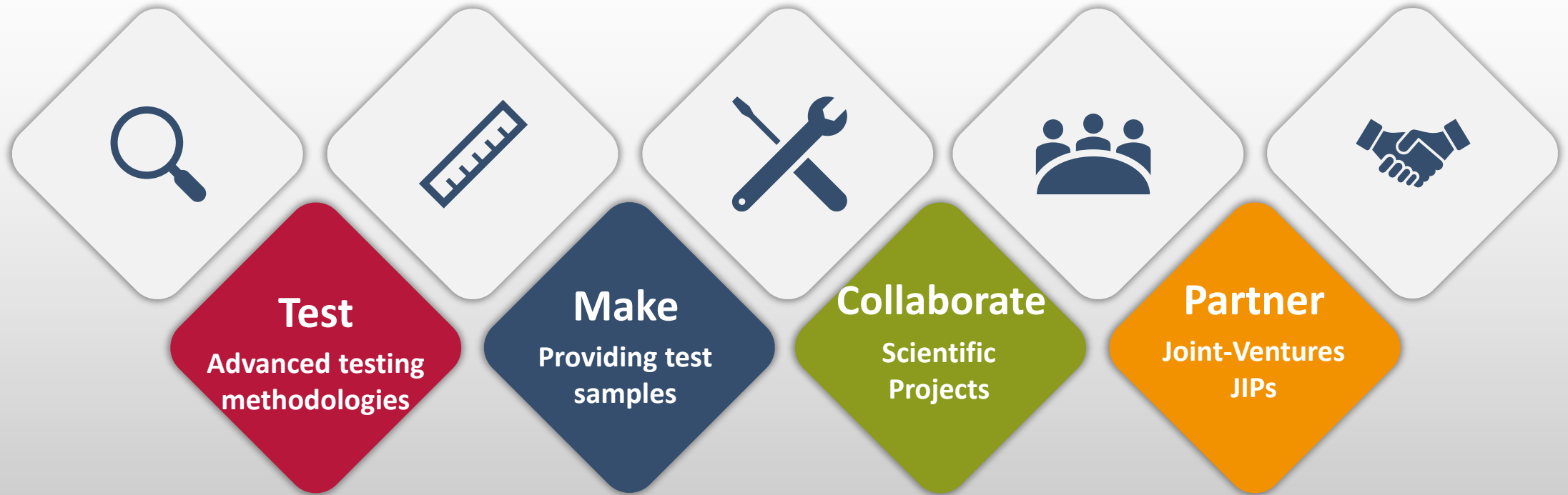
20 000  
m<sup>2</sup> labs  
at our sites in Zelzate &  
Zwijnaarde



>180  
partners  
scientific & academic  
worldwide network



# Working with OCAS



OCAS offers its competencies, know-how, equipment and methodologies to facilitate and help our customers succeed in their R&D journeys



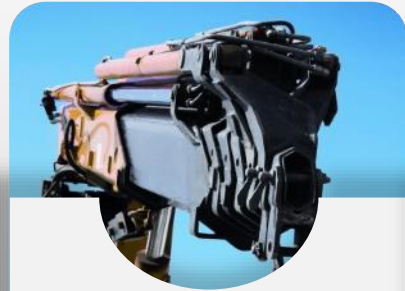
# Serving various market segments



**Metals  
industry**



**Offshore  
structures**



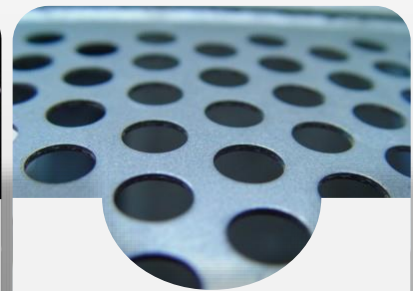
**Heavy  
machinery  
& equipment**



**Mobility**



**Consumer  
goods**



**Construction**



# Multi-disciplinary competences for a world in transition

01



## Power generation **OFFSHORE**

- Fatigue performance
- Welding technology
- Numerical simulation
- In-house engineered large-scale testing
- Corrosion resistance
- Hydrogen interactions
- Alloy development

02



## Green **MOBILITY**

- Electromagnetic characterisation
- Coating development
- Powerful modelling
- Low loss grade development
- Ramping up industrialisation

03



## Assuring **RELIABLE USE**

- Preventing component degradation
- Developing novel grades resistant to wear, corrosion, fatigue, hydrogen embrittlement, etc.
- Testing under combined conditions
- Lifetime prediction & extension

04



## REACH compliant **COATINGS**

- Chromium free solutions
- Cost-reducing co-engineering
- Thin glass coating
- Advanced interface testing
- Different substrate geometries



# OCAS R&D partner for Hydrogen



**HYDROGEN**

## Lab capacity

- Simulation of H<sub>2</sub> uptake: loading / unloading
- Mechanical testing in degraded condition
- Numerical simulations & modelling
- Characterisation

## Applied R&D in Hydrogen economy

- Non-standard questions
- Focus on the operation circumstances, in loading conditions
- Driven by energy transition:
  - Existing assets/equipment in hydrogen-related use
  - Empirical demonstration to conclude on fitness for purpose
  - Use beyond design purpose (old, partly degraded > now H<sub>2</sub>)





# OCAS R&D partner for Hydrogen

borit



- ✓ Unique forming technology
- ✓ Bipolar plate assemblies for fuel cells

[www.borit.be](http://www.borit.be)



- ✓ Fuel cell stacks and systems
- ✓ Mobile and stationary applications

[www.powercell.se](http://www.powercell.se)



Steel & Hydrogen

- ✓ Three conferences organised by OCAS
- ✓ Focussing on influence of H<sub>2</sub> on metals
- ✓ 177 participants from 27 countries
- ✓ Unique in its kind – next edition in 2021



- ✓ [CO<sub>2</sub>QUEST](#) FP7: coupled numerical model of pipe decompression and ductile fracture
- ✓ Proprietary Hydrogen Induced Cracking & Stress Corrosion cracking tests

[vimeo.com/261519045](https://vimeo.com/261519045)

# Summary

- OCAS for applied R&D, industrial context
- Fundamental knowledge about hydrogen
- Focus on non-standard inquiries:
  - Specific loading conditions
  - Specific testing
  - Specific answers



**Thank you!**

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