

IoTWeek

Dublin — June 20-23, 2022

IoT as an enabler for Circular Manufacturing: self-symbiosis in Zinc Alloy production

Alessandra Arezza (DGS S.p.A.), June 22nd 2022

GLOBAL VISION:

IoT TODAY AND BEYOND

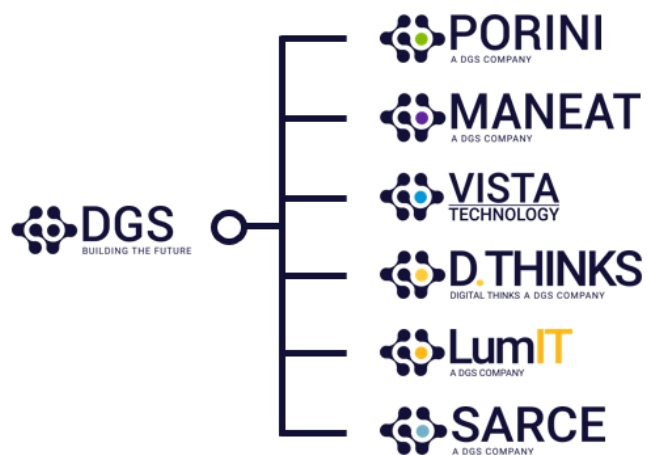
IoTForum

DGS at a glance

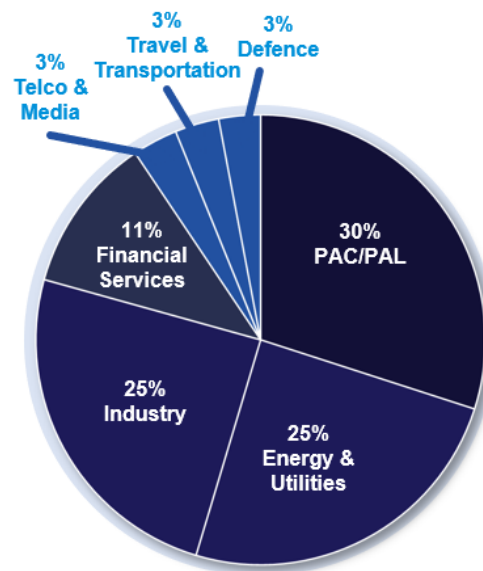
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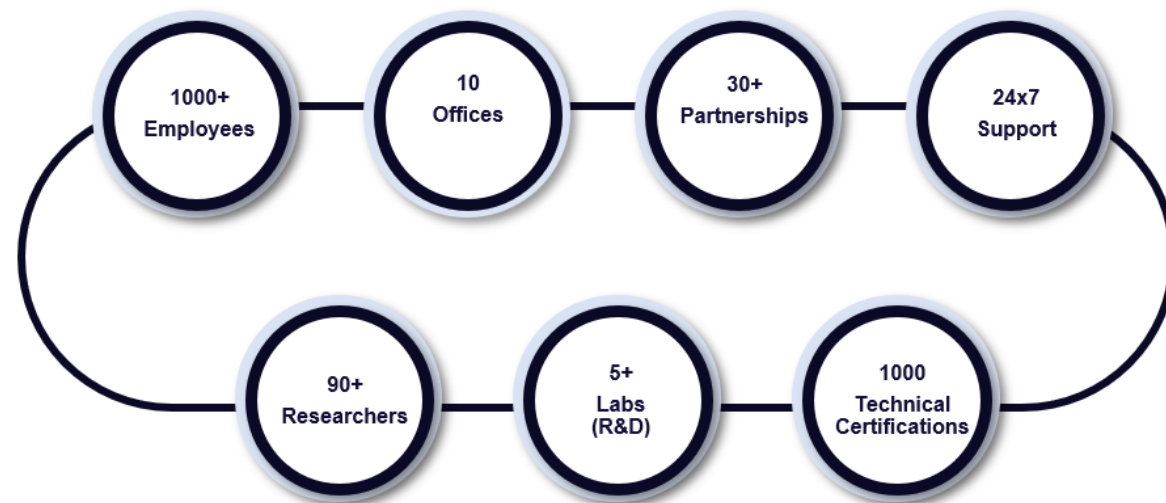
The Group



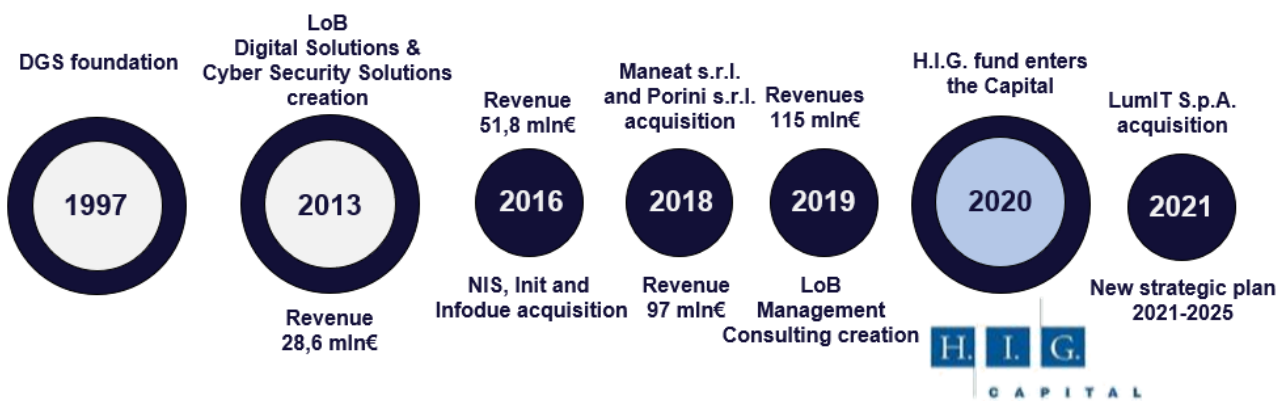
Revenues by market



Info

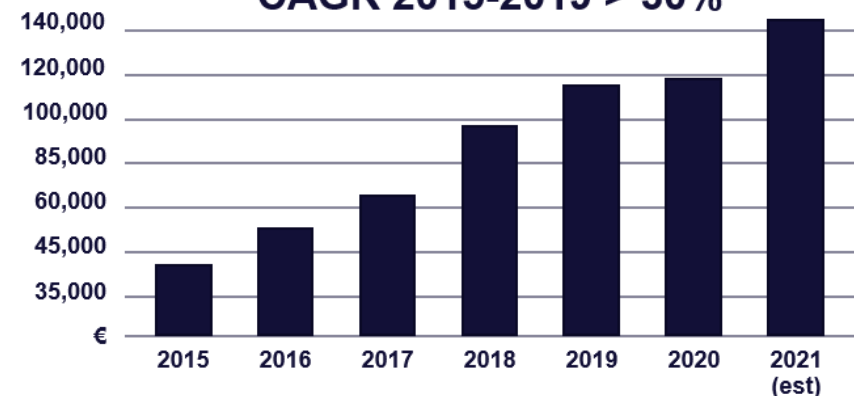


History



Revenues

CAGR 2015-2019 > 30%



Industrial Pilot in Zinc Alloy Production

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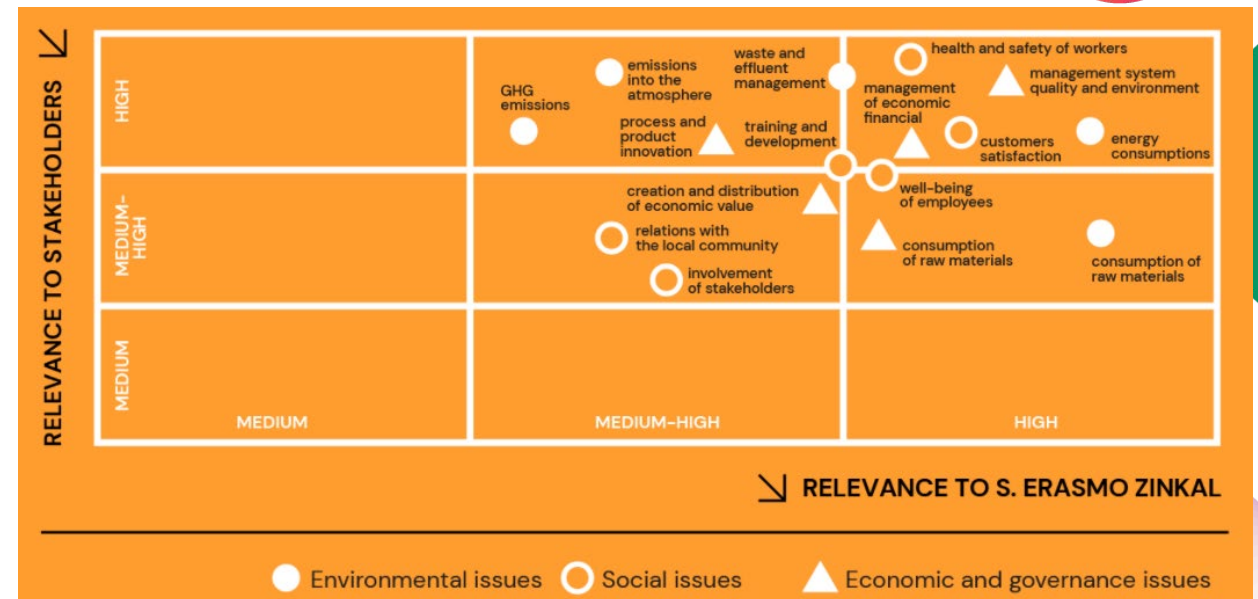


- Foundry specialised in **zinc alloys** production for die casting.
- Over **60 years** of industrial experience
- ~**50** employees
- ~**45M€** revenues
- **3** production lines



Continuous improvement thanks to investments and experiments towards the **sustainability** of the entire production cycle following the **EU Green Deal** lighthouse and **Circular Economy** guidelines.

- **100%** Raw materials (SHG zinc, Mozal aluminum, magnesium and copper) zamak scraps and by-products entering the production cycle
- **99.8%** Total waste sent for recycling
- **2.2%** Reduction of CO2 emissions per unit of product



APPAREL



CAR COMPONENTS



MODEL BUILDING AND TOYS



FURNITURE COMPONENTS



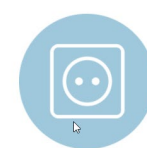
INTERIOR DECORATION COMPONENTS



SANITARY COMPONENTS

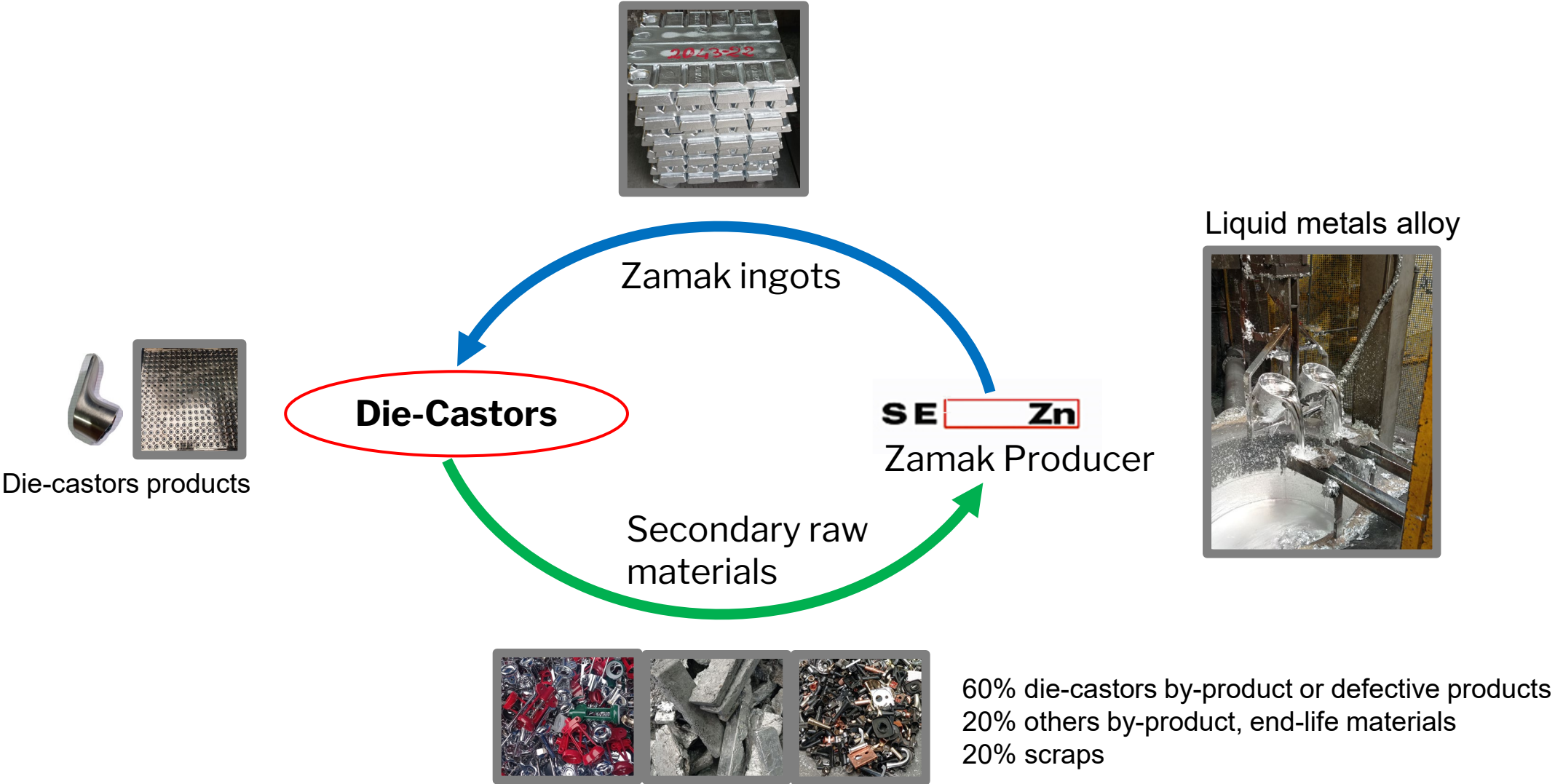


KITCHEN ACCESSORIES



ELECTRICAL COMPONENTS

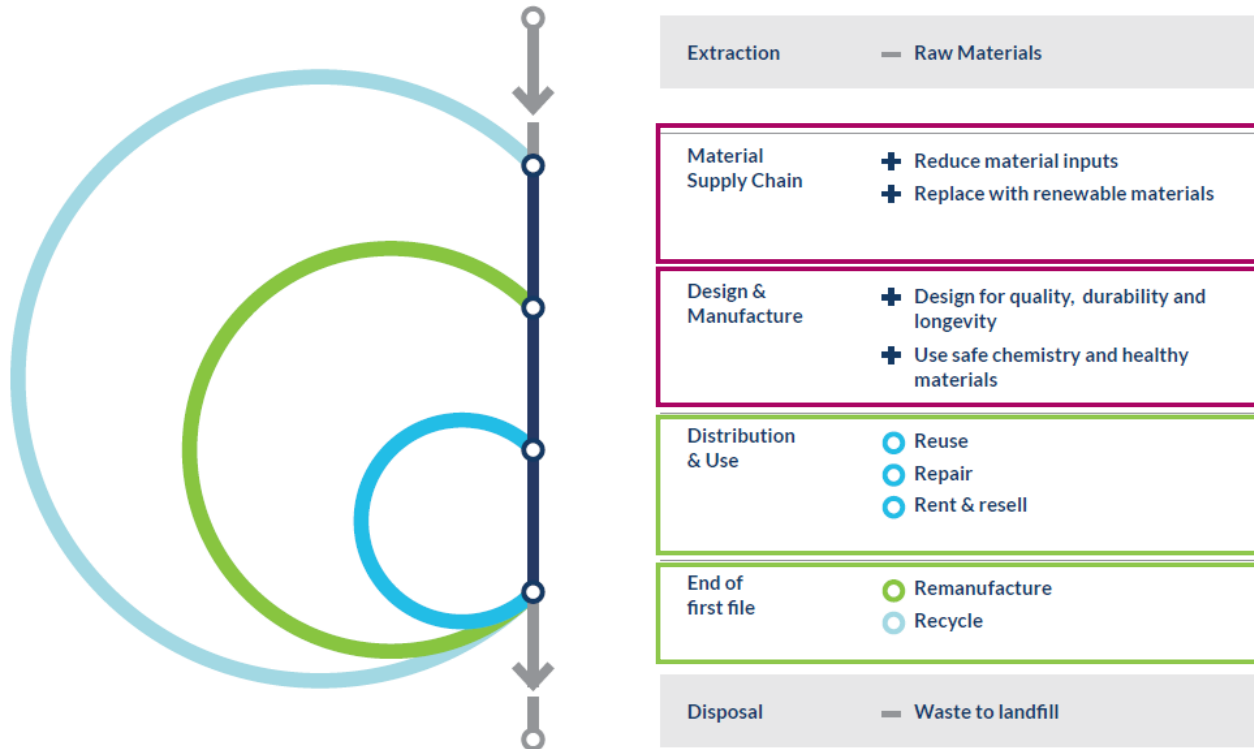
A model of self-symbiosis industry



Objectives vs Circular Economy Needs

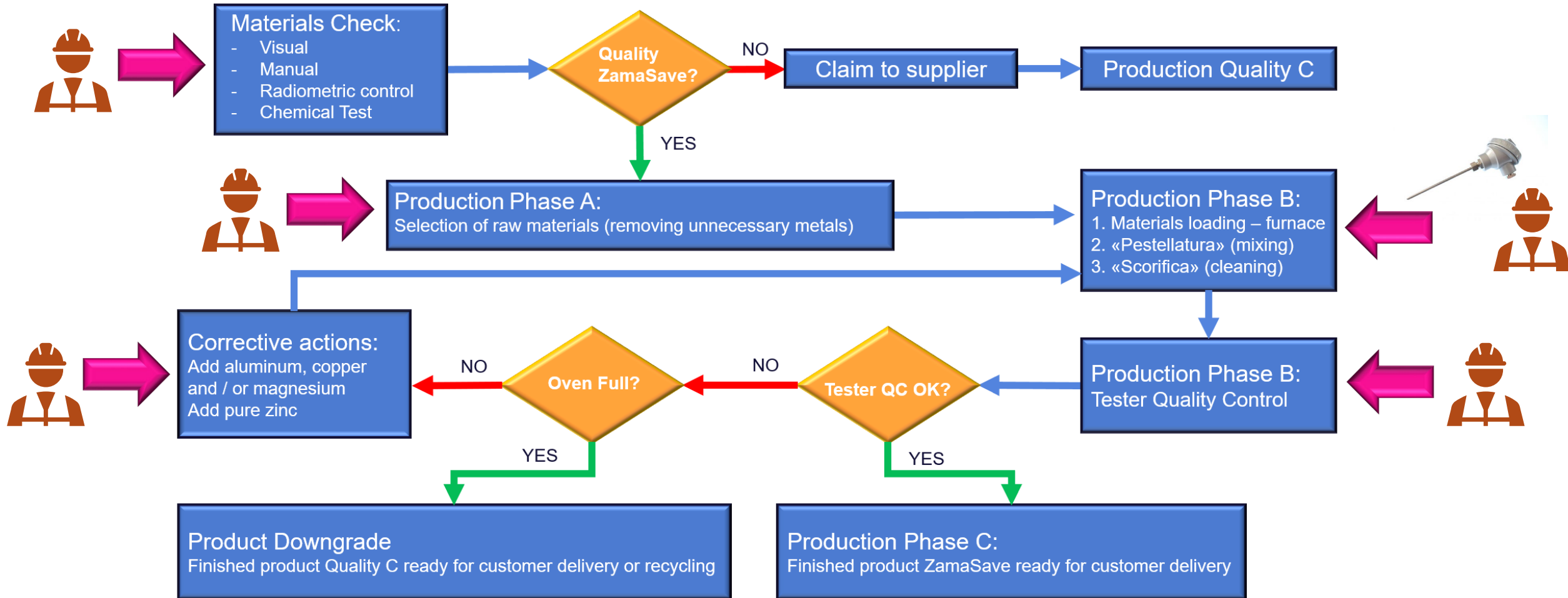
Circular Economy Diagram

(Source: Closed Loop Partners)²

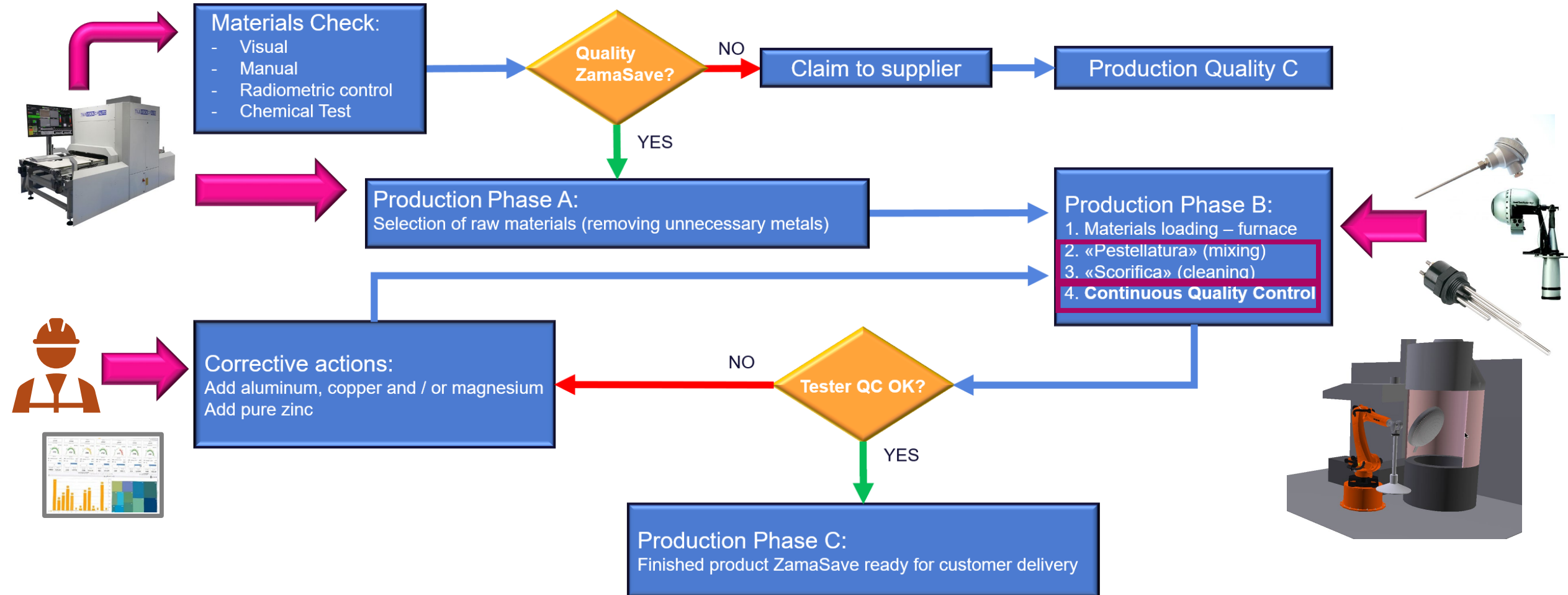


- Innovative IoT platform for continuous monitoring across the whole production process:
 - to identify secondary raw materials qualities and compositions
 - to analyze in real-time alloy chemical characteristics in furnace
 - to reduce energy consumption (e.g. regulation of the fun for powders sucking)
 - to reduce waste and emission
 - healthier human working environment
- a new concept of certification and digital tracking and tracing of secondary raw materials (SRM) though Digital Product Passport of SRM
- Innovative digital zamak alloys design based on AI analysis and simulation to identify the quality of secondary raw materials most suitable to:
 - reducing waste and emission
 - extracting the best formulation to be offered to customers for the production of other object
- to improve collaboration with all stakeholders involved in the product value chain

ZamaSave Production Process - AS IS



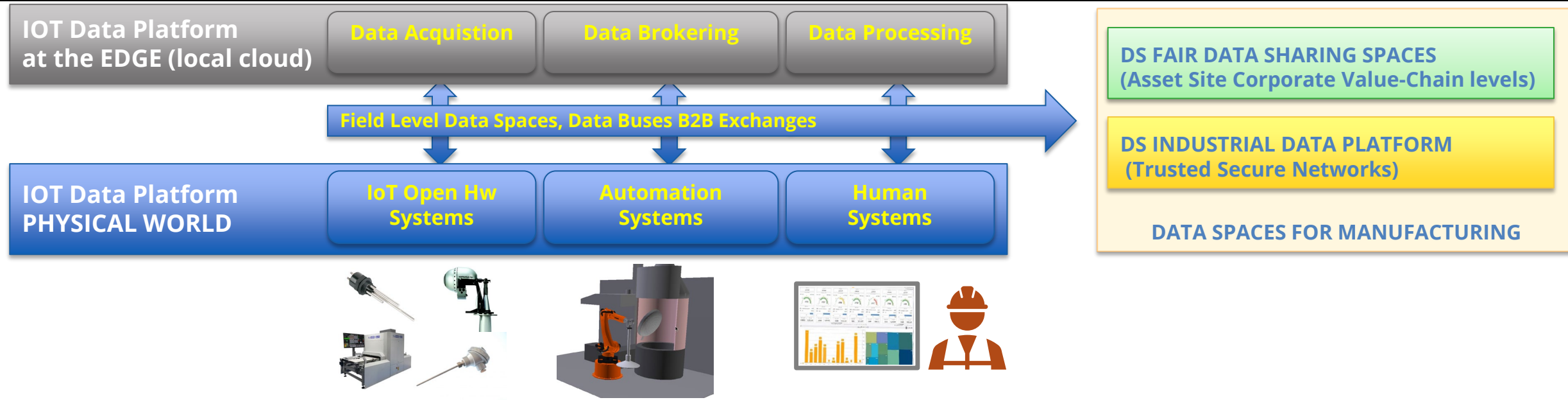
Zamasave Production Process – TO BE



Ongoing Solution

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- to introduce an innovative decision support system based on IIoT tools and AI based analysis, able to monitoring
 - production process (criticalities, alert, suggested corrective actions, etc.)
 - energy consumptions
 - the level of waste and emissionsallowing a rapid reconfiguration of materials compositions
- an AI based decision support system, able to connect the chemical-physical-mechanical characteristics of the ZamaSave alloys to the various die-cast objects made by his customers. This solution will help zamak producers and customers to simulate and test different qualities of raw materials as well as new alloys on a virtual environment (waste reduction of materials used for test)
- a new concept of certification and digital tracking and tracing of secondary raw materials (SRM) though Digital Product Passport of SRM

Expected Impacts

Energy

- 5% of energy consumption reduction

Waste Savings

- 10% of waste and emission reduction

Market

- innovative zamak alloys based on the quality of secondary raw materials most suitable towards the EU Green Deal objectives

Productivity

- production process leadtime reduction
- 5%-10% production volumes increase

Workers well-being

- reduction of powders emission



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Thank you!

Find more:

www.dgsspa.com

www.erasmozinkal.it

iotweek.org