Teresa Ros Dosdá – ITC (Institute of Ceramic Technology)
Ceramics Newcomer Training

SPIRE-SAIS FINAL CONFERENCE, 23 MAY 2024

Co-funded by the Erasmus+ Programme of the European Union

INSTITUTE FOR CERAMIC TECHNOLOGY

ABOUT ITC

We are a **technological institute** with 55 years of experience, distinguished for being a pioneer in the **university-industry cooperation system**.

Main activities

Own R&D

Internal lines with a certain risk, aimed to acquire knowledge.

R&D for companies

Industrial objectives at short and medium-term.

Technological consultancy

Application of the knowledge for solving industrial problems.

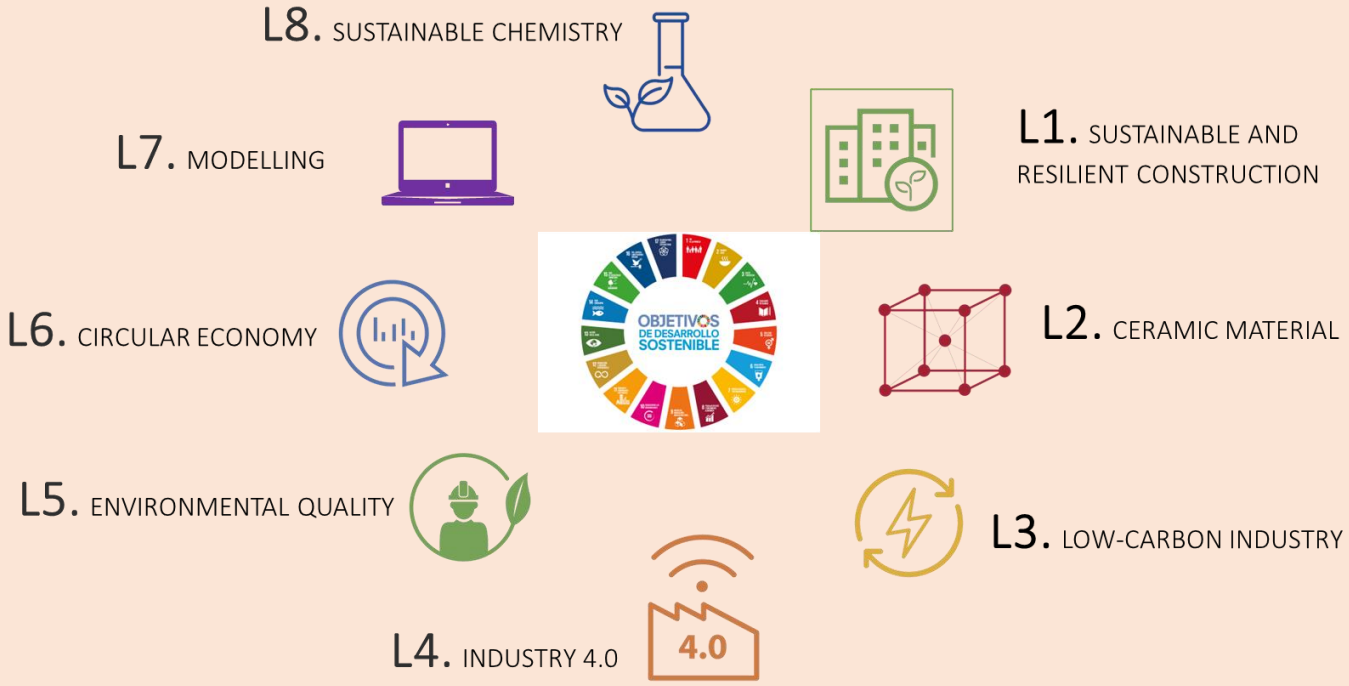
Analysis and tests

From raw materials to finished product.

Training

Training of new professionals and Postgraduate training.
Custom training for companies.

Research lines



SECTORS

#Coatings #Nanotechnologies

#Habitat #Machinery #Plastics

#Energy #Chemical #Sanitaryware

#Glass #Ceramictiles #Inkjet

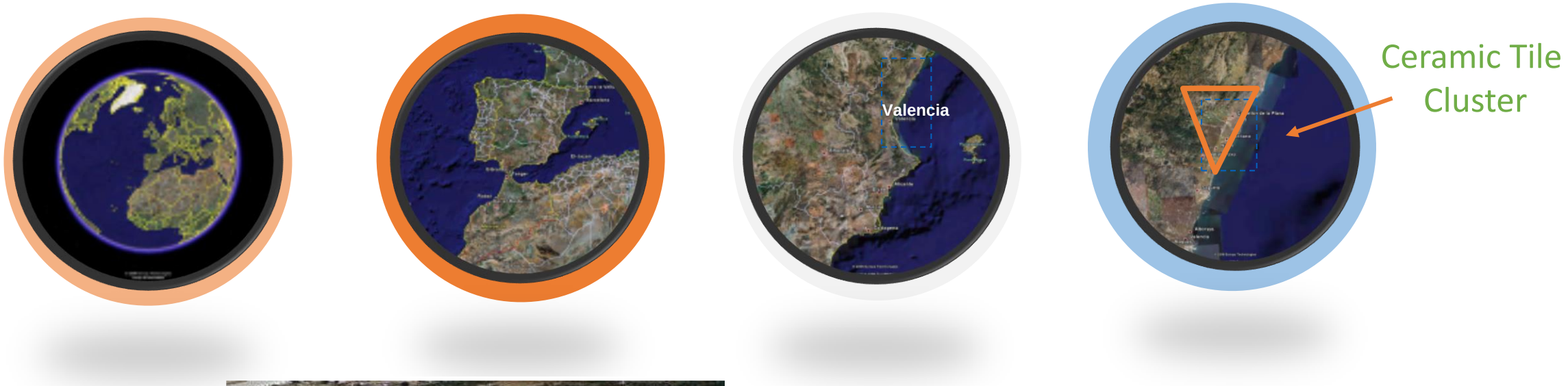
#Environment #Refractories

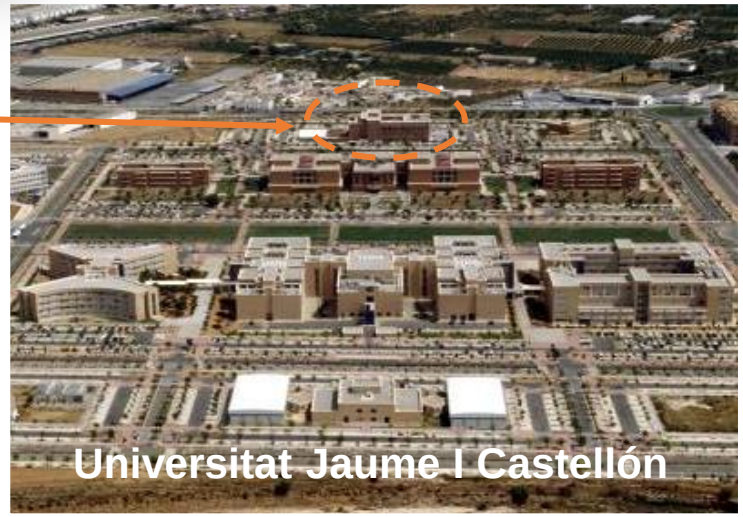
#Petroleumderivates #Membranes #Technicalceramics

#Constructionsystems

ABOUT US

CERAMIC CLUSTER OF CASTELLÓN AND ITC





CERAMIC TILE CLUSTER

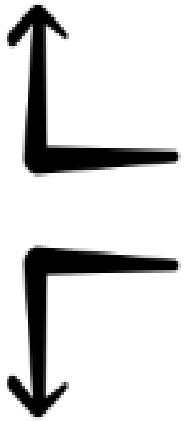
- ✓ 180 Tile manufacturers
- ✓ 26 Glaze, Frit and Ink producers
- ✓ >30 Machinery producers
- ✓ 16 Raw Materials suppliers

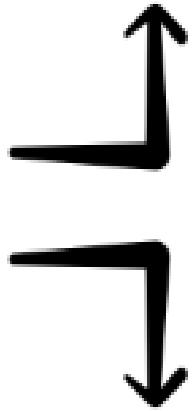
>21,000 DIRECT JOBS
5,500 M €

Identification of skills and capabilities on IS & EE
Coordination of this task in all SPIRE sectors.

Job profiles related with IS and EE
Identification for the ceramic sector

Existing training material
Research and selection





SPIRE-SAIS

AICE jtc Universitat Jaume I

Colorker

ASCER
Asociación Española de Fabricantes de Azulejos y Pavimentos Cerámicos

Cerame-Unie
The European Ceramic Industry Association

Skill/knowledge/experience gaps in terms of IS and EE in training programs and recruitment process

Collaboration in the development of the **self-assessment tool**

New training material:
- New comers (basis for all other sectors)
- EE in the ceramics sector
- Examples for the IS course in the ceramics sector

Skills Alliance for Industrial Symbiosis-
A Cross-sectoral Blueprint for a Sustainable Process Industry
(SPIRE-SAIS)

IS & EE for Ceramic Sector Newcomers pilot course

Co-funded by the Erasmus+ Programme of the European Union

Project Number
612429-EPP-1-2019-1-DE-EPPKA2-SSA-B

IS & EE for Ceramic Sector Newcomers

Why?

To provide basic knowledge of the sector's **production processes** and specific approaches to **EE and IS.**

For whom?

New employees whose jobs are linked in some way to EE or SI
Employees who wish to apply for recruitment processes to fill EE and IS positions.

How?

Course sector-specific

- Sector basics
- SI Implementation
- EE implementation

Duration: min. 5h.

Used as a model for other SPIRE sectors

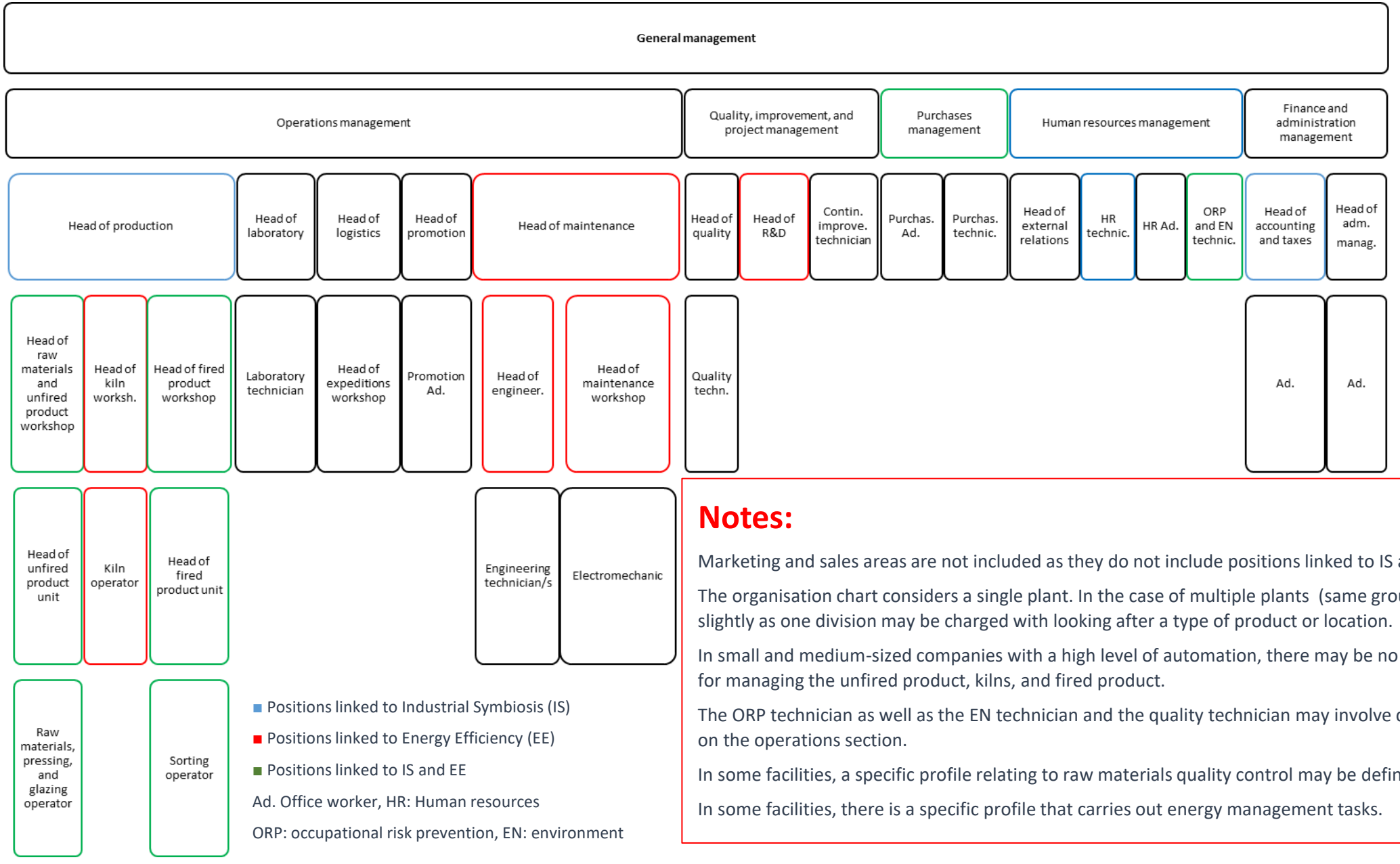
Previous knowledge

Not required.

It is a basic course for employees to a new sector.

More advanced courses: training offered by specialised centres.

Jobs position in the ceramic industry



- Positions linked to Industrial Symbiosis (IS)
- Positions linked to Energy Efficiency (EE)
- Positions linked to IS and EE

Ad. Office worker, HR: Human resources

ORP: occupational risk prevention, EN: environment

Notes:

Marketing and sales areas are not included as they do not include positions linked to IS and EE.

The organisation chart considers a single plant. In the case of multiple plants (same group), the organisation may change slightly as one division may be charged with looking after a type of product or location.

In small and medium-sized companies with a high level of automation, there may be no differentiated professional profiles for managing the unfired product, kilns, and fired product.

The ORP technician as well as the EN technician and the quality technician may involve differentiated profiles and depend on the operations section.

In some facilities, a specific profile relating to raw materials quality control may be defined.

In some facilities, there is a specific profile that carries out energy management tasks.

Module 1:
The ceramic product

1.General concepts of the sector

1.1.The ceramics value chain system

1.2. European ceramic production value and trade balance.

1.3. Ceramics industry sub-sectors

2. Ceramic manufacturing process

2.1. Ceramic products

2.2. Ceramic manufacturing process stages

Module 2:
Energy efficiency: present and future decarbonization in the ceramics sector

1. Technologies and current energy consumption in the ceramics industry

1.1. Description of the process

1.2. Consumption and CO_2 emissions

2. Decarbonisation in the Ceramics Cluster: Roadmap

2.1. Thermal energy optimization

2.2. Decarbonisation strategy

2.3. Use of renewable gases

2.4. CO_2 capture

2.5. Electrification of processes

2.6. Fossil-free energy sources

2.7. 2030 Vision

Module 3:
Circular economy and industrial symbiosis in the ceramics sector

1. Basic concepts on CE

1.1. Definition of CE

1.2. Principles and strategies of CE

1.3. EU CE strategy framework

2. Basic concepts on IS

2.1. Definition of IS

2.2. Types of synergies

2.3. Types of resources

2.4. Synergy detection methodology

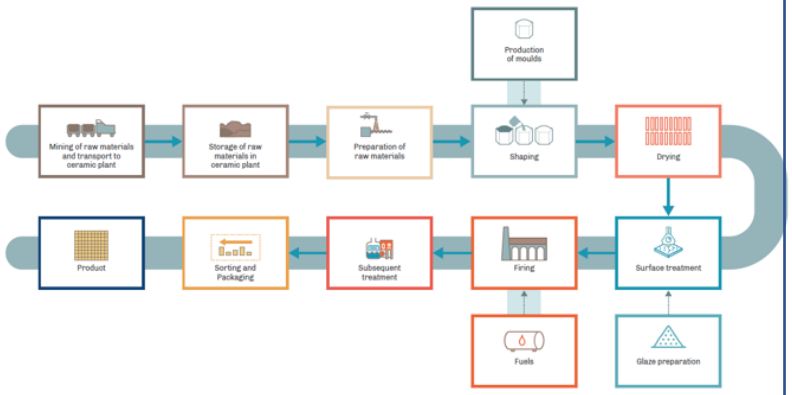
2.5. Main barriers and success factors

2.6. Current IS practices in the ceramic sector

2.7. Emerging practices under study

2.8. Potential resources to be shared in the ceramics sector

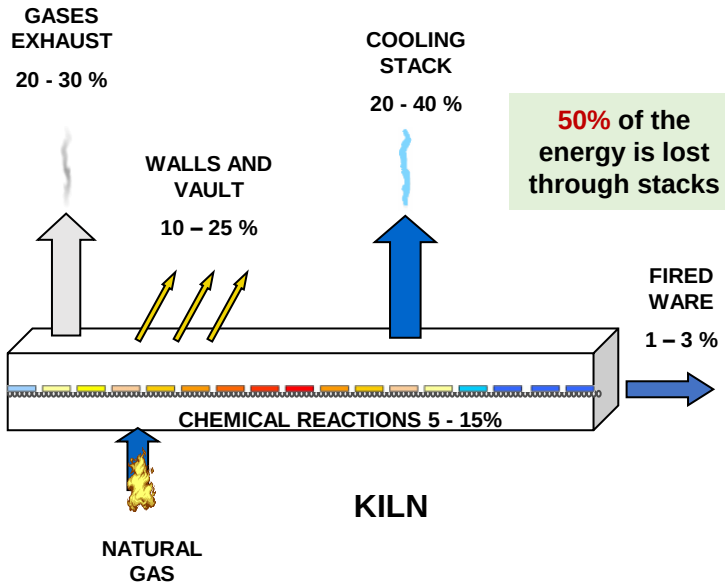
Module 1:
The ceramic product



Source: Cerame-Unie, Ceramic roadmap to 2050

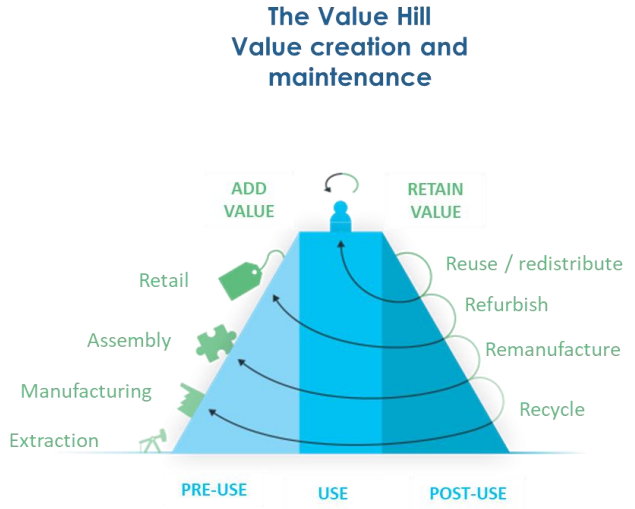
1. Preparation of raw materials
2. Component mixing
3. Shaping/forming of ware
4. Drying of ware
5. Surface treatment and decoration
6. Firing
7. Subsequent treatment (product finishing)
8. Addition of auxiliary materials
9. Sorting, packaging and storage

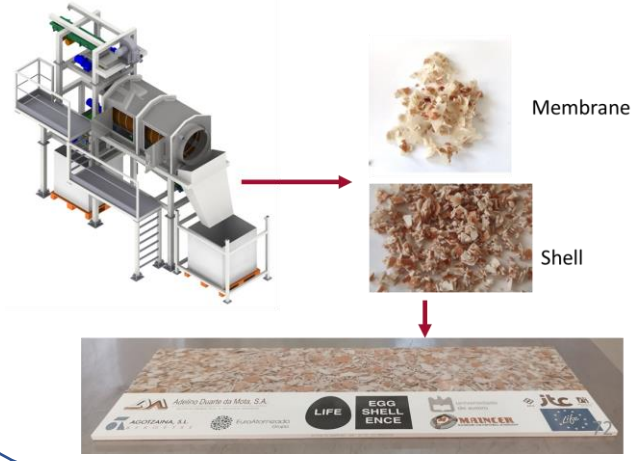
Module 2:
Energy efficiency: present and future decarbonization in the ceramics sector



50% of the energy is lost through stacks

Module 3:
Circular economy and industrial symbiosis in the ceramics sector





REFLECTIONS

INDUSTRIAL SYMBIOSIS:

We perceive it as more multidisciplinary but more cross-sectoral.

There are many initiatives in many sectors that have not yet been categorised as industrial symbiosis practices.

It is important to provide sector specific examples

ENERGY EFFICIENCY

It requires more technical and technological knowledge

The solutions are sector-specific, although it is very interesting to benchmark because there is additional technology that is applicable to various sectors.

TRAINING MATERIAL AND BLUEPRINT

We see the **SKILLS4Planet platform** as a valuable opportunity to concentrate, harmonise and regulate training in all key sectors of SPIRE.

Overcome the barriers for the implementation in the sector of energy efficiency and industrial symbiosis.

DANKE!
THANK YOU!
MERCI!
GRAZIE!
GRACIAS!
DANK JE WEL!