What do we want to do?

The project is based on the development of oxide coatings with superior wear/corrosion resistance and insulation properties using a cost-effective and environmentally friendly production process based on Suspension Thermal Spraying (STS).

The project aims to do the first implementation of STS in SME job shops, demonstrating its advantages in selected components:

- Cylinders for hydroelectric applications
- Off-shore piston rods
- Industrial valves
- Pump sealing seats
- Ball bearings with electrical insulation.

**STSWear**

Suspension Thermal Spraying Coatings

**Strategy**

1. Development of special hardware to spray suspensions
2. Implementation of the suspension hardware in the current spray booths of the SMEs job coaters
3. Production of suspension feedstock based on ternary oxide ceramic composition (Al₂O₃-TiO₂-Cr₂O₃)
4. Development and characterization of the new STS coatings tailored for the selected market segments:
   - At laboratory scale
   - Optimization and up-scaling
5. Validation of the industrial STS coated prototypes

**Partners**

**STS HARDWARE DEVELOPER**

- GTV
- Stern

**END USER**

**COATING PRODUCERS**

- TMCOMAS
- obz

**RESEARCH CENTERS**

- Fraunhofer
- IK4-TEKNIKER
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STS Coatings

The ceramic coatings obtained using Suspension Thermal Spray (STS) offer interesting advantages in comparison with traditional thermal sprayed coatings:

- Smoother surface (Ra ≈ 1 µm instead of Ra ≈ 10µm)
- High wear protection due to denser, nano-crystalline microstructure
- Improved mechanical performance (higher hardness & toughness)
- Improved wear-corrosion resistance
- High electrical insulation
- Cost efficient due to less expensive post-processing (mechanical finishing)
- Environmentally friendly processing

Strategy

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![Coatings Diagram]

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