




Resource Efficiency in Glass Bottles Production

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THE COMPANIES

- **HYPERTEC:**
 - Engineering company, +30 years experience
 - Located in Trento and Bologna (IT), over 50 professionals
 - Active in machinery (packaging, ceramics, glass), energy technologies, automotive
- **CRIT:**
 - Innovation company, owned by 26 large industries, Modena (IT)
 - In SPIRE since 2015 (Ceramics, Cement, Chemical, Engineering)

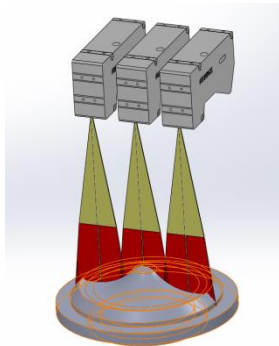
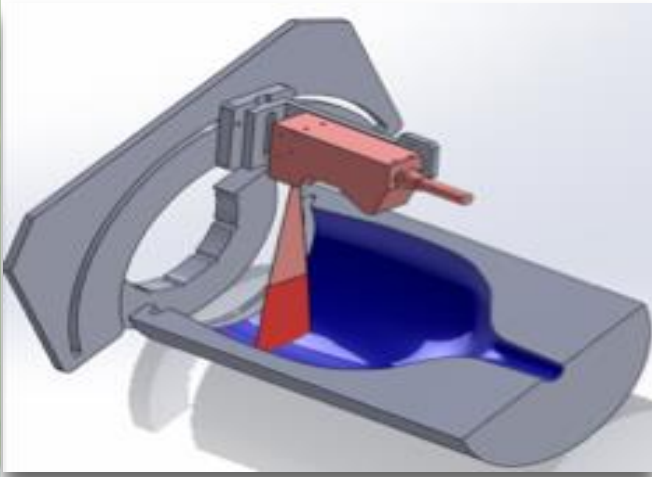


THE PROBLEM

- Glass bottles production: a **resource inefficient** process industry
- **11M** glass bottles produced **daily** in Italy alone (Saint Gobain, Vidrala...)
- Bottlers need **extreme volume accuracy** → 10% waste due to non conformity
- Waste mainly due to **wear in moulds** (high pressure and temperature), now maintained manually



THE SOLUTION



- A dedicated **laser measurement system**
- Dedicated 3D modelling software to capture cavity image
- Certifies the **mold volume** the and consequently the **nominal capacity of the bottle** in a few minutes
- Accuracy of measurement of 1 cc in 1000 cc
- Issues :
 - Demand **high accuracy** <0.01 mm
 - Extreme **variability** forms molds
 - Measurement **speed**

THE RESULT



- A repeatable and certified method to measure **mold measure**



Ensure the bottles
nominal capacity

- **Significant advance** vs. state of the art (indirect manual methods)
- Preserve bottlers from:
 - **Unlawful** lower volume bottles
 - **Inefficient** higher volume bottles

KEY BENEFITS

- Increase **resource efficiency** in the glass industry by at least 20%
- This could help saving **220K glass bottles per day** in Italy alone
- Related **reduction** in CO2 emissions, raw materials, energy consumption
- Clear **economic benefit** for process industry



FURTHER STEPS

- Technology now at TRL6
- Possible actions towards exploitation:
 - Fast Track to Innovation
 - Provide a case study for:
 - *SPIRE 06-2016 → Business models for flexible and delocalised approaches for intensified processing*
 - Involve a customer and participate in:
 - *SPIRE 09-2017 → Pilot lines based on more flexible and down-scaled high performance processing*
 - *SPIRE 07-2017 → Integrated approach to process optimisation for raw material resources efficiency*