

Sirris

Driving industry by technology

Sirris – Collective center of the Belgian technology industry



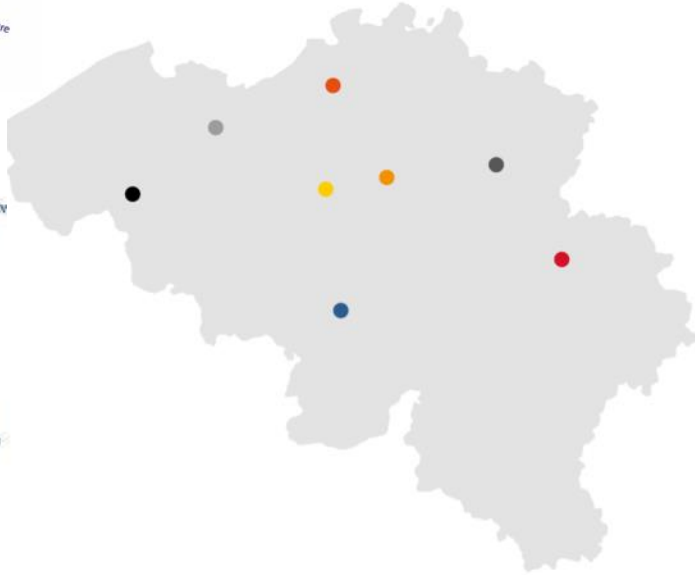
Partnering Event & Matchmaking,
June 2, 2016 – Berlin

jacques.halleux@sirris.be



driving industry by technology

High-tech infrastructure & Application Labs close to companies



High-tech infrastructure, from demonstration to implementation



Coatings Deposition



Additive Manufacturing



Micro Precision



Microfabrication



Robotics & Cobots



Climatic Test Chamber

5 domains of technology

SOFTWARE ENGINEERING
CLOUD COMPUTING
DATA INNOVATION



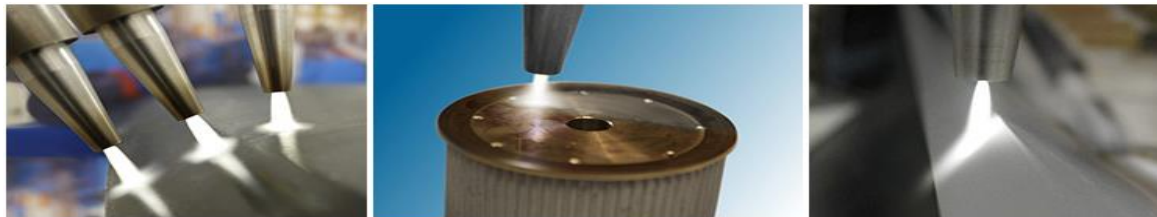
FACTORIES OF FUTURE
WORLD CLASS TECHNOLOGIES
ADDITIVE MANUFACTURING

METALS
COMPOSITES
PLASTICS & HYBRIDS
COATINGS
NANOMATERIALS

ECO-MECHATRONICS
SENSORIZED FUTURE
MODEL BASED DESIGN

Project Idea n°1: 2K multimat

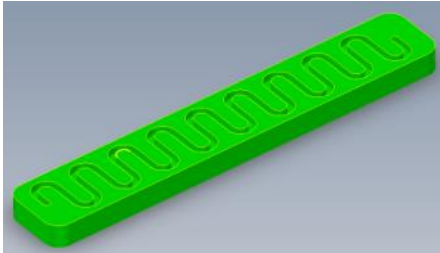
- Overmoulding of a thermoplastic on:
 - another thermoplastic
 - a thermoplastic composite (ex. ABS or PC on PA6 composite)
 - a thermoplastic elastomer (integration of a molded joint)
- After surface cleaning & activation with an atmospheric plasma



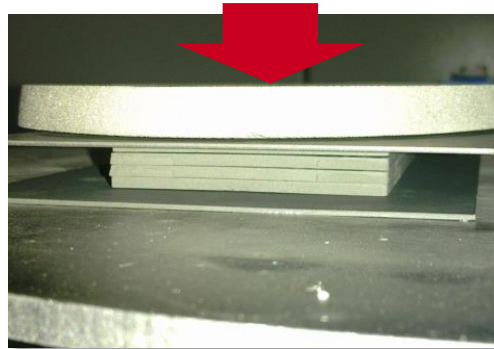
- Looking for a research partner active in atmospheric plasma technology

Project Idea n°2: low-cost production of micro-reactors

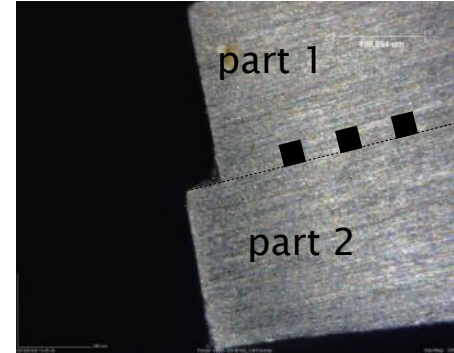
- Sinter-joining of metallic or ceramic components to manufacture low-cost micro-reactors



Injection of PIM plates with micro-grooves



Stack & sinter-joining of plates



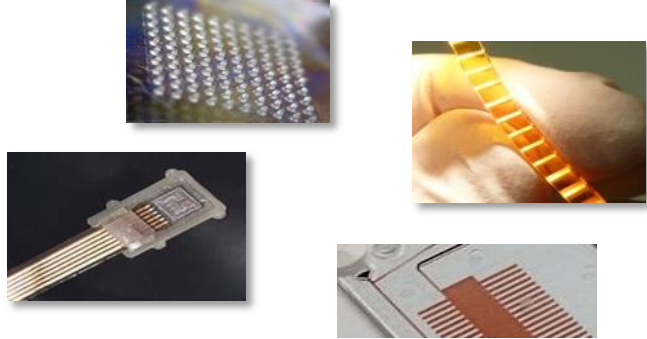
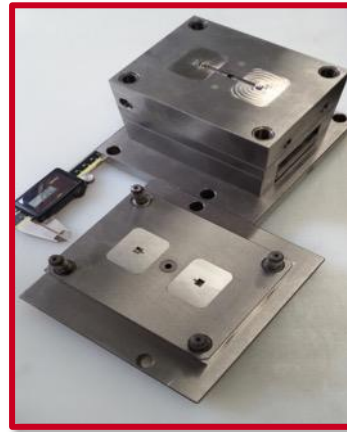
Micro-reactors with closed micro-channels

- Looking for a research partner expert in powder injection moulding & sintering

Project idea n°3: Rapid and Innovative Tooling for μ -Molding

Requirements in micro-molding

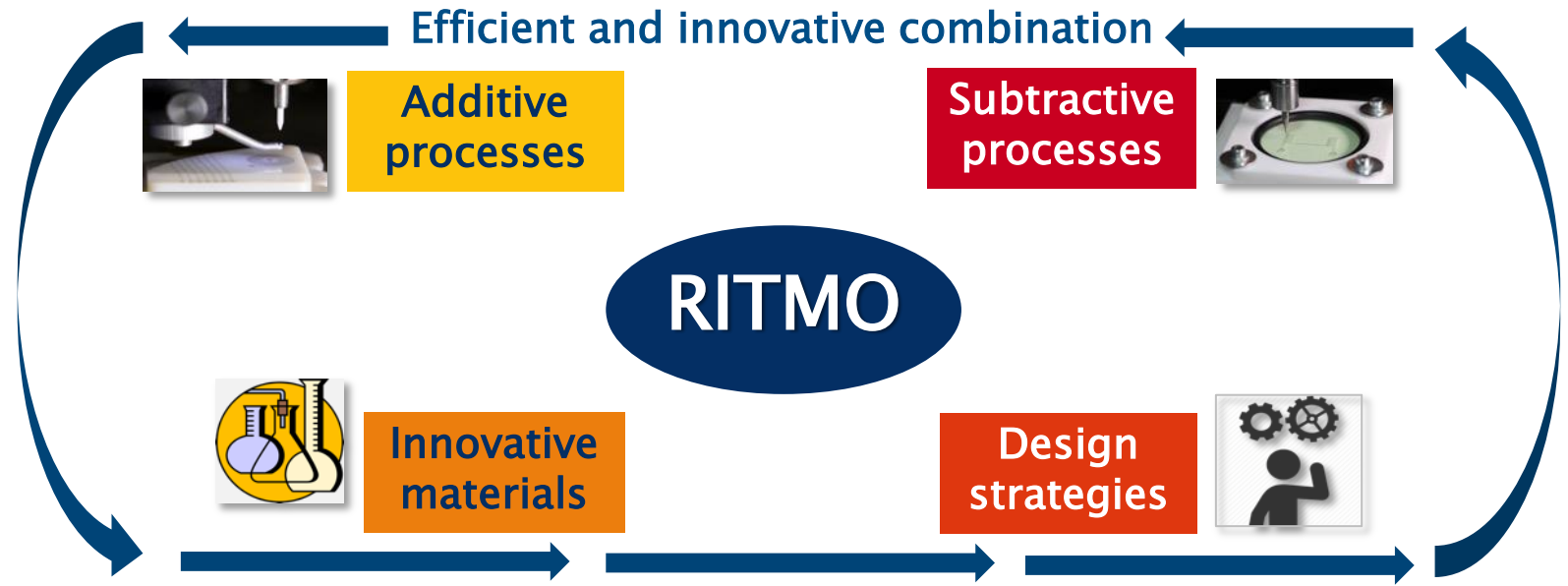
- accuracy / reliability
- custom-made / small / pre-series
- mini- / micro- details
- high surface quality
- **ultra-short lead time**
- **low cost**
- transferability



Domains

- micro-optics
- micro-mechanics
- micro-packaging
- micro-fluidics...

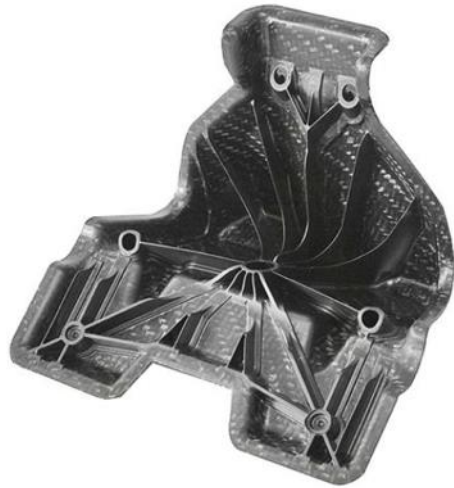
Project idea n°3: Rapid and Innovative Tooling for μ -Molding



Looking for partner with expertise in advanced materials & processes and in high resolution additive manufacturing

Project Idea n°4: Overmoulded Hybrid Sandwiches

Common state of the art :
shaped organosheet combined
with overmolding



Composite technology : sandwich materials
to improve bending performance !!

Single Skin - t

Weight: 1
Strength: 1
Stiffness: 1



Sandwich - 2t

Weight: 1
Strength: 6
Stiffness: 12



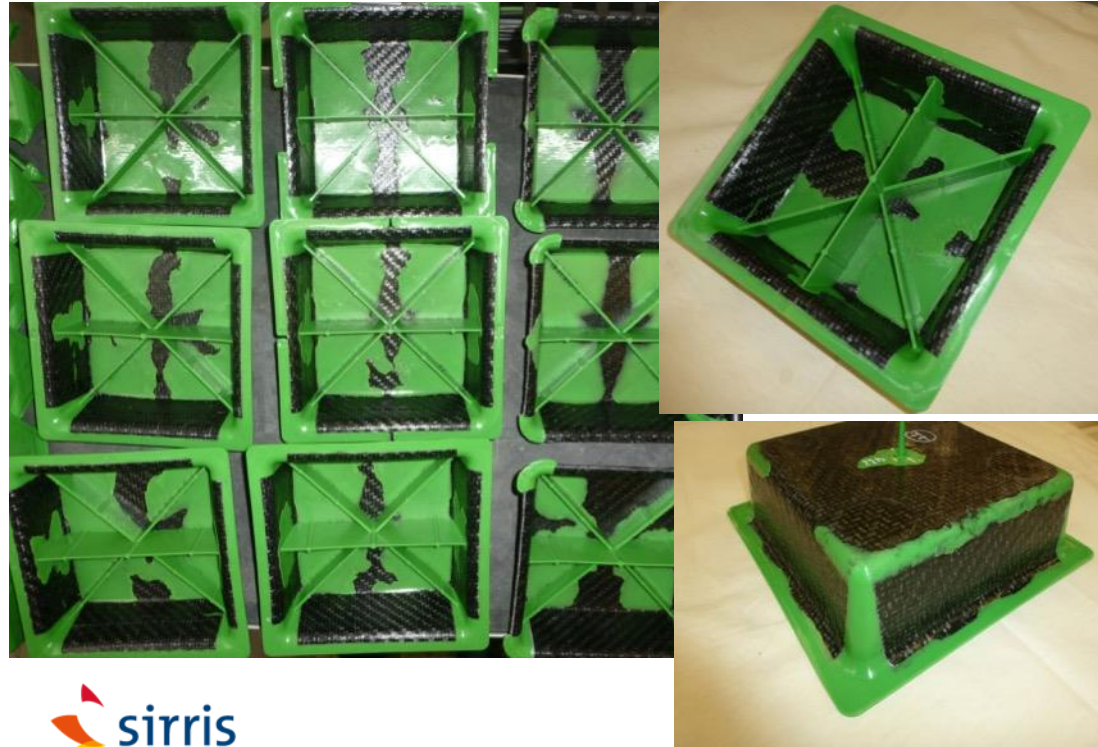
Sandwich - 4t

Weight: 1
Strength: 6
Stiffness: 48



Project Idea n°4: Overmoulded Hybrid Sandwiches

Preliminary trials with Sandwich preforms:



→ Feasibility demonstrated

- Weight saving : 35%
(meaning that the core part resists to the IM process)
- Points to be improved :
 - / Local deformations
→ leakage
 - / Flow control of the IM material within the core
 - / Connexions at the interfaces/edges

Project Idea n°4: Overmoulded Hybrid Sandwiches

Proposed developments

- Preheating with masks to limit the local deformations (→ leakages)
 - Use of existing sandwich preforms or development of dedicated structures to manage the injected flow
 - One step or two steps processing (two steps means apart preforming → insert)
 - 2K injection with foam in core
 - Material configurations vs part performances analysis
 - Experiments and simulations
 - Others ...
- Looking for a partner with industrial case

Project idea n°5: Composite reloaded – bring composite automation at SMEs to a higher level



Manual work

- Separate, manual handling steps
- High labor cost
- Not competitive with non-European production

Semi-automated production

- Handling and process steps are partly automated



Automated production line

- Integrated, automated production line
- Preforming, injection, handling, trimming...



Project idea n°5: Composite reloaded

1. **Benchmarking:** automation technologies for a SME production environment
2. **Development of gripper technology & flexible tooling**
 - For handling of preforms, parts, molds, etc.
 - Dedicated to the task, e.g. using 3D printing
3. **Demonstration**
 - Setup of a small scale pilot line
 - Using lightweight robot setups
 - Integrating low-threshold gripper and process technologies



- Looking for partner having competence in textile handling & composites

Project idea n°6:

Unlocking the potential of Industry 4.0 for SME's

- **Develop Industry 4.0 concepts**, building blocks and applications
 - Based on SME relevant use cases, driven by members of the user committee
 - Based on integration of available technologies (& standards)
 - for representative SME shop floor environment and within reach of SMEs
- **Demonstrate and experiment with Industry 4.0 applications**
 - on SME-relevant scenario's,
 - in application labs (industrial relevant environment),
 - validate by user committee
- **Develop guidelines** & close gap between assessment methodologies & implementation

Themes: transparent factory, cobots, smart automation, autonomy, plug & produce ...

- Looking for partner with expertise in industry 4.0 for SME's



Jacques Halleux, Senior Project Manager



jacques.halleux@sirris.be



+32 498 91 93 34

Sirris
Rue Bois St-Jean 12
Liege Science Park
4102 Seraing
Belgium



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<http://www.sirris.be>



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