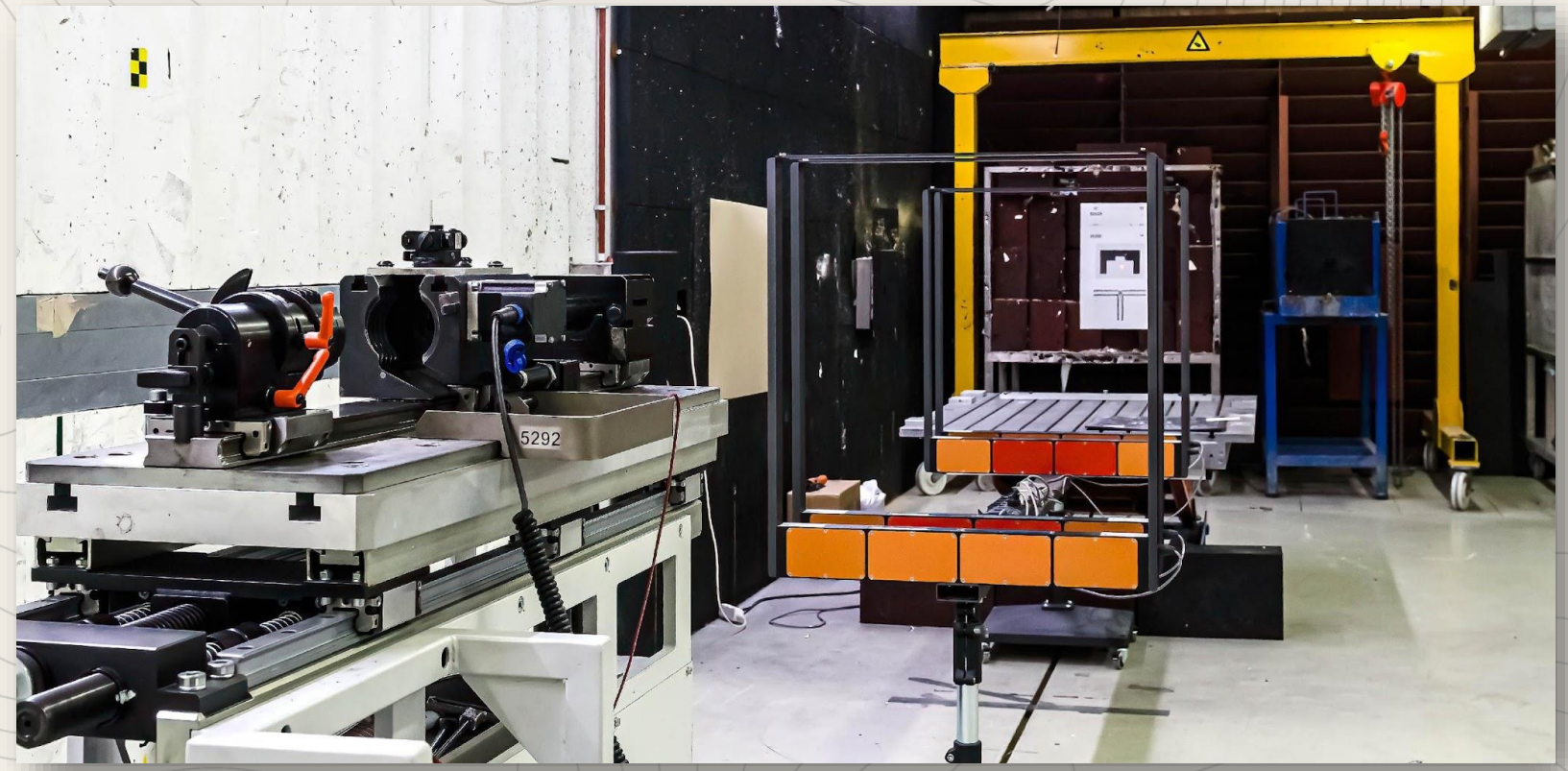
DEPT. WEAPON SYSTEMS AND BALLISTICS
DR IR CYRIL ROBBE

DEFENCE

Sept 2025



Research @ ABAL

RMA Brussels
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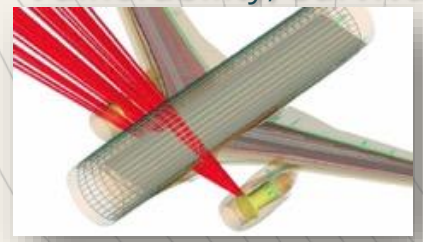
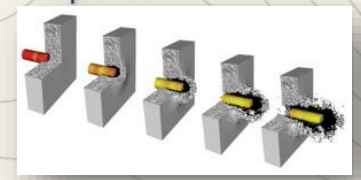
ABAL Department

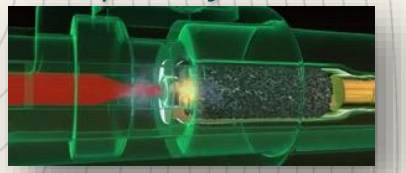
Vulnerability/survivability



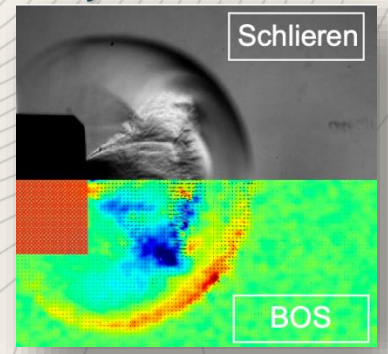
Impact



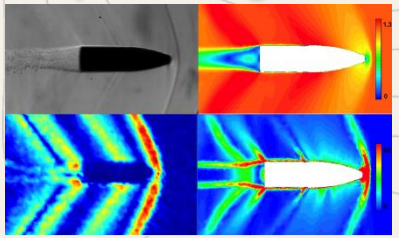
Weapon systems



Projectile Launch



Projectile flight



03 (+1) Profs
03 Assistants
02 Research managers
20+ Researchers
09 Tech/Admin

100m+ range
220+ measurement devices
1.000+ SAW
100.000+ SA ammo

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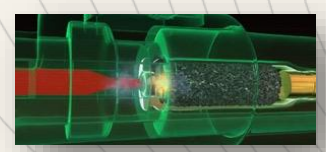
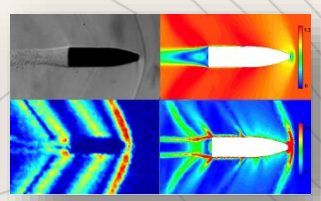
Research Units @ABAL

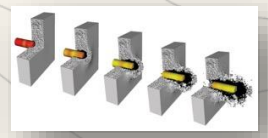
1. **Interior Ballistics:** Cyril Robbe

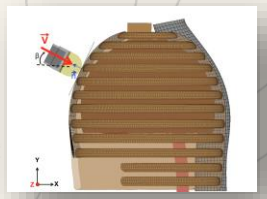
2. **Exterior Ballistics:** Véronique de Briey

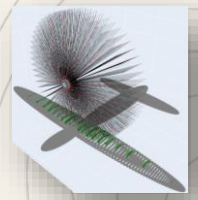
3. **Terminal Ballistics:** Frederik Coghe

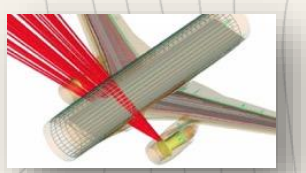
4. **Human Body Response:** Cyril ROBBE

5. **Counter UAV:** Alexandre Papy

6. **Survivability & Risk Assessment:** Johan Gallant

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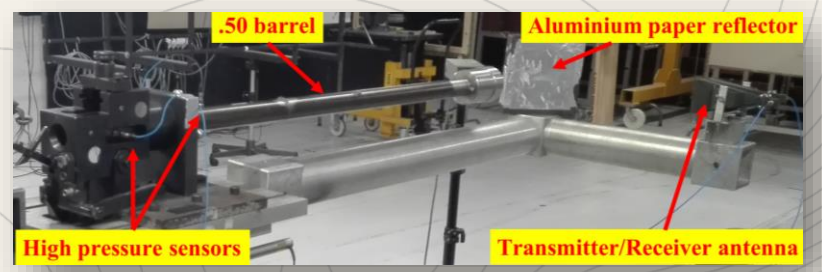
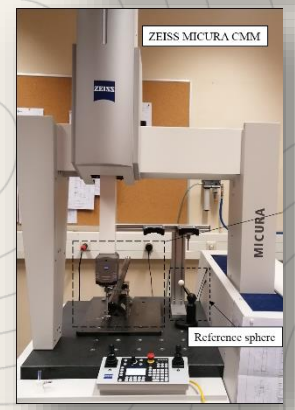
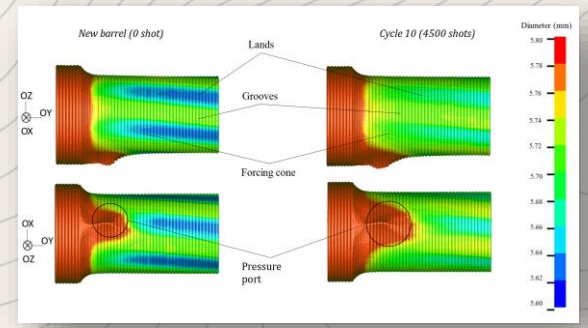
Interior Ballistics: Influence of small calibre erosion

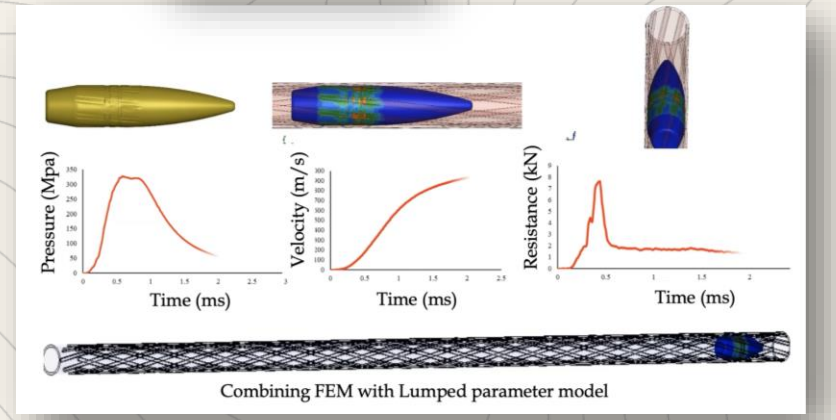
Objectives & Scope:

- Experimental and numerical study
- Pressure and velocity measurements
- CMM
- Combining FEM and CFD









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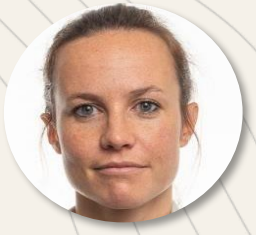
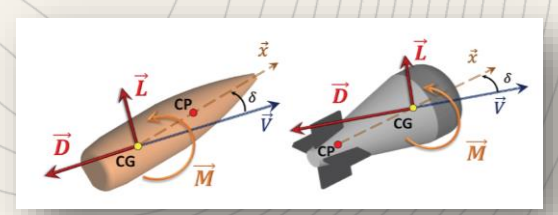
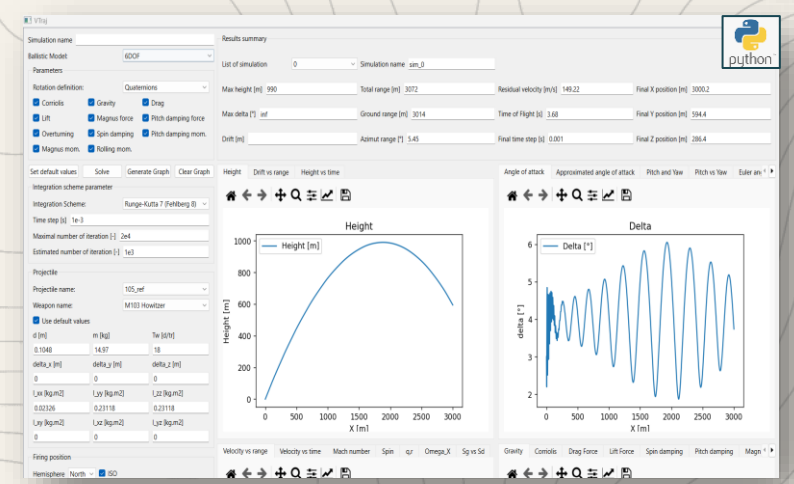
Exterior Ballistics : validated trajectory toolbox

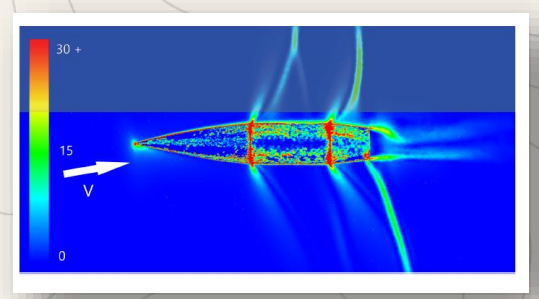


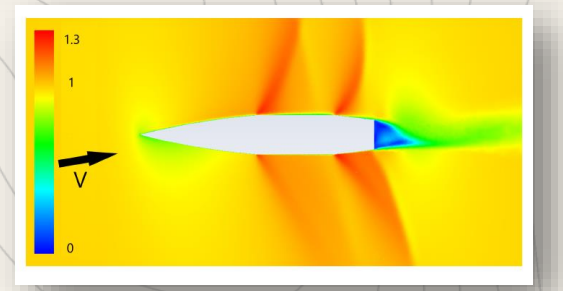
Objectives & Scope:

- Tailored exterior ballistics models
- Aerodynamic coefficient determination
- Validated models
- Combining analytical models and CFD









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Terminal ballistics: simulating IED secondary debris

Objectives & Scope:

- Experimental study
- Effect of IED secondary debris
- Adequate simulant
- Optimizing an experimental setup
- Comparing combat clothing

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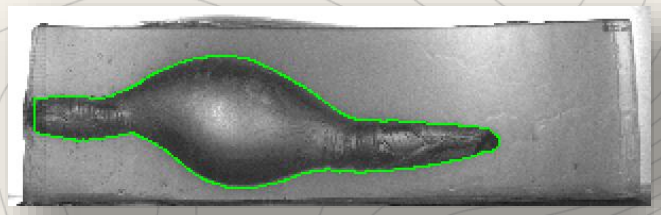
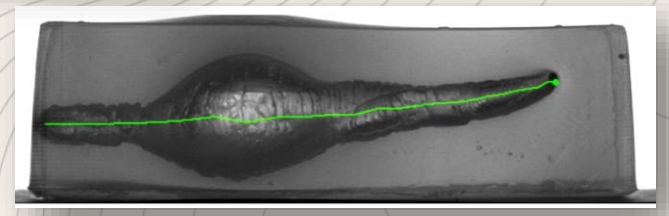
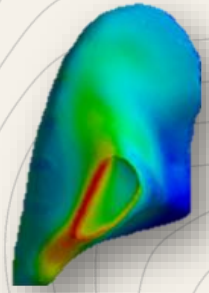
Human Body Response: wound ballistics models

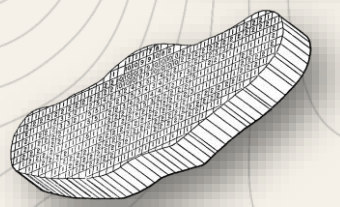
Objectives & Scope:

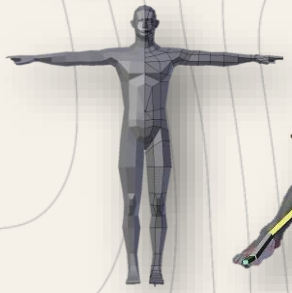
- Experimental protocol
- Video tracking capabilities
- Energy based injury models
- Link between injury and incapacitation
- Vulnerability model

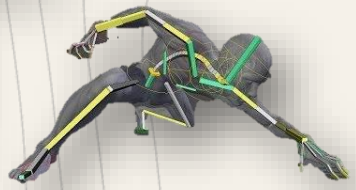












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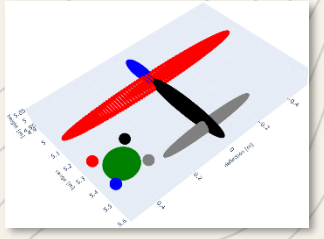
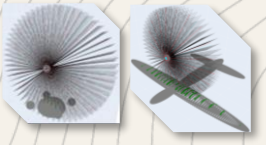
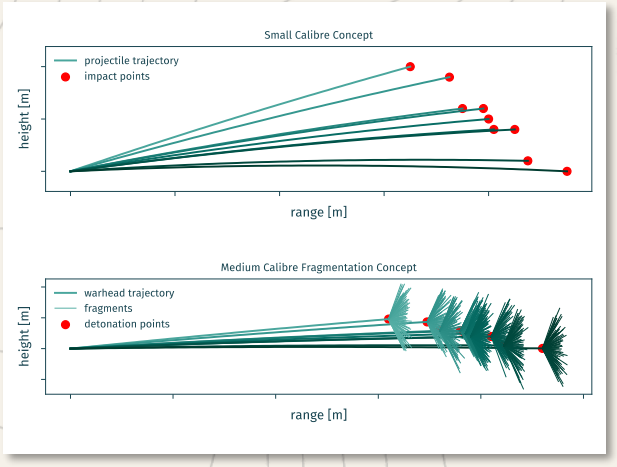
Counter UAV: Kinetic-Energy neutralization of sUAS

Objectives & Scope:

- Small UAS survivability
- Exterior and terminal ballistics
- Uncertainty theory
- Fragmentation models
- Unguided small and medium calibres







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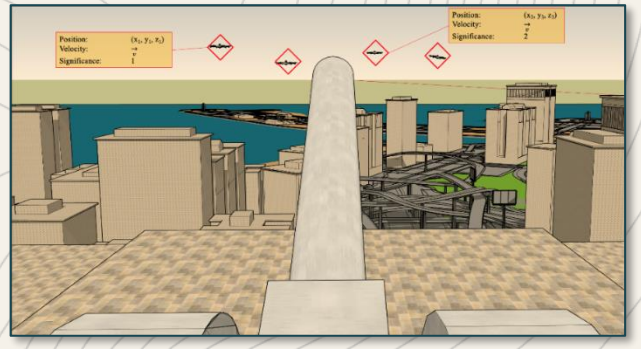
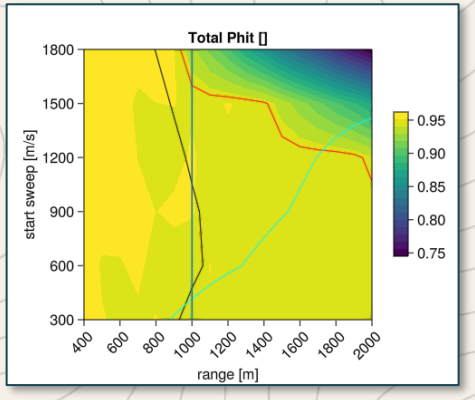
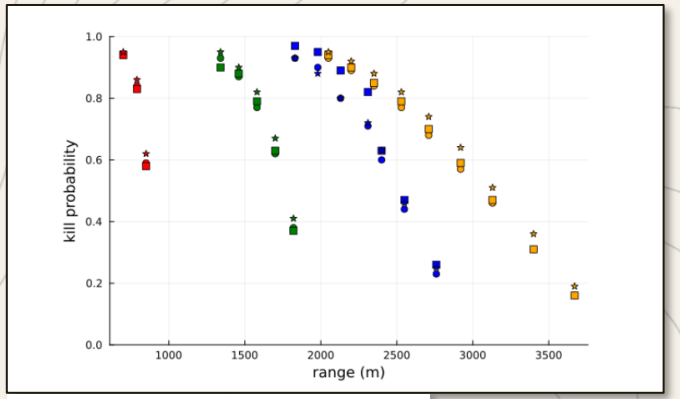
Survivability & Risk assessment: anti-threat solutions

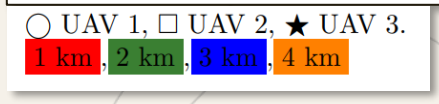
Objectives & Scope:

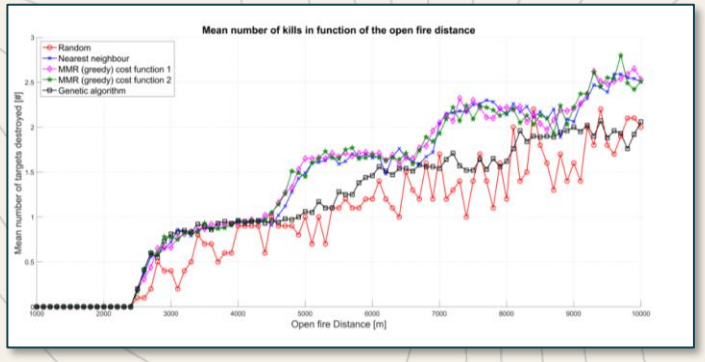
- Effector-based fire control solution
- Constraint-driven engagement scenarios
- Dynamic combat effectiveness assessment
- Fire control decision making











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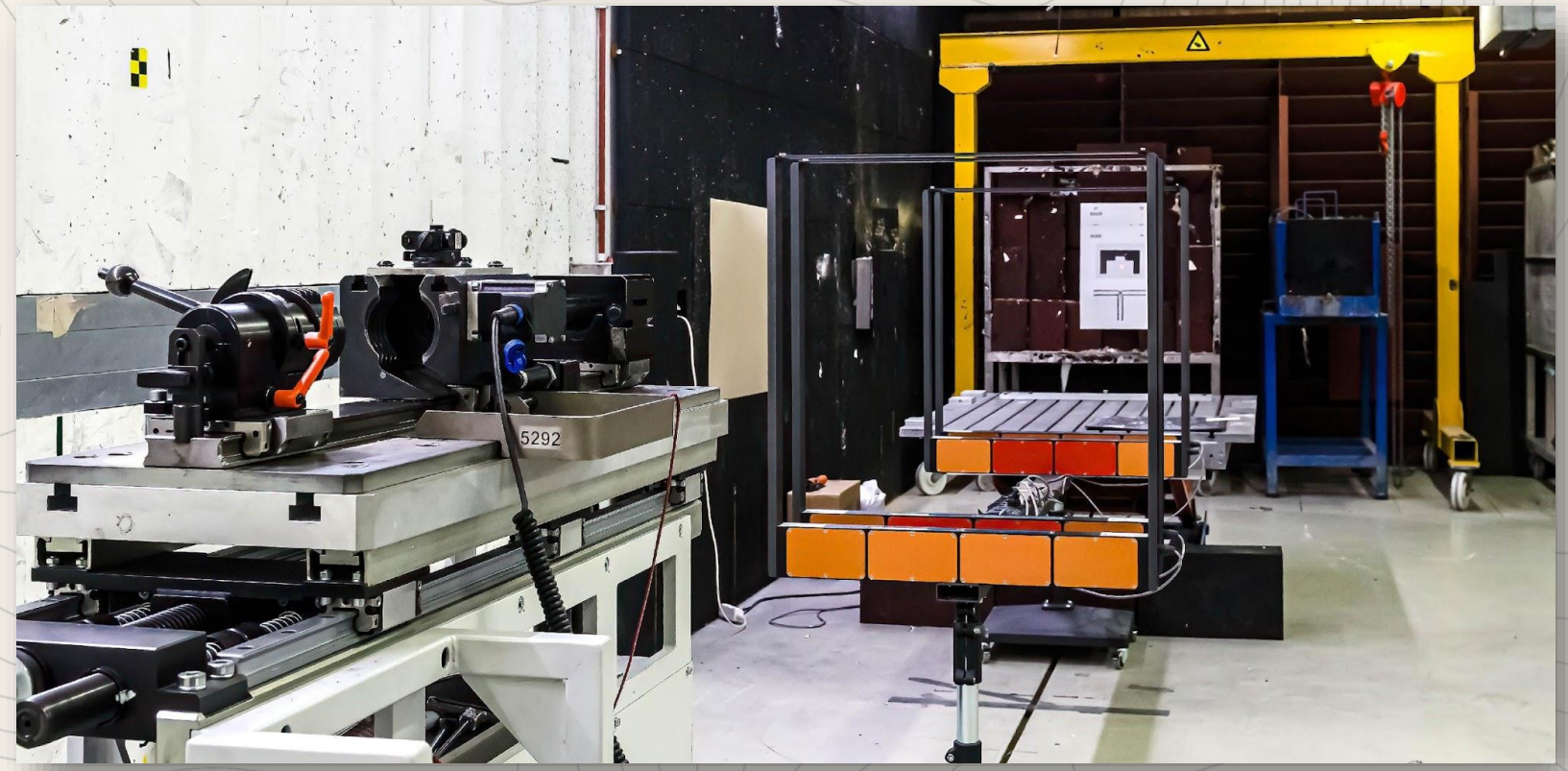

Enjoy the labo/stand visit!

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