

Grade2XL – Functionally Graded Materials for Extra-Large Parts



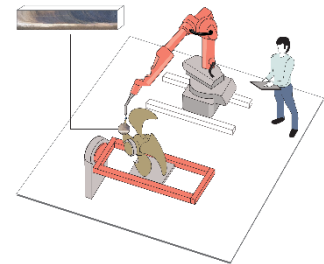
Project Description

Key Information

- EU funding: € 7,91 Million
- Total budget: € 9,75 Million
- Duration: 48 months [March 2020 – Feb 2024]

Background

Grade2XL is a joint development programme aligning partners along the value chain to foster the rapid development of WAAM materials and process. Grade2XL will deliver multi-material products of superior quality and performance. The high printing rate of WAAM, combined with the ability to control material properties down to the nanoscale, will enable building strong and durable engineering structures.



The Grade2XL project, funded by the programme Horizon 2020, will demonstrate the potential of multi-material wire arc additive manufacturing (WAAM) for large structures ~1 to >10 m length. Grade2XL will strengthen Europe's capacity to drive manufacturing innovation globally and withstand growing competition from Asia.

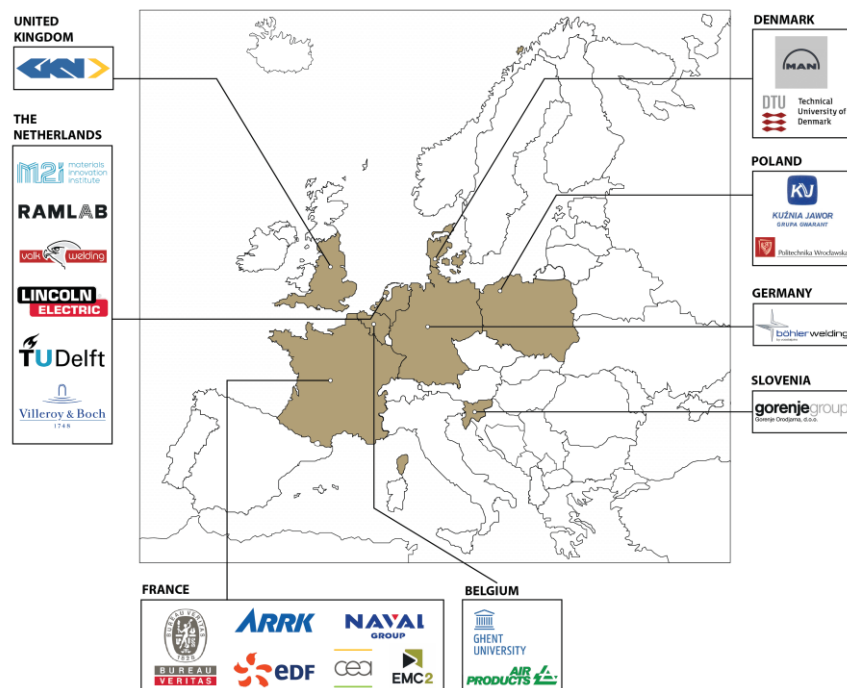
Ambition

Grade2XL will deliver a multi-material, high throughput WAAM system, removing the technological barriers that hinder the application of WAAM, on three levels:

1. **Material level:** functionally graded (multi)materials will be achieved by controlling the two main factors governing the material properties: the chemical composition and the thermal
2. **Process level:** high WAAM productivity will be achieved using multiple wire deposition systems. The productivity will increase from typically 2 kg/h to 5 kg/h, which can double when a dual robot configuration is used. In-line contactless inspection will ensure first time right quality and facilitate qualification.
3. **Life cycle or system level:** challenging applications will demonstrate the lifecycle benefits of WAAM multi-material devices and in-line process control.

Project Partners

1. **Stichting Materials Innovation Institute (M2i)**, The Netherlands – Lead Partner
2. **Rotterdam Additive Manufacturing Fieldlab (RAMLAB)**, The Netherlands
3. **Gent University**, Belgium
4. **Delft University of Technology**, The Netherlands
5. **Commissariat à l'énergie atomique et aux (CEA)**, France
6. **Technical University of Denmark**, Denmark
7. **voestalpine Böhler Welding**, Germany
8. **Valk Welding**, The Netherlands
9. **Air Products**, Belgium
10. **Lincoln Electric Europe**, The Netherlands
11. **Politechnika Wroclawska**, Poland
12. **Naval Group**, France
13. **Gorenje Orodjarna**, Slovenia
14. **Energie de France**, France
15. **Arrk Shapers**, France
16. **MAN Energy Solutions**, Denmark
17. **Ucosan (Villeroy&Boch)**, The Netherlands
18. **GKN Aerospace Services Ltd**, United Kingdom
19. **Kuźnia Jawor S.A.**, Poland
20. **Bureau Veritas**, France
21. **Pôle EMC2**, France



Contact persons

Wim.VanPaepegem@UGent.be

Ilse.Christiaens@UGent.be

For more information please visit Grade2XL webpage at: www.grade2xl.eu

News and upcoming events



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