WeldCast Welding of Cast Iron ref. no. 0224-00116A











Cast iron forms the backbone of the nacelle



WeldCast is: Industrializing welding in large cast iron components to reduce costs



Principal Idea

- 1. Establish a welding procedure for cast iron
- 2. Test and verify material properties to be applied in third party type approvals
- 3. Deploy welding procedures world wide
- 4. Use welding procedure as a repair method to reduce scrap
- 5. Create the basis for modular design using assembly welding procedure
- 6. Create an industry standard for cast iron requirement specification
- 7. Create an industry standard for approved/allowed repair methods

All of this will lead to lower the LCoE, reduce CO_2 emission and improve social acceptance.



Applies on up to 100 tonnes structures:

- Rotor hubs
- Bearing housing
- Machine frames
- Nacelle support structures

The consortium

Ends users **SIEMENS** Gamesa RENEWABLE ENERGY **Vestas**

Project management



Engineering the Foundatio

Welding Research & Development











Exploring and mapping





Well-known facts:

- Lower strengths grades are weldable
- Weldability decreases when strength increases
- HAZ holds carbides and martensite → mechanical properties





Catalog:

- Cast iron material
- Expected quality level of the weld

SIEMENS Gamesa

- Shape and size
- Welding application
- Welded joint

Vestas

- Filler metal(s)
- NDT procedure

Welding of large-scale cast iron components



Weld inspection

Standard NDT techniques:







Magnetic particles



Liquid dye penetrant



Ultrasonic testing





Validation of standard NDT and PAUT procedures





Optimize weld parameters for full scale components

