DISCOVER YOUR Power with HZ



Crawler development:

- Key question for all AIRTuB involved parties:
 - **Definition of** •
 - minimum defect size & resolution
 - → type/volume/mass sensor
 - in combination with necessary mission time/scanning speed
 - → type/volume/mass crawler
 - \rightarrow type/volume/mass drone
- **Demonstrator development assignment :**
 - Crawling robot/Crawler & integration of payload:
 - Crawling over blade/holding to blade
 - Fast mode/trave to region of interest
 - Scanning motion (one direction scan) over region of interest
 - Feasibility studies including hardware
 - Integration of Internal damage ultrasonic sensor; simple interface
 - Device for transporting/releasing/holding crawler to drone
 - **Testequipment**
 - Turbine blade movable in more directions
 - 22m Nedwind blade
 - Moving platform; trailer
 - Rotation total blade
 - Pitch of blade











Vs. 1 Crawler



Vs. 2 Crawler & internal damage ultrasooic sensor plus landing gear







Students & Teachers/researchers

- Period 2019-2022:
 - 120+ students
 - 20+ groups
 - Scalda
 - HZ



















• Results :

- Crawling robot/Crawler & Internal damage ultrasonic sensor
 - See film:
 - Future developments:
 - Short term: mass reduction ("weight watchers"!)
 - Integration of crawler and internal sensor; reduce mass and volume
 - Increase performance
 - Traveling speed to/from region of interest
 - Motion accuracy
 - Miniaturization ultrasonic sensor -> crawler and drone smaller
 - Integration of repair module

Testequipment

- Turbine blade movable in more directions
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Mobile, tiltable and rotatable turbine blade for test purposes



Vs. 2 Crawler & internal damage ultrasonic sensor



Societal/educational benefits:

- Students/alumni:
 - Critical thinkers, innovation minded
 - Fun, life long learning, employability
- Teachers/researchers:
 - Hands-on, brains-on busy with new technologies/ways of working
 - Fresh knowhow & insights \rightarrow education
- Small & medium enterprises:
 - Main risks taken out of new technologies/ways of working
 - Application with controlled risk



Drone plus crawler; span <3 meter, mass < 60kg





