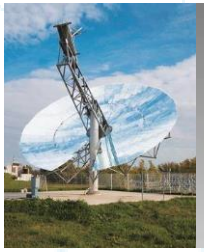
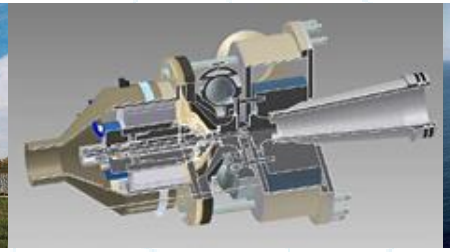
ETN TC3 Session

Material Degradation, Repair Technologies & Manufacturing

Additive Manufacturing

28 March 2019, Pau





Chaired by John Oakey
Professor of Energy Technology
Cranfield University

Agenda

1. AM-Motion benefits and trends of AM in Europe
   Paula Queipo, External Relations Director, Prodintec
2. ETN AM research roadmap
   Ferenc Pankotai, Manager Combustion Engineering and AM, Solar Turbines
3. 3D Printing a Pump Impeller – Specification, Testing and Acceptance Criteria
   Jan de Roos, Senior Rotating Equipment Engineer, Shell
4. ETN AM Benchmarking Initiative
   Steve Nardone, Project Manager Metal Additive Manufacturing, ENGIE
5. ETN AM Equipment Database
   Valentin Moens, Technical Project Officer, ETN

Additive Manufacturing WG

Objectives

- Exchange knowledge and experiences focusing on the added value that AM could generate
  - ✓ Short delivery time
  - ✓ Efficiency increase by optimised design (DfAM)
  - ✓ Delivery of obsolete or “urgent” parts to shorten maintenance outages and overhauls
- Cooperate on additive manufacturing practices

Activities

- ETN **AM equipment and process** database;
- **AM product quality and control**
  - ETN best practices booklet: “Best practices for defects detection in additive manufactured components in the energy sector”;
  - Case study on AM product quality and control;
- **AM research roadmap**
  - ETN Roadmap
  - Cooperation with the AM European Forum

ETN AM Research Roadmap

- Not enough focus on the AM in the energy sector in the current roadmaps: AMSC (2018), CAMM (2015), DoD (2016)
- ETN AM roadmap
  - Push for research fundings
  - High impact on EU research programmes
- Useful for the industry
  - Vision of the AM in the turbomachinery industry for the next 5-10 years
- Stability of the process is crucial to users
  - Standardisation
  - Alignment of different technologies and supply chains

ETN AM Research Roadmap

Design

- Current design
- Future design
- Analysis Software
- Integrated software packages
- Knowledge management
- Modelling to optimise design/support
- Design by platform standardization
- Life cycle costs

Material

- Modelling / simulation
- Multi materials
- HSE
- Optimise powders for AM (chemistry) and morphology
- Knowledge of powder characterization
- Component inspection and life prediction

Process

- Modelling / Simulation
- Hybrid machines
- Data handlings
- Data security

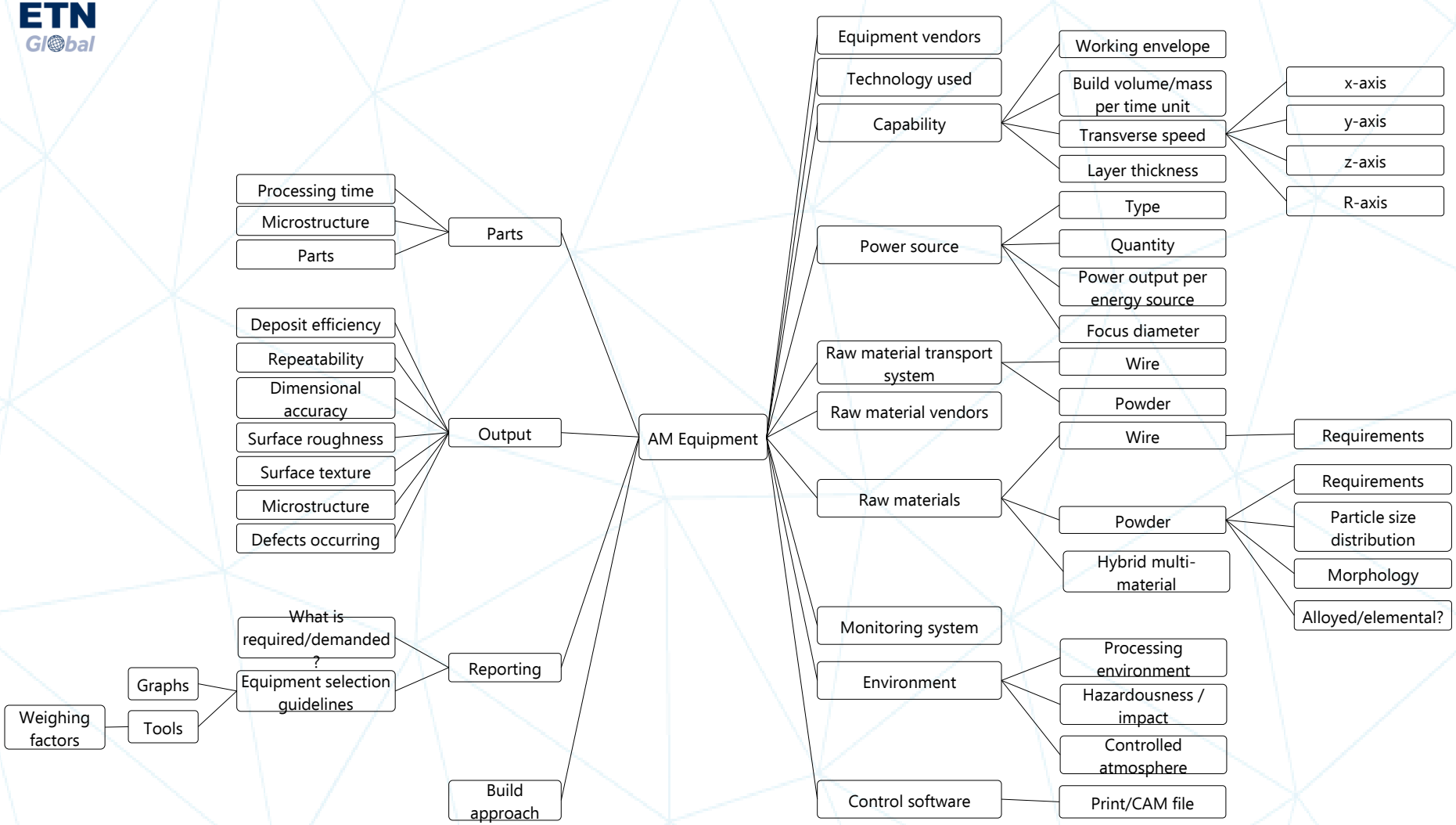
Production

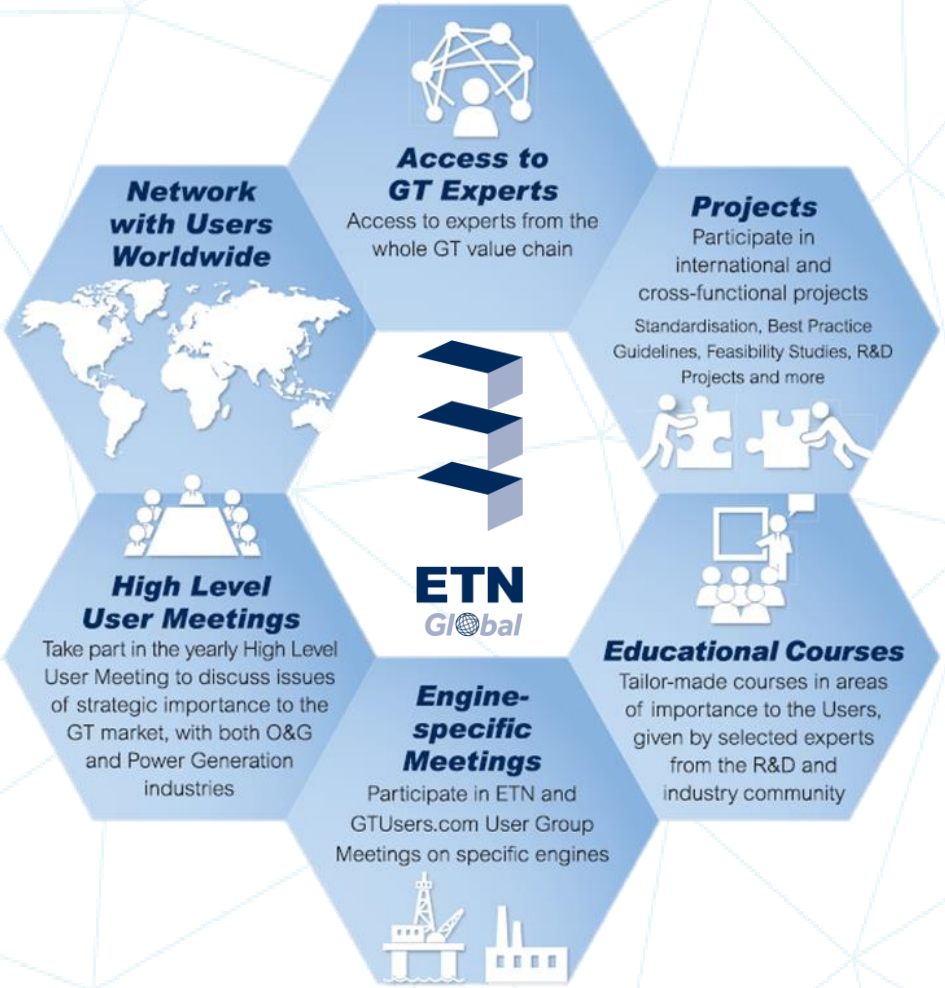
- Modelling / Simulation
- Q.A. in situ

ETN AM Equipment Database

- Database
  - Machine/equipment and their parameters
  - Property of manufactured components
- Already contains the main manufacturers and describes their processes
  - Parameters of interest?
  - Focus on energy, movement, or additional items… ?

ETN AM Equipment Database





ETN Global
Chaussée de Charleroi 146-148, 1060 Brussels, Belgium
Tel: +32 (0)2 646 15 77, info@etn.global