Additive Manufacturing of jigs and fixtures

Background

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Department of Industrial and Materials Science is hosting the competence center “Centre for additive manufacturing – metal (CAM²)” that involves broad network of national and international companies. Project will be done in collaboration between ABB corporate research in Västerås and IMS at Chalmers in the frame of CAM².

Description of the thesis work

Additive manufacturing opens up for many new exciting functionalities that can hardly be achieved by conventional manufacturing techniques. An important area where AM might boost the productivity of the manufacturing line is by designing dedicated jigs and fixtures.

Some typical examples are:

• Jigs for manufacturing of the parts
• Tools for inspection and quality control
• Fixtures used in the assembly process (e.g. for mechanical parts or electronic components)
• Dedicated tools to improve the ergonomics of working moment.

In a first step, the thesis work should provide an overview of what is done in the field in different industries. Which applications, what added value has been reached material, cost, delivery time etc…

With this solid background, you should review in which ways you are using jigs and fixtures in the production floor of ABB Control. You will be in contact with people from our quality and production departments to discuss this topic, share your respective knowledge, and identify some examples where 3D printed fixtures could be of interest.

It is proposed to select 3-4 significantly different examples and develop high quality solutions to demonstrate the broad range of added values that AM can provide.
The designed components should be printed, and the design evaluated at the production site. If the time is enough, the thesis could address a methodology for design of such fixtures in a user-friendly way. Basically, from the CAD drawing of the existing part, it should be reasonably straightforward to derive its replica and design a fixture that perfectly fits the “simple” parts. This could be done by using existing commercial software suites or by further developing an existing tool developed at Corporate Research.

**Requirements:**
We are looking for a master student with a profile towards material science. A solid background in additive manufacturing is an advantage.

**Extent and time plan:**
- Location partly at ABB Corporate Research and ABB Control in Västerås
- Period (January-June 2019)
- Number of credits 30 ECTS/högskolepoäng(hp).
- The thesis is intended for one student

**More information:**
Recruiting Manager Santanu Singha, +46 21-34 51 72, will answer your questions. Union representatives - Sveriges Ingenjörer: Ulf Westblom +46 21 32 30 68. Unionen: Krista Andersson, +46 21- 34 02 85. Ledarna: Lenny Larsson +46 21-32 85 47. All other questions can be directed to Terese Björklund, + 46 21-32 80 75. Positions are filled continuously. Apply with your CV, academic transcripts and a cover letter in English

Welcome to apply!

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