EENX15-18-47: Design of a generic tool for mounting/demounting of rotational design elements for use by robots and humans.

Background:
Collaborative robots are entering the market rapidly. Applications for these kinds of robots are often intended to be the same kind of mounting/de-mouting operations as today are performed by humans. That implies that tools used for those operations shall sometimes be used by humans and sometimes be used by the collaborative robots. This will require a complete new type of control and sourcing of actuators in the tools as well as also addressing quite complex ergonomic questions.

Task:
1. Learn to work in a global product development team
2. Learn how those operations are performed in industry today
3. Learn what it means to have a workstation where humans and robots are working together
4. Together with Volvo and Chalmers, set up the technical, ergonomic etc. requirements for the tools
5. Based on an existing prototype, make some design concepts, evaluate and select one
6. Design the selected concept
7. Build a prototype using additive manufacturing technologies (3D-printing)
8. Define technical specification for the unit, including temperature demand, vibration, resistance to oil etc.
9. Test the tools

Deliverables:
- CAD design
- Technical specification.
- Validation test specification, verification plan & Test report.
- Product cost estimate.
- A functional prototype.
**Students:**
The project is in cooperation with Pennsylvania State University (Penn State). The project team will consist of three ME students from Chalmers and three ME students from Penn State

**Volvo Contacts/Supervisors:**
Göteborg: Per-Lage Götvall (Per-Lage.Gotvall@volvo.com)
Greensboro:

**Examiner:**
Associate Professor Petter Falkman, E2

**Chalmers supervisors:**
Associate Professor Knut Åkesson, E2

**Målgrupp:**
TKAUT, TKMAS, TKELT, TKDES

**Gruppstorlek**
Tre studenter från Chalmers och tre från Penn State
(Projectet kan ej fördubblas)