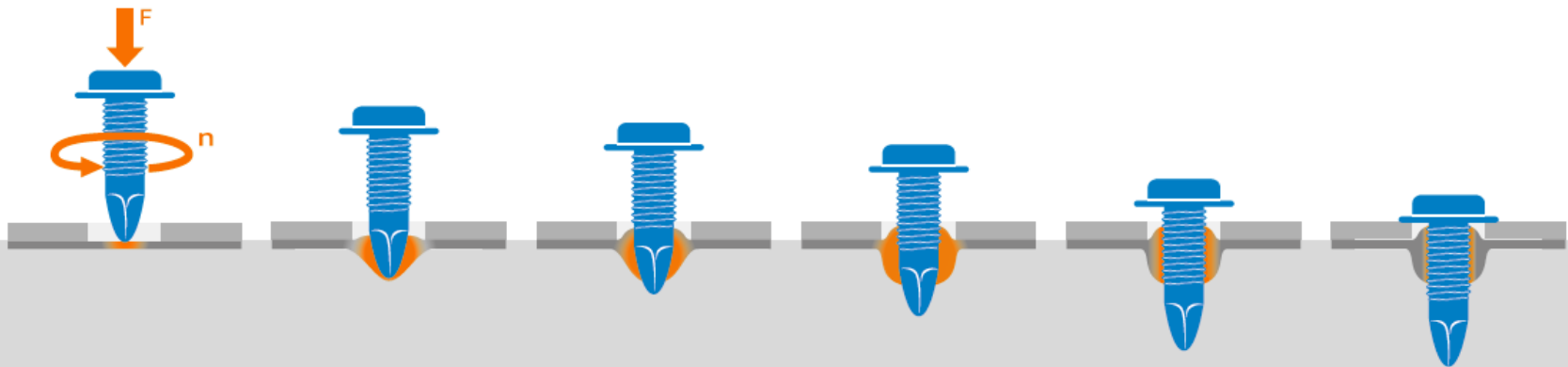


*MSc. Thesis Proposal*

# Simulation of the Flow Drilling Screw (FDS) process for automotive components



*A.A. 2019/2020*

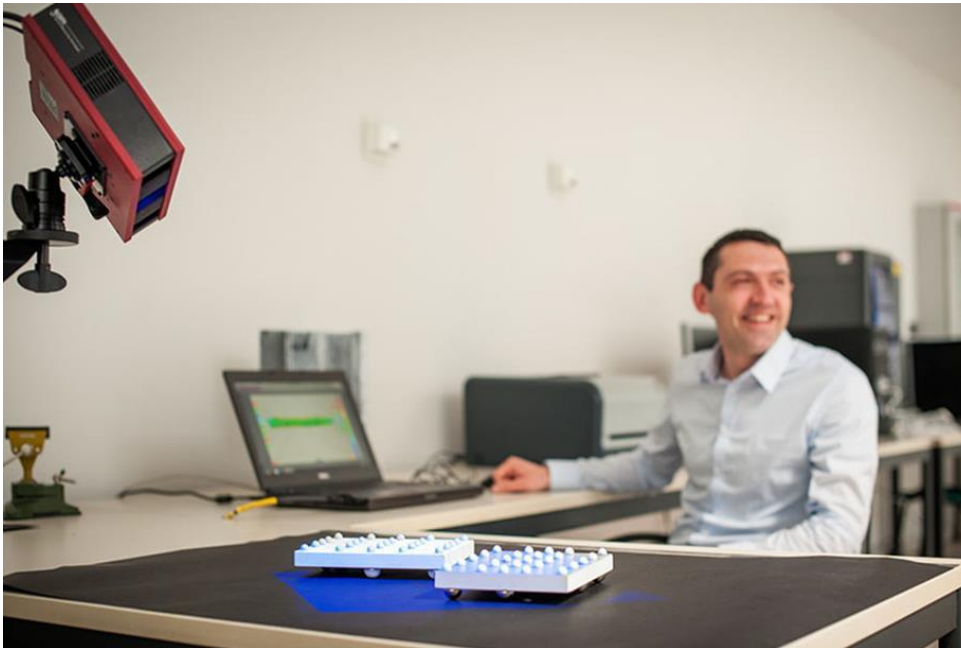
*Prof. Paolo Minetola*

# *Supervisor of the Thesis*

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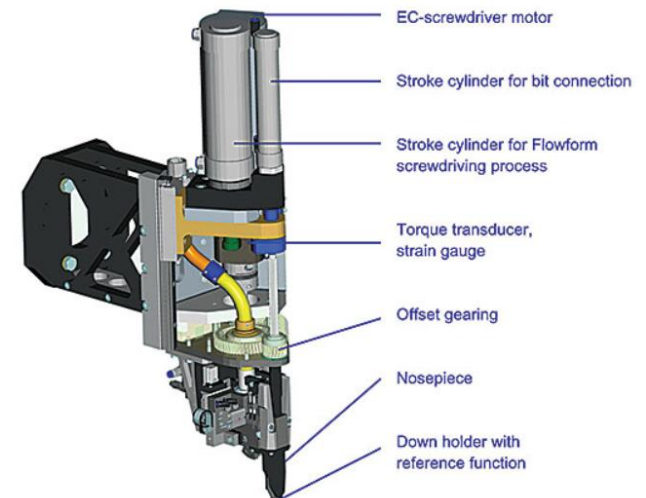
# The Topic

The **Flow Drilling Screw (FDS)** process is used by **car makers** for multi-material joints as an alternative to adhesive or welding.

It has the advantage of requiring **one-side access** to the elements to be joined, so it has less geometric limitations than welding.



## DEPRAG screwdriving system for flowform fastenings





## *The Research Activity*

The research activities are aimed at **simulating the FDS process** by general purpose software such as **Abaqus** or **Hyperworks**.

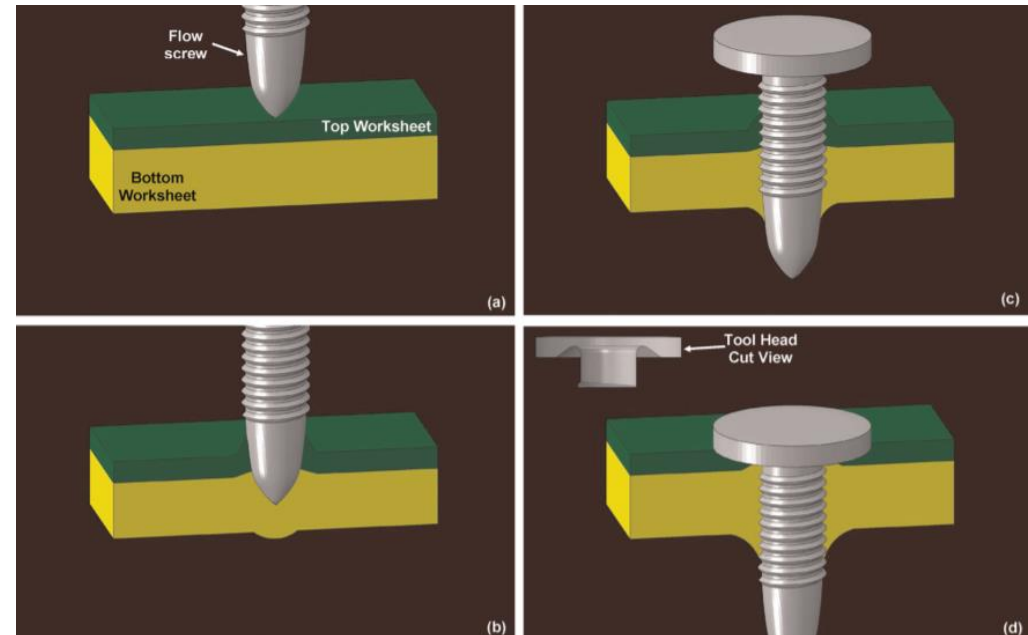
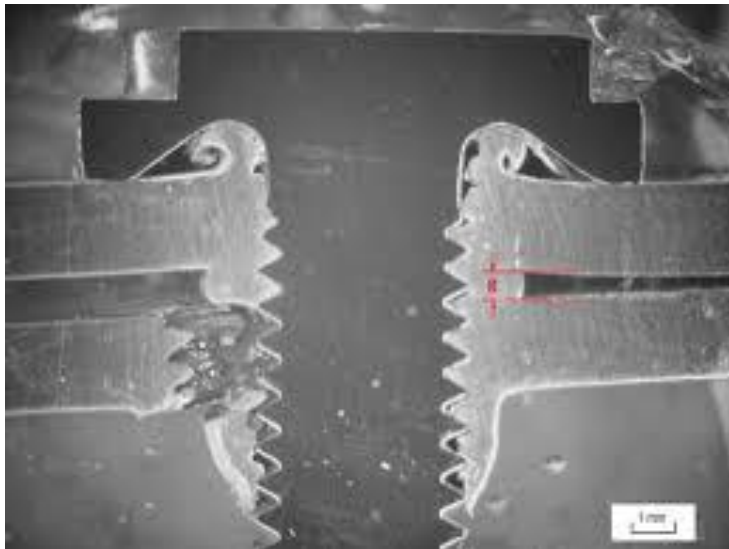
*The educational license of the software is available to students. So the thesis development is consistent with the current restrictions for Covid-19.*

A short video of the process can be watched here:

<https://youtu.be/PrTh6VFu6QE>

# Thesis development

It will be necessary to **model the screw** used in the joint and simulate the process for **different pairs of materials** (aluminum / steel, aluminum / composite, steel / composite) considering **different thicknesses** of the sheet metal for comparison of process feasibility.





# Requirements

Good attitude for the use of PC and software.

Abaqus and Hyperworks software will be used.

Commitment for a minimum period of 6 month.



## Important notice

The early handing in of the thesis draft is a strict requirement. In order to graduate in the desired session the student should hand in the draft to the supervisor at least two weeks before the deadline of the student office.