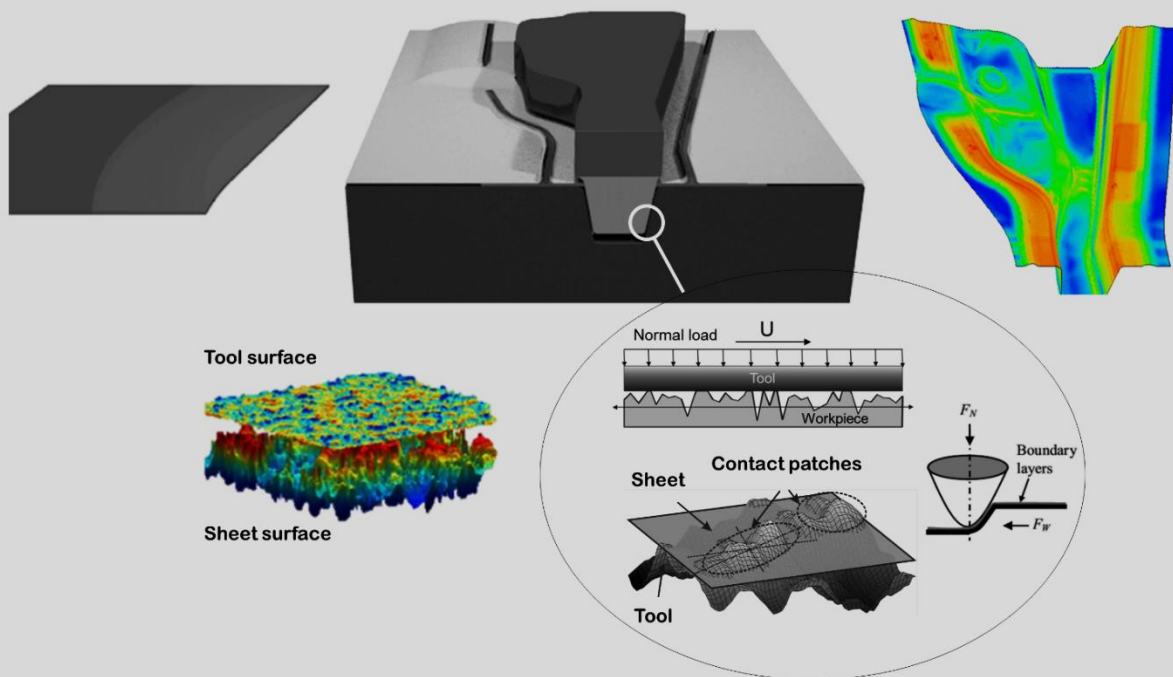


## Invitation

Course on “Fundamentals of Tribology in Sheet Metal Forming”

*Date:* 04 & 05 September 2019

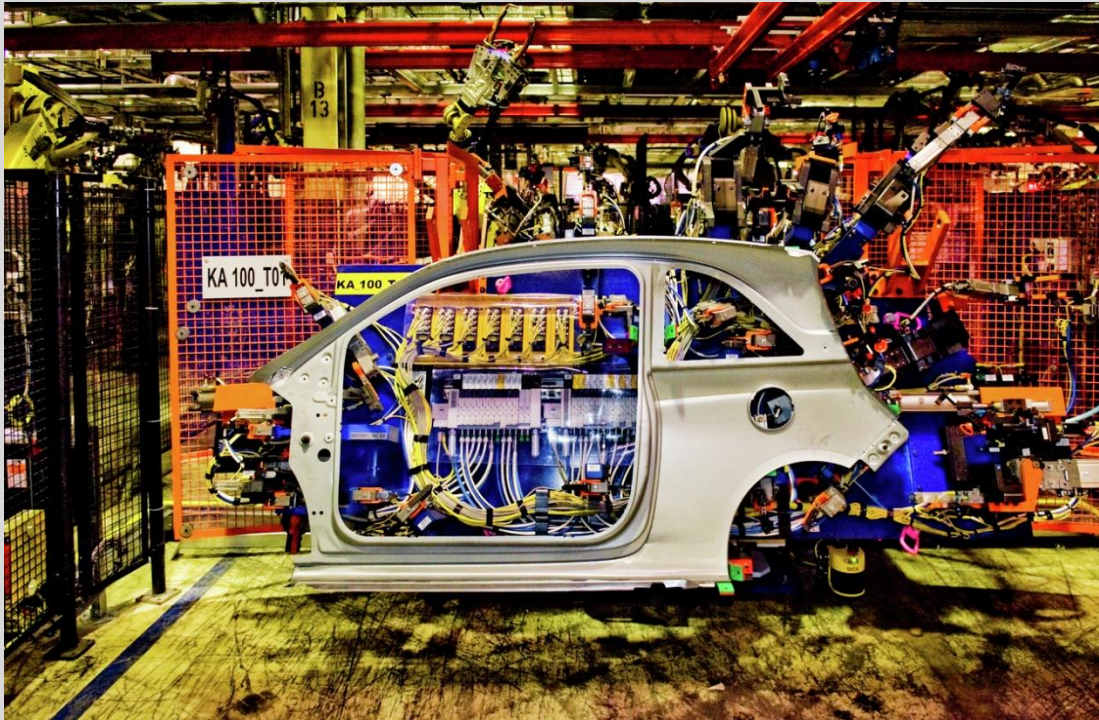
*Location:* UNIVERSITY OF TWENTE.



### TOPICS:

- Fundamentals of tribology
- Introduction to tribology in sheet metal forming
  - Contact conditions, surface topology and friction in deep drawing processes; underlying friction mechanisms in deep drawing processes: adhesion, ploughing, lubrication regimes; classical friction tests.
  - Flattening due to normal loading and sliding; surface roughness evolution due to sub-surface (substrate) plastic deformation
  - Wear mode diagram; single asperity ploughing model; slip-line field theory
- Introduction to metal plasticity
  - Stress-strain behavior (including temperature effect); yield functions; strain hardening postulates; plastic flow rules; large deformations; forming limit diagrams
- Advanced friction models in sheet metal forming and implementation in FEM
  - Multi-scale friction model; evolution of friction during metal forming (position dependent);
  - Contact algorithms in FEM
  - FE implementation of advanced friction model (in full-scale simulations)
- Tribology Lab tour
- Workshop: Simulating cold stamping processes using the advanced friction model

*“Fundamentals of Tribology in Sheet Metal Forming Processes”*



Program, 04-09-2019

Lecturers

8.00	Registration	
9.00	Fundamentals of tribology	Prof. em. Dr. Ir. Jean-Pierre Celis
10.30	Break	
11.00	Tribology in sheet metal forming (1)	Dr.ir. Matthijn de Rooij
12.30	Lunch	
13.30	Tribology in sheet metal forming (2)	Dr.ir. Matthijn de Rooij
15.00	Break	
15.30	Introduction to metal plasticity	Prof.dr.ir. Ton van den Boogaard

Program, 05-09-2019

Lecturers

8.30	Advanced friction models in sheet metal forming and implementation in FEM	Dr. Javad Hazrati
9.30	Break	
9.45	Advanced friction models in sheet metal forming and implementation in FEM	Dr. Javad Hazrati
11.00	Lab tour	Dr.ir. Matthijn de Rooij Dr. Javad Hazrati
12.30	Lunch	
13.00	Workshop: Simulating cold stamping process using the advanced friction model	Dr. Sabrina Gastebois

**Registration**

**Target group:**

MSc and PhD students, Researchers

Please register, free of charge, via [this link](#).