

# Machine and Vehicle Design - Master Thesis

**TITLE:** Structural modelling and Multi-Objective optimization of a cold rolling machine

**Activities:**

- ✓ Finite element detailed modelling of a 20-mills-type machine.
- ✓ Development of a linear and nonlinear simplified finite element model based on beam elements and Hertzian contact conditions.
- ✓ Multi-Objective optimization supported by Machine Learning of machine parameters to maximise structural stiffness and minimise geometrical errors.

**Methodology:** Numerical

**Duration:** 6-9 months

**Contacts:** prof. Giorgio Previati ([giorgio.previati@polimi.it](mailto:giorgio.previati@polimi.it)),  
ing. Federico Ballo ([federicomaria.ballo@polimi.it](mailto:federicomaria.ballo@polimi.it))  
ing. Pietro Stabile ([pietro.stabile@polimi.it](mailto:pietro.stabile@polimi.it))

**Possible collaborations:** Tenova S.p.A.

