Motivation
Further processing of cold-rolled metal sheets requires a homogeneous 3D distribution of the roughness parameters mostly. The only possibility to react on the rolled surface changes immediately, for instance by strip tension, is an online roughness measurement. But the roughness measurement is a challenge. This is primarily based on the non isotropically reflecting aluminium surface and the oscillating strip in an lubricant mist environment.

Executive summary
The project investigates the feasibility of an industrial-orientated online roughness measurement for aluminium materials. In this respect the recorded measured data will be verified by static topography measurements. After that first rolling tests can be carried out which show the surface modification of the aluminium material during the rolling process.

Experimental Setup
Three sensors are necessary to investigate the generation of the pattern during the rolling process. One sensor measures the surface of the work roll in real time. The two others are located in front of and after the roll gap. The measuring signals are recorded together with other measured values like the rolling force or the strip tension. The roughness measurement of each sensor is based on the light sectioning principle. Due to the short exposure time of 8ns the measurement system is resistant to vibration and suitable for high rolling speed.

Possible Extensions
- Investigations with of EDT (electro discharged textured) rolls
- Studies of different contributing factors to the pattern generation
- Development of a model to predict the pattern generation
- Development of a controller for a homogenous 3D pattern distribution

Timeline
- Roll Mill Configuration
- Sensor Implementation
- Rolling Tests
- Evaluation

Consortium
The project consortium consists of three partners: AMEPA, Hydro and the Institute of Metal Forming (IBF) of the RWTH Aachen University.

Cold Rolling Mill at the Institute of Metal Forming