

Objective

EU regulations on vehicle fuel efficiency and emissions require further weight reduction of cars. Al-alloy sheets for the car body help lowering weight. However, Al-alloys are less well formable, when compared to steel.

Formability of Al-sheets can be controlled through the texture that is a result of the rolling and annealing steps in the manufacturing process. A good model of the texture, capable of predicting texture evolution should be a very powerful tool for product and process optimization.



Strong textured



Weak textured

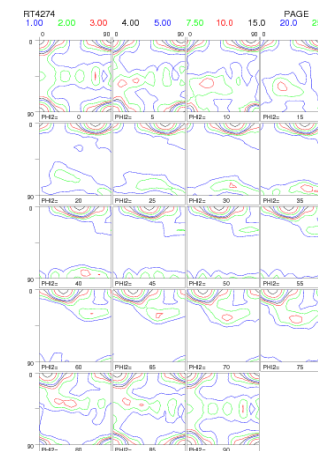


Research topics

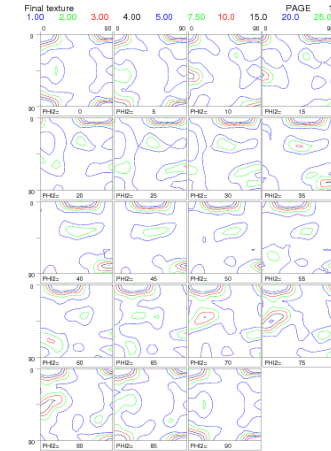
- Implementation of a texture model as developed in a research project, incorporating the measured input texture and the intermediate process data.
- Validation of the predicted textures.

Industrial benefits

- The integration project connected the recrystallisation texture model with Alamel, which is regarded as the best performing deformation texture model available.
- The deformation and recrystallisation texture in conventionally rolled aluminium sheets could be predicted semi-quantitatively.
- Cost savings in product development of €50,000 per year.



Measured texture



Predicted texture

Implementation of the recrystallization texture model into industrial codes – Corus/Aleris