

Announcement of a Master's Thesis, 14.07.2020

Dynamic recrystallization of austenitic stainless steel

Description

Austenitic stainless steels generally exhibit superior corrosion resistance, high ductility, and excellent weldability. Despite the extensive application of austenitic stainless steels, austenitic welds present major inspection problems due to their large grain structure (Figure 1). Grain refinement in austenitic stainless steels can only be achieved by recrystallization after cold or hot deformation. Accordingly, a technique named Thermo-mechanical Welding (TMW) is proposed, aiming at refining the grain size of the weld metal and HAZ region. The key idea of TMW is stimulating the dynamic or static recrystallization by large plastic deformation and subsequently controlling the grain growth by a controlled cooling process. To optimize the parameters of the TMW process, a fundamental investigation is required on recrystallization and grain growth of austenitic stainless steel. Therefore, a master thesis has been planned within the TMW project to investigate the dynamic recrystallization of austenitic stainless steel 304.

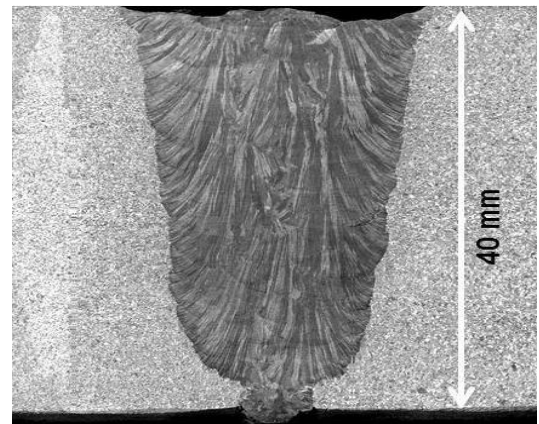


Figure 1 coarse columnar grains of austenitic stainless steel weld metal

The backbone of the planned thesis is physically simulation of the dynamic recrystallization using the GLEEBLE machine at different temperatures and strain rates.

Organization

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Duration: as of now for min. 6 months

Location: Joining group, Steyrergasse 17, 8010 Graz

Reward: € 2000 + 500 performance bonus for an excellent success

Further information

For further information please contact the secretariat of the institute or the supervisor.

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