

## INVESTIGATIONS ON BLACK-AND-WHITE WELDED JOINTS BETWEEN ADDITIVELY MANUFACTURED PRINTDUR HSA AND STRUCTURAL STEEL

### Content

The purpose of this work is to investigate different welding processes for joining additively manufactured parts to semi-finished steel products. The steels studied are additively manufactured Printdur HSA and structural steel. Since the former has a fully austenitic grain structure and the latter has a ferritic grain structure, a test setup must be developed to determine all the data needed to construct safe and durable welded joints. Important data include tensile strength, fatigue life, and metallurgical data such as grain structure and hardness changes. In addition, various welding processes will be investigated. Metal Inert Gas (MIG) welding, Tungsten Inert Gas (TIG) welding, and laser welding will be studied.



Figure 1: different weld processes

### Tasks

- Literature research on black and white joints
- Conducting static and dynamic tests
- Metallurgic analyses

### Prerequisites

- Knowledge of steel constructions and weld processes

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