

## Objective

A bottleneck in the extrusion of hollow sections is the quality (mechanical integrity) of the weld seams, especially for high-strength aluminium alloys.

The parameters governing the underlying solid-state bonding process strongly depend on the die design and the (local) process conditions governing material flow through the extrusion tooling.

## Research topics

- The metal flow was analyzed through finite element method based simulation techniques, specifically aimed at determining the local conditions near the (re-)joining of metal streams, laboratory scale extrusion experiments and characterization of sample material.

## Industrial benefits

- Significant prevention of potential weld seam related non-conformities in new products (dies) and a reduction in die trials related to weld seam quality.
- Weld seam related non-conformities are in the top-3 of most occurring sources of internal rejects at Nedal, generating approximately 30% of the total quality costs.

