Experimental analysis of cut welding in aluminium

Cut welding is a newly developed cold pressure welding process. In the present work, an experimental investigation was carried out analyzing the mechanisms involved in cut welding of a block to a strip. Experiments were carried out in technically pure aluminium. The investigation has involved tensile testing and metallographic investigations of the welds. The results show that this variant of cut welding is a very reproducible process giving a weld strength equal to 30-40% the strength of the parent material. The experiments have shown that the reason for this relatively low strength is an uneven pressure distribution along the weld due to a wave formed during sliding. Attempts to alter the material flow during sliding are presented.