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Methods of Efficient Sheet Metal Production by Cutting and Cold Rolling

Large strain extrusion machining (LSEM) offers an energy-efficient and simplified method for manufacturing rollable aluminum sheet metal at room temperature, eliminating the need for homogenization and hot rolling.

Researchers at Purdue University have demonstrated that large strain extrusion machining (LSEM) can be used to manufacture aluminum sheet metal at room temperature. This simplified process eliminates the need for homogenization and hot rolling of aluminum alloy. 600 micrometer as-cast aluminum crack free sheets were prepared in single step with LSEM at room temperature and had the same reduction in cold rolling as conventional methods. Experiments showed that LSEM strips are more rollable than warm rolled strips thereby requiring less passes during cold rolling.

Advantages:

-Energy efficient production of sheet metal

-Simplified production of sheet metal

Potential Applications:

-Sheet metal production

-Automotive manufacturing

-Aeronautical manufacturing

TRL: 6

Intellectual Property:

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Keywords: Large strain extrusion machining, LSEM, aluminum sheet metal, room temperature production, simplified process, energy efficient

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