Sindri

A PROJECT AIMED TO REDUCE COST IN CNC PRODUCTION BY PRODUCING NEAR NET SHAPE WITH A NEW AM METHOD
Why Near Net Shape?

To reduce production cost in cnc machining a NNS will minimize machining time, tool wear and amount of waste material.

On average in cnc machining industry about 80% of the raw material is machined away in the form of shavings to create the desired geometry.

With NNS the waste can be reduced to a couple of percent or less.

The project is aimed for low series production and high cost raw materials initially.

Project parts are:
P.A.M.P Nordic Systems AB - coordinator
Quintus Technologies AB
RISE
Linköping University

Project duration:
2022.10.14 – 2023.04.14

Total budget: 960 000 SEK
How will the NNS be produced?

With a new AM method for building a green state powder body for sintering this project will be a suitable development step thanks to lower resolution demands for NNS production.

The method is patented and can be described as a PM-process but with the difference that a coordinate system is utilised, so several small powder volumes are pressed together in sequence to build up a larger 3D geometry.

After the green body is produced it will be HIP treated to give the material optimal properties.

P.A.M.P Nordic Systems AB
Will provide powder based green body state test specimen

Quintus technologies AB
Will HIP treat the test specimen

Linköping University
Will perform mechanical testing on the HIP treated specimen

RISE
Will characterise the produced specimen
What will be the benefits?

The suggested production method will give a producer the freedom in geometry with minimal material cost and at the same time make it possible to adapt the material properties for optimal performance of the produced part.

For easy mounting in a CNC machine and reduce the demand for fixtures, a mounting flange or such can be made into the NNS.

Sindri is one of the dwarfs in Norse mythology that amongst other things made Mjölnir for Thor, the God of thunder.
What are the alternatives?

NNS production is often done by casting or forging in different forms. These processes demand special tools or molds for each geometry and are therefore expensive and complex and demand rather large production series.

There are some AM producers for NNS but due to the high complexity and production cost of these processes it is most often not an economic alternative.