

## Optimal process parameters for band saws

### Challenge

At times, DAMRC receives enquiries about challenges related to the band sawing processes. The experience is that the process is not seriously examined for optimal parameters, as the process runs its course. Therefore, no attention is paid to reducing wear on the cutting blade, where the cut is left from the process and instability in the process can lead to unnecessary wear on the machine.

Sawing is seen as a simple process that has “one size fits all” solutions and has no room for optimization. Rather it is thought that if the process parameters are optimized for the specific cut, material removal rate can be improved.

### Expected solution

DAMRC would like to gain systematic insight into the cutting process of band sawing in order to uncover whether trends can be deduced that can lead to a strengthening of the level of expertise on Danish soil.

The proposal will be to carry out systematic testing of different materials, blade types and cutting parameters to assess whether trends can be detected and suggestions on how to overcome them can be derived from the project.

DAMRC will organize tests of different materials that reflect the use in the industry and process parameters that enable as many people as possible to be able to use the insights created. After testing, inspection and measurements of sample items will show which parameters optimize the cutting process.

### Result

Tests on various band saw machines and blades show that cut quality is significantly affected by process parameters. An experimental Material Removal Rate (MRR) can be calculated, and while machine-specific, such a tool could help operators optimize settings.

Through industry interviews the project also highlights the lack of standardized cutting parameters due to the perception of sawing as a rough-cutting process.

### Success Criterion

This mindset has limited improvements in cut quality, efficiency, and material waste reduction.

The project's success lies in raising industry awareness and introducing tools like the proposed calculator to drive better material processing, reduce waste, improve accuracy, and enhance efficiency.

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