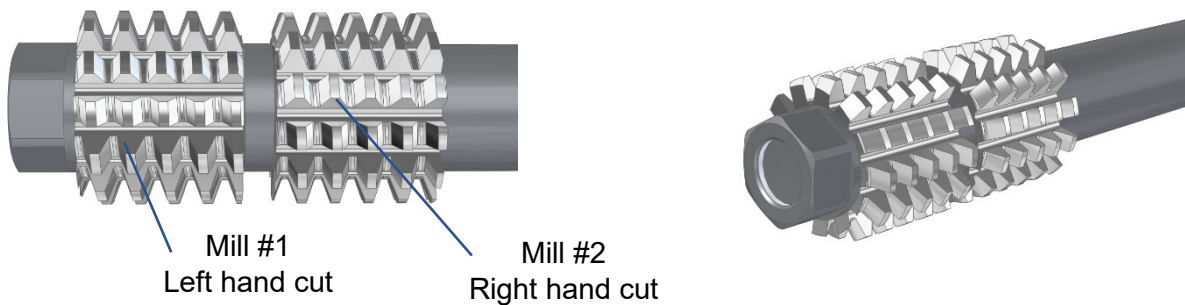


The burr-free micro-gear cutting

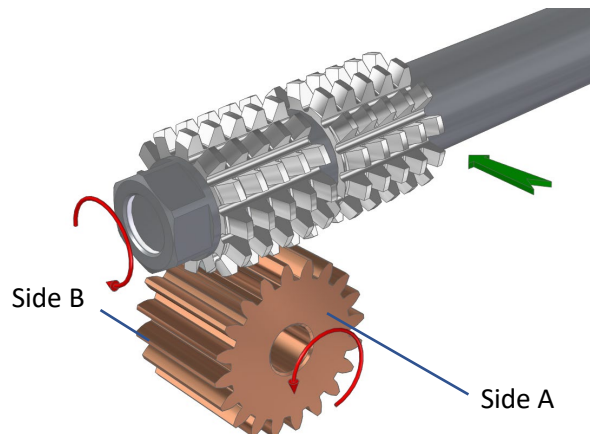
Cutting the teeth of small modules brings many difficulties. The precision required with very tight tolerances and the checking fixtures to hold these tolerances are paramount. Burr is a very delicate problem and difficult to control. There are several deburring and beveling solutions for modules $> m0.5$. Below this level, due to the dimensions of the wheels, their shape, the space required and the fact that the parts are often light, deburring or beveling operations become difficult.

One solution exists and has been tried and tested for many years: hobbing with two hobs. The two hobs are mounted on the same bar, one hob is mounted in the "right" direction and the second in the "left" direction.

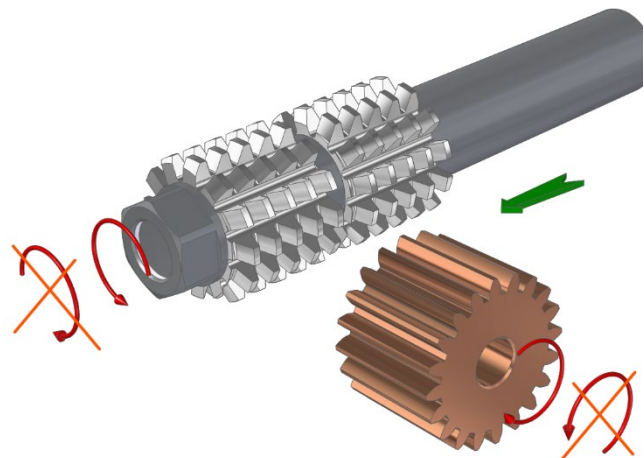


A first cut to the finished diameter is made with cutter #1. Climb milling, plunge milling above face A and then turning until the part exits on side B.

Burr on side B, no burr on side A.

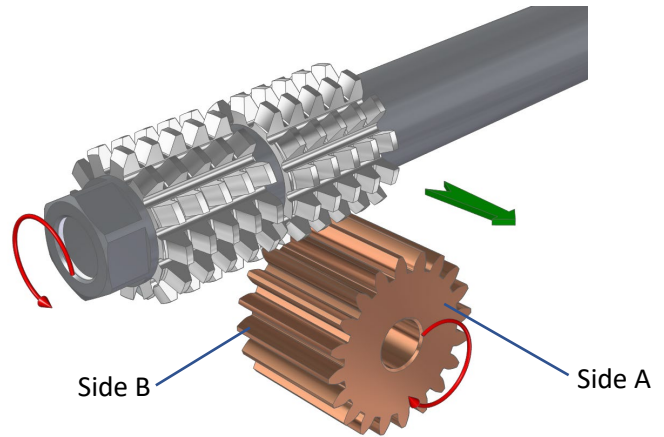


Offset the tool axis to work with cutter #2 and change the direction of rotation of the cutter and workpiece.

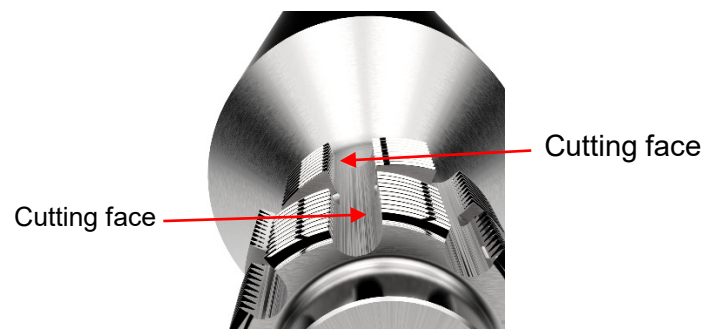


Enter the material until the axis of the milling cutter protrudes beyond side B.

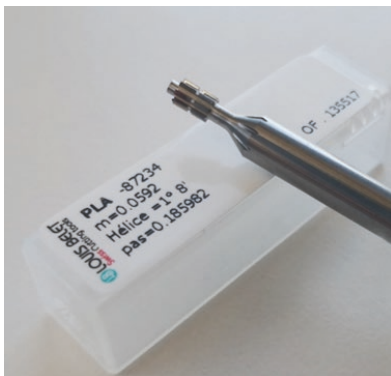
The burr on side B is removed by the #2 cutter.



To facilitate this process, Louis Bélet has developed DUPLEX hobs. A single tool, two cutting directions, right and left.



They can be made on a shaft or a disc, allowing faster adjustment to apply the principle of hobbing with two hobs.



Tested at several customers in production, this hobbing technique makes it possible to machine small modules in multiple materials without burrs.