

## ECONOMICS OF METAL CUTTING

The economics of precision machining can be understood with four factors: machining cost, material cost, tool cost, and cost of non-productive time (setup costs).

The line labeled “machining cost” (made up of labor and overhead cost of time per piece) reduces with increasing speed by reducing operating (cycle) times.

The cost for tools, on the other hand, increases with increasing speed. This is because tool life decreases with increasing speed. Since machining and tool costs vary with the speed of operation, a minimum total cost occurs at a definite set of conditions for material, tooling and operating speed.

Purchasing improved tools is one way to move the machining cost, and total cost per piece curves to the right and down, as is adding coatings, improved metalworking fluids and their delivery, and so on.

As long as the gain in speed and the drop in cost for production are larger than the cost of the improved tooling or other process improvements, you can improve or further optimize the economics of your production

