# MEASURE DRAWING DIE BLENDING

Task

The blending between reduction cone and bearing zone of a drawing die is an important parameter. A good blending provides a smooth flow for the wire material from the reduction cone into the bearing zone. In tube drawing, the blending of both die and plug must be correct in order to keep the floating plug in place. The usual way to describe the blending is as a radius of curvature.

Solution

Conoptica provides the means to measure the Blending in the Advanced Measurement Panel. Geometrically, the die profile is represented by a curve, and a range of useful parameters can be defined on it. A robust way to define the blending start and end positions is to find the tangent angle interval between reduction and bearing, and then reduce it by an increment. The radius of curvature or the length of the blending can easily be computed. Alternatively, it can be defined as the distance between the bearing and the red. cone/bearing line intersection.

Benefit

When control over the basic die characteristics is obtained, it becomes important to fine-tune the process. A correct blending can then help optimize the wire drawing by reducing friction and drawing force. The blending helps to improve surface quality, and plays a role in lubricant injection into the bearing zone. This must be weighed against the need for a long constant reduction cone.

$\alpha_B + 2°$

α_B

Bearing Zone

$\alpha_R - 2°$

Blending
Radius of Curvature

α_R

Reduction Cone

Axial Blending Length
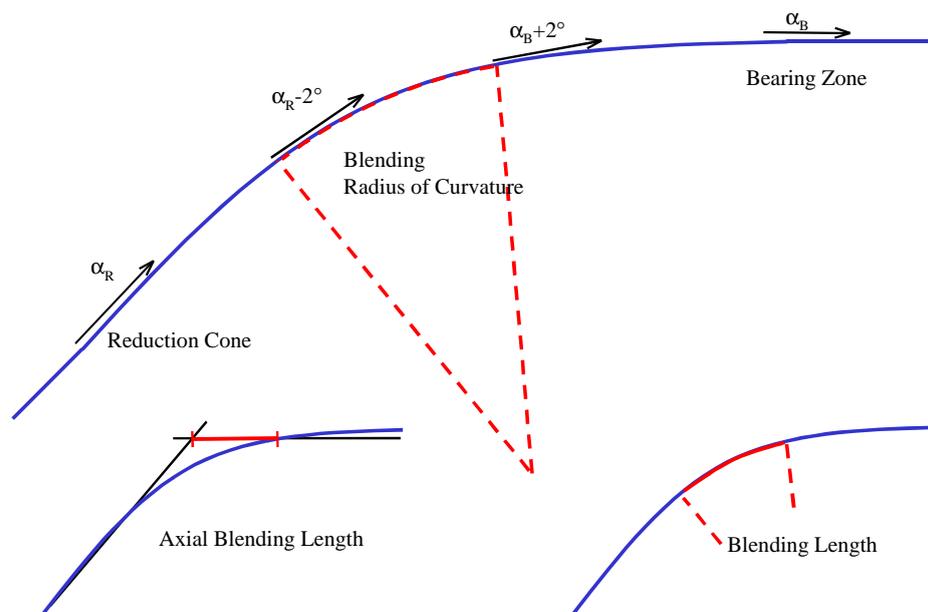
Blending Length

Step by Step

Define blending parameter:
- Open the Depth Panel where the profile is displayed.
- In the Local List, create the blending parameter using the POI Definition Tool.
- Select where to display it, either in the Main List or in a Floating List.
- Save the new settings.

Measure the blending:
- After each measurement, the blending parameter is displayed on the screen.
- Printing and export to ConOffice is also available.

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