



# P/M Gear Technology versus Conventional Gear Production

## ...When Hobbing Just Doesn't Cut It!

Powder metal (P/M) gears outperform wrought, or "cut" gears in many applications. Comparisons based solely on mechanical properties can be misleading to the gear designer ... and more expensive.

In fact, not only does P/M offer lower cost based on its net-shape processing, P/M's gear-feature design flexibility allows for a lower-stress design .

Gears produced from P/M can offer extremely complex geometries, an optimal combination of design flexibility, dimensional accuracy and part-to-part repeatability not possible with cut gears.



P/M helical gear with as-formed face features.

### With Conventional Hobbing...

- ◆ Unit indexing creates tooth-to-tooth tolerance discrepancies;
- ◆ Involutives are shaped as a series of flats, which may result in stress risers or increased NVH; and
- ◆ Part-to-part repeatability diminishes as the hobbing tool wears.



### With P/M Forming...

- ◆ The EDM-produced production die allows the entire gear to be formed at once, as opposed to one tooth at a time, thus ensuring precise dimensional consistency from tooth to tooth and in total tooth spacing;
- ◆ Involutives have the profile of a smooth arc, which improves operating performance;
- ◆ The die permits a smooth transition from the full fillet radius to the involute form, resulting in lower stress concentrations; and
- ◆ Once a die is developed and geometries are set, part-to-part tolerances are repeatable over the entire production run.

For further information on using P/M Technologies for your gear applications, call 1-248-371-0800; e-mail: [info@gknsintermetals.com](mailto:info@gknsintermetals.com)