

Carbide Progressive Dies - Advantages of Using Tungsten Carbide Tooling

Written by Rick Pollick

Mgr., Strategic Marketing – Penn United Technologies, Inc.

January 26, 2010

In the tool and die world, carbide progressive dies have several key advantages for certain precision metal stamping operations requiring long life and high volume stamping runs. Carbide is harder than steel, is highly wear resistant, and can withstand very high compressive loading.

Tungsten carbide is a cemented carbide made up of Tungsten (W), Carbon (C), and a binder such as cobalt or nickel. By changing the amount of binder, the properties of Tungsten Carbide can be adjusted to obtain specific properties needed for various applications. For example, increasing the amount of binder results in higher impact resistance, but less wear resistance. Conversely, decreasing the amount of binder results in higher hardness, but less fracture toughness. Hence, a proper understanding of the various grades of carbide can increase the chances of having a successfully designed carbide progressive die.

The selection of a carbide progressive die (over a steel die) is a consideration that should be made during the design stage of the component that is to be stamped. For applications requiring very high volumes, carbide tooling may be a good selection. Examples of this would be applications such as: lamination for the rotors/stators in motors or for transformers, surgical components, bearings, electronic connector pins, and many other applications.

The benefits of using carbide tooling for certain progressive die applications include: higher wear resistance, reduced die maintenance, and less downtime. These three benefits are inherently due to the higher wear resistance provided by the use of tungsten carbide. Higher wear resistance results in longer running times between necessary maintenance for a carbide progressive die as compared to a steel progressive die. Although a carbide progressive die still requires preventive maintenance, the less frequent maintenance intervals oftentimes result in a lower life cycle (total) cost for certain precision stamped components.

Penn United serves the following markets: Energy, Medical, Defense, and other markets requiring precision components. At Penn United, progressive carbide dies are one of our offerings that allow us to stand by our slogan...”Manufacturing Solutions. Absolute Integrity.” Visit our web site at www.PennUnited.com or call us at (724) 352-1507.



© 2010 Penn United Technologies, Inc. All Rights Reserved.

This website and all materials contained herein are copyrighted works ("Copyrights") of Penn United Technologies, Inc. ("Penn United"). The trademarks, service marks, or other logos ("Marks") displayed on this website belong to Penn United, unless otherwise noted. The unauthorized use of Penn United's Copyrights and Marks is prohibited.

[View Terms of Use](#)