Innovate

One-Step Drilling: ADF Flat Drill Eliminates Starter Hole

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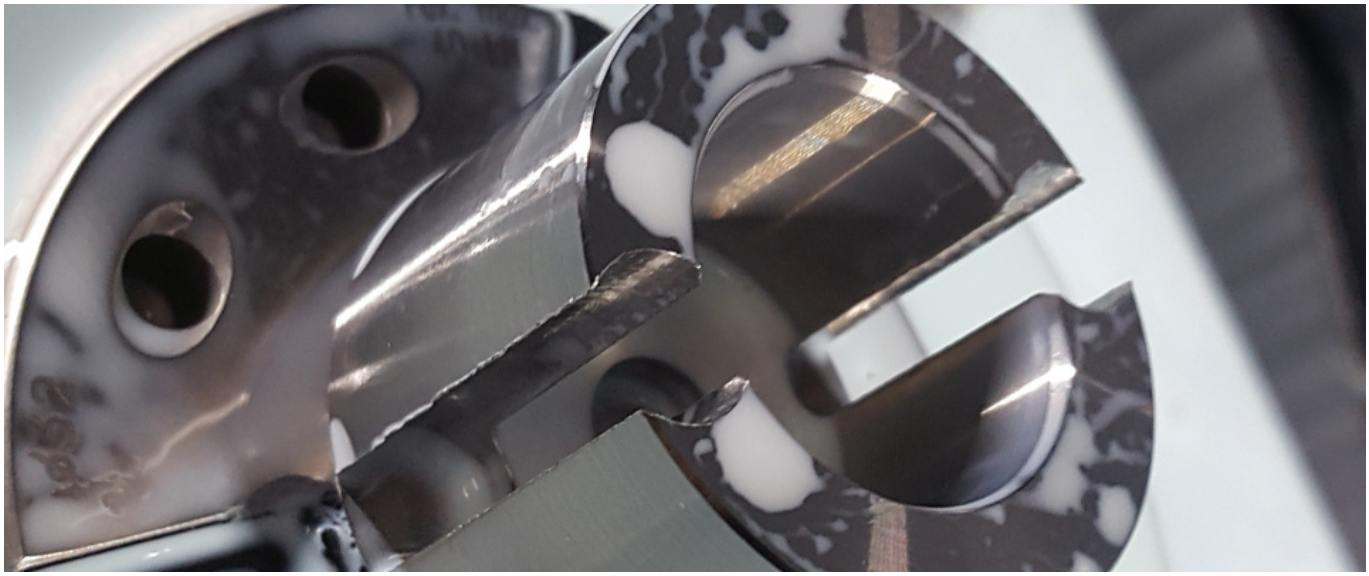
Machining flat-bottom holes traditionally required the use of a drill and an end mill. The drill is used in the preliminary center drilling operation to create a start hole, followed by the use of an end mill to complete the process. Not only is the utilization of two tools costly, additional setup time is also required to exchange between tools. When machining flat-bottom holes, maintaining consistent hole quality can also be a challenge. Burrs are common problems particularly in thin plates and an unstable cutting environment.

The ***ADF carbide flat drill***, one of OSG Corporation's latest drilling innovations, eliminates all of the mentioned machining challenges with one-step drilling, providing manufacturers with significantly improved processing efficiency and work quality. Asia Precision Public Company Limited is one of the manufacturers who has recently leveraged the ADF's superior performance in their production process.



The ADF is a multi-purpose flat drill series for machining inclined surfaces and counterboring applications without requiring a start hole.

Established in 1994, Asia Precision is one of Thailand's leading precision metal component manufacturers serving customers in various industries, including automotive, camera, compressor, machinery, medical, office automation, telecommunication and aerospace. Located in Muang, Chonburi, Thailand, Asia Precision's capabilities include cold forging, precision machining, gear making, induction hardening, anodizing, aluminum die casting, heat treatment, hot forging and component assembly. Asia Precision's product offering ranges from cam rings, lens housings, connectors, union bearings, pistons, valves, drive shafts, flanges, brackets and pins, just to name a few.

Asia Precision has four manufacturing facilities in Thailand with an estimated total production space of 20,000 square meters and over 500 employees. The staff at Asia Precision is constantly improving production processes to generate cost savings for their customers.

The opportunity to evaluate new tooling options came about when Asia Precision was assigned with a new project involving automotive parts. The work involves the machining of electric oil pump rotor parts in S45C. Each vehicle requires a piece of the rotor part. The monthly production is estimated to be around 26,000 pieces. Each workpiece requires the machining of two slots, measured 10mm in diameter and 28mm in depth. The machining center used for this particular production is the Yamazaki Giken YM-850. Initially, Asia Precision was processing these parts utilizing a 7.5mm diameter carbide drill for center drilling, followed by another 2-flute 10mm diameter carbide end mill to complete the hole.

A rotor part in S45C before processing. Each workpiece requires the machining of two slots, measured 10mm in diameter and 28mm in depth.

A rotor part in S45C after processing. Asia Precision Public Company Limited was initially machining these parts with the use of a drill and an end mill.

When *OSG* recommended the 10mm diameter ADF-2D for one-step drilling, Asia Precision's Senior Manager Prasit Mulgunee welcomed the opportunity in hopes of improving work efficiency.

Unlike conventional drills, OSG's ADF carbide flat drill is capable of creating holes in inclined and contoured surfaces without requiring a start hole. The ADF's unique balanced form and cutting edge enable reduced cutting forces with smaller chips and stable hole entry with minimal burr. With the addition of OSG's proprietary EgiAs coating, tool life can be prolonged with excellent heat and wear resistance.

The ADF is engineered for a wide variety of drilling applications, including inclined surfaces, curved surfaces, counterboring, eccentric holes, half-hole and thin plates. It is suitable for common materials such as carbon steel, alloy steel, hardened steel up to 35 HRC, and cast iron.

The ADF is able to consolidate the machining process for Asia Precision's application, completely eliminating the preliminary center drilling operation. The ADF was also tested against a competitor tool for durability. At the end of the trial, the ADF was able to more than double the life of the competitor drill, achieving 500 pieces versus the competitor's 200 pieces.

"The ADF demonstrated overwhelmingly superior performance versus the previous procedure," said Siriruk Thammajit, OSG Thailand Sales Representative.

“Asia Precision is now able to combine two operations into one. Taking the time required for tool change, the ADF is able to reduce the processing time by nearly 50%, and our customer couldn’t be more satisfied,” said Thammajit.

As a manufacturer who prides itself as a precision metal component specialist, Asia Precision is always seeking to develop new processing solutions to meet the ever-growing customer requirements. The ADF has proven to be a reliable partner in Asia Precision’s endeavor for improving quality, reducing machining time and simplifying tool management.

Click on the video here to see how the ADF flat drill excels in a wide range of applications.