



WILTON INDUSTRIES

CONSUMER PRODUCTS

HAND TOOL

Innovative hand tool developed with unique engineering and manufacturing methods

Wilton Industries, a contract manufacturer for national leading consumer products companies, approached NOVATION to assist with design and development of a highly engineered All-in-One™ screwdriver, involving unique engineering and manufacturing challenges. The screwdriver was designed with a distinctive autoloading feature that exchanges a series of screwdriver bits using a rotating end cap. The unique, multi-functional tool, required exceptional strength and presented challenging assembly processes, which NOVATION overcame with unique material selection and manufacturing automation solutions. Single-source integrated development provided Wilton with expertise and efficiencies in engineering, prototyping, testing, component manufacturing, assembly and packaging services.

Novation managed the project with a multi-functional team to address both design and manufacturing challenges.



Project summary:

- Material engineering
- Prototype and testing
- Injection molding of all plastic components
- Insert molding and specialized tooling
- Assembly automation
- Packaging and logistics

- DESIGN
- PLASTICS
- MANUFACTURING
- LOGISTICS



MANUFACTURING IDEAS.

NOVATION

CHALLENGE: The All-in-One™ Craftsman screwdriver incorporated a unique multi-bit honeycomb chamber that stored six different bits that, when rotated, introduced a different bit to be fastened and secured for use, while not allowing bits to be removed from the handle. Material and design requirements demanded resilience to withstand repeated bit changes and continuous hand torque. The challenges were compounded with the thin-walled interior honeycomb design. The original designs that Wilton introduced required material evaluation as well as functional testing through prototype validation. Injection molding and assembly also presented unique challenges.

SOLUTION: NOVATION managed the project with a multi-functional team to address both the design and manufacturing challenges. They started with material research and selected Grivory®, a polymer that incorporates 50 percent glass filler, to provide added strength and rigidity. A hot oil process was required to bury the glass content and provide a resin-rich exterior. Prototypes were developed and tested to prove the design functionality and material resilience under torque pressure.

Innovation was used during the manufacturing engineering stage as well to determine the best methods for tool design, molding process, parts finishing and assembly. A ring-gate design, used in the molding process, helped to ensure even material flow and eliminate potential for core shift in the tight tolerance areas of the interior cavity. Beryllium Copper blade inserts brought high thermal conductivity needed to rapidly cool the Grivory® material and stabilize the part.

A specially designed automation process, which incorporated CNC degating with customized loading fixtures, allowed continuous operation and short cycle times. Once parts were trimmed and prepped, bits were automatically loaded into the chamber. A rare earth magnet, which features exceptionally strong and permanent magnetic properties, was used to draw in bits and keep them secured during product use.

NOVATION also provided double-sided name imprinting, unit packaging assembly, case packing and logistics management.



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