

INNOVATIVE LIGHTWEIGHT SOLUTIONS

CLEVELAND-CLIFFS TOOLING AND STAMPING

Engineering / Tooling

Product Co-Development

Hot Stamping

Cold Stamping

Assembly and Finishing



ABOUT CLEVELAND-CLIFFS TOOLING AND STAMPING

Cleveland-Cliffs Tooling and Stamping (CCTS) specializes in lightweight, complex, hard-to-manufacture components. CCTS is one of the few companies in the market that can produce a full catalog of stamped products, producing over 85 million stamped parts annually. The Company's unparalleled technical capabilities allow it to provide deep-draw, highly complex geometries when working with challenging metals. Approximately 30% of its stamped components receive value-added assembly or finishing. CCTS is highly focused on light-weighting content, an important component in today's EV-focused automotive market.

OUR BRANDS



ENGINEERING / TOOLING

With over 70 years of unmatched experience, CCTS's world-class engineering and tooling expertise provides a foundation for excellence. Its fully-trained and certified skilled tool makers push the limits of conventional tooling philosophy, resulting in tooling that successfully manufactures both highly complex and heavy gauge parts with processes typically reserved for simpler components. CCTS' self-contained testing labs and stringent quality standards are a true differentiator in the industry. CCTS provides its customers with superior production capabilities and enhanced complex component manufacturability, driving flawless launches through reduced production cycle times, secondary processing, scrap and rework.

OVERVIEW

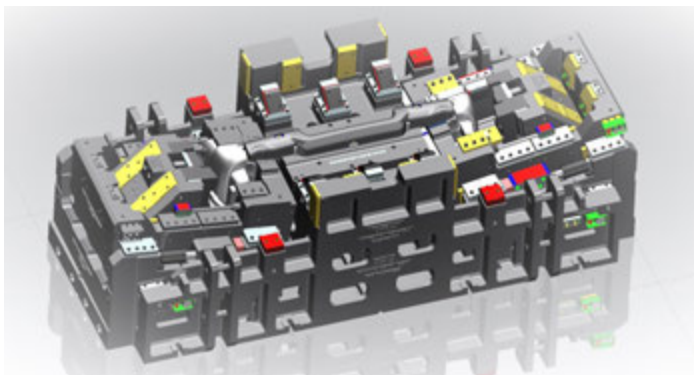
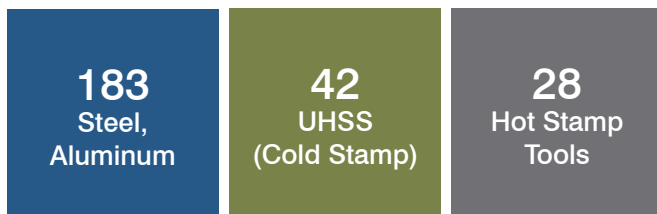
- Supports critical functionality and performance across production operations
- Complex hot-stamping and Ultra-High-Strength Steel (UHSS) cold-stamping expertise
 - Integrated hot stamping tooling with proprietary hot stamping process
 - Enhanced in-die quenching improves mechanical properties while maintaining enhanced throughput
- Enables the design and producing of tools for high-tensile strength (HHS & UHSS) components, addressing material "springback and other possible post-forming capabilities
- Broad range of die build capabilities, with special focus in robotic transfer, progressive, in-die transfer, automated transfer and hot stamp tooling

STRINGENT QUALITY STANDARDS EQUALS WORLD-CLASS PERFORMANCE

- Subject to less deviation over time versus competitors
- PPM among the lowest in the industry
- Built to optimize the usage and flow of material, resulting in reduced scrap, higher throughput, and superior part quality

TOOLING EXPERIENCE

Number of tools built in the last 2 years.



PRODUCT CO-DEVELOPMENT

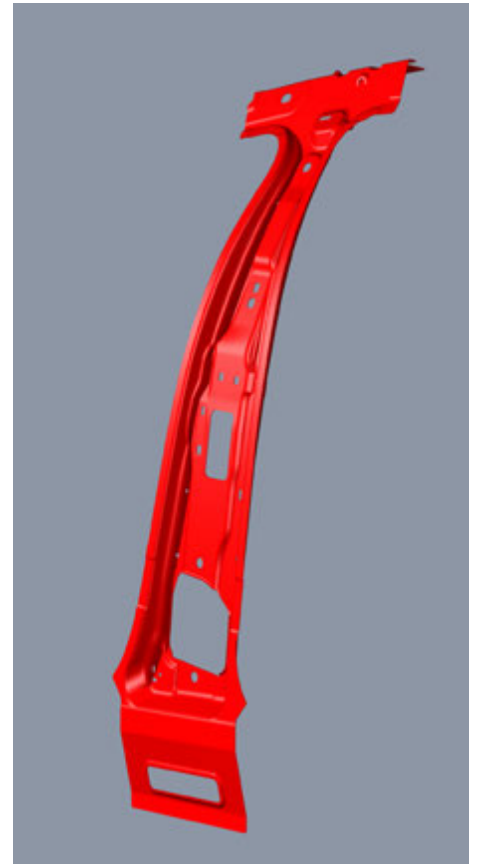
CCTS has a track record of designing tools for components that were believed impossible to manufacture. The Company views customer collaboration as an extension of its own internal engineering departments. It works in partnership to find the optimal solution for the most challenging manufacturing issues. This highly customer-centric, collaborative product development process ensures deliverables are exceeded and results are of superior quality, setting the stage for long-term, successful business relationships.

OVERVIEW

- Robust tooling and production processes for complex and difficult-to-manufacture components through leading-edge design and production validation technologies
- Component innovation, tool design, engineering, and technical problem-solving
- Complex tooling, stamping and product assembly solutions

EMERGENCY PRODUCTION SUPPORT

- Short lead time emergency production support for failing manufacturing processes or inadequate/inefficient tooling
- Improves, adapts and repairs tooling or manufacturing processes while maintaining production, ensuring no inventory outages



COLD STAMPING

CCTS is one of the few companies in the market with a full catalog of stamped components. Its unparalleled cold stamping operations offer advanced production capabilities in high-strength steels, aluminum and tailor-welded blanks, further expanding its product portfolio. Ultra-high strength steel capabilities are a key element of CCTS's lightweighting strategy

OVERVIEW

- Focused on the most complex and safety-critical cold stamp components
- Leverages advanced tooling capabilities to optimize manufacturing processes, driving above-market OEE for cold stamping
- Highly automated presses, including servo-transfer, tandem (robotic transfer) and progressive providing cost-effective and efficient production
- Large-bed, 3,000-ton press enables manufacturing of the strongest ultra-high strength steels

HANDLING CAPABILITIES

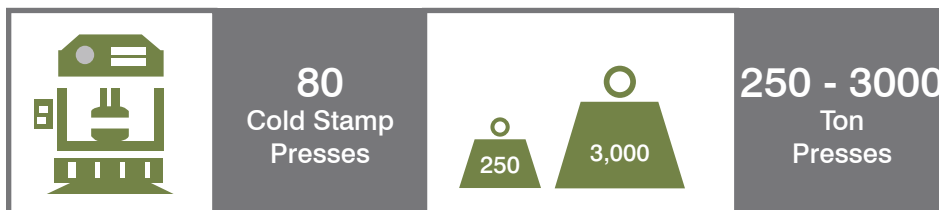
- Tooling capabilities are managed in-house, with the ability to support up to 1200 MPa dual and complex phase

TOOLING SPECIFIC CAPABILITIES

- Predictive engineering, formability validation, springback compensation, and trim line optimization
- Advanced design and production support
- Product validation
- Product consolidation
- Multi-material thickness
- Class "A" production capability

PRESS CAPABILITIES

- 17 dedicated tryout presses
 - 3,000-ton in Bowling Green, KY
 - 2,000-ton in Windsor, ON
- 80 total cold stamping presses
 - Presses range from 250 – 3,000 tons
- Strategic open press capacity for emergency takeover situations



HOT STAMPING

CCTS's patent-pending and proprietary hot stamping production capabilities are superior to those of competitors on numerous key metrics, offering customers the most effective methods for unlocking substantial weight-saving opportunities. The Company identifies potential design improvements and prototype parts internally, collaborating on new solutions with customers. This process yields higher throughput and unmatched quality.

OVERVIEW

- Focused on the most complex and safety-critical hot stamp components
- Developed 30 new hot stamp component prototypes annually
- Identifies innovations for platform specific and large-scale multi-platform/cross-OEM applications
- Rapid growth in hot stamping production driven by highly efficient proprietary process and superior tooling capabilities
- Superior tool design leverages expertise in design and engineering
- Leverages advanced tooling capabilities to optimize manufacturing processes, driving above-market OEE for cold stamping
- Hot stamping assets support large-scale components typically unsupported through competitor hot stamping assets (i.e., full door ring)

RESEARCH AND DEVELOPMENT FOCUSES

- Developing innovative, full-scale hot stamped components, reducing required secondary processing
- Substitution of thick gauged, cold stamped, structural components by hot stamped solutions

APPLICATIONS

- Bumper Beams
- Roof Reinforcements
- Pillars
- Door Beams
- Sill Reinforcements
- Rail Sub Frames
- Rail Reinforcements
- Close Out Panels



ASSEMBLY AND FINISHING

Value-added in-house assembly, laser-cutting, welding and E-coating capabilities simplify the supply chain, increase quality and allow enhanced margins for our customers.

E-COATING

- 15-stage linear transfer E-Coat system
- Located at Tillonsburg, ON facility
- Certified for 1,000-hour salt spray
- Powercron 6000cx Black Cationic epoxy electrocoat
- Film thickness – 0.5 – 1.5 mm

FULLY AUTOMATED ASSEMBLY

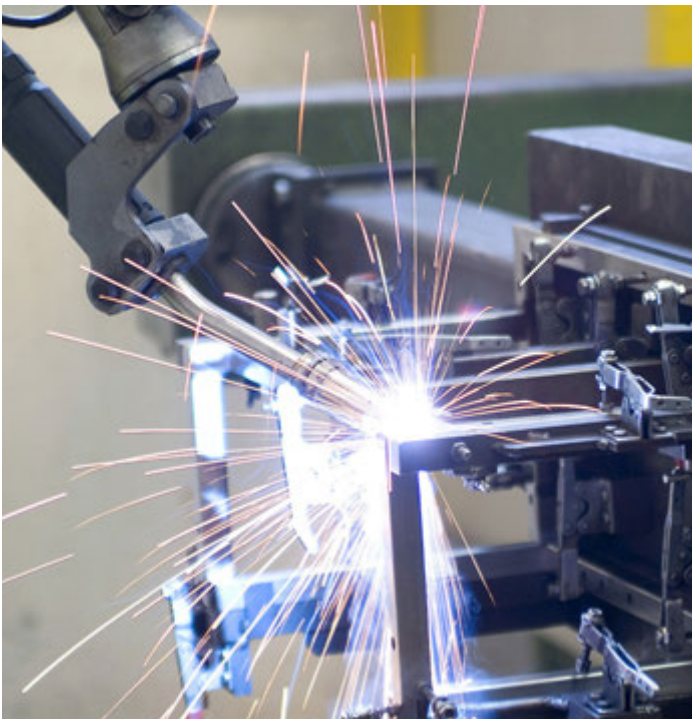
- Multiple assembly cells utilized across the organization – application of standard and non standard joining and fastening technologies and post process assembly
- Handle safety-critical components

LASER

- Laser utilized for post-production trimming and hole punching of hot-stamped components as well as tooling support
- Multiple high-speed production lasers located across the organization lasers, located at three facilities

WELDING

- 125 welding cells assemble as many as eight components into a single assembly
- Strategic open machine capacity for emergency takeover situations



About Cleveland-Cliffs Inc.

Cleveland-Cliffs is the largest flat-rolled steel producer in North America. Founded in 1847 as a mine operator, Cliffs also is the largest manufacturer of iron ore pellets in North America. The Company is vertically integrated from mined raw materials, direct reduced iron, and ferrous scrap to primary steelmaking and downstream finishing, stamping, tooling, and tubing. The Company serves a diverse range of markets due to its comprehensive offering of flat-rolled steel products and is the largest supplier of steel to the automotive industry in North America. The Company is headquartered in Cleveland, Ohio with mining, steel and downstream manufacturing operations located across the United States and in Canada. For more information, visit www.clevelandcliffs.com.



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Learn more about
Cleveland-Cliffs Tooling
and Stamping online



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