ADVANCED MOLD AND MOLD COPPER COATINGS
Maintenance Services
SMS group has been repairing continuous caster molds and advancing caster mold technology and design in North America for nearly 50 years.

With our wealth of experience, staff of mold experts, first-class equipment and advanced technology, we can provide the mold products and services needed to keep conventional, medium- and thin-slab casters producing high-quality products while extending campaigns and increasing casting speed.

**MOLD REFURBISHMENT SERVICES**

With state-of-the-art machining and mold coating facilities, our Oil City Division is a single-source for mold maintenance services. We expertly refurbish and repair continuous caster molds and their subcomponents, such as broad-face and narrow-face assemblies, breakout avoidance systems and width change mechanisms. We also can recoat mold plates using the full range of hard-facing coating options and restore both conventional and high-speed caster molds, manufactured by all major OEMs, to better-than-original specifications.

We also provide complete mold repair services at our other service centers using subcomponents expertly refurbished in our Oil City facility. Our network of mold repair centers allow us to provide superior mold service to steel producers throughout North America.

**MOLD MODIFICATION SERVICES**

Because our mechanical, electrical and coating experts have extensive experience with all types of continuous casting molds and their subcomponents, we can upgrade equipment and copper designs to maximize throughput and maintain slab product quality at a variety of casting speeds and copper thicknesses.

We offer comprehensive design services, including sophisticated 2-D and 3-D thermal modeling techniques, that can improve mold life and produce copper designs that provide more uniform meniscus heat extraction. Examples of design improvements and modifications are break-out detection system upgrades, optimized copper cold-face designs, improved width-change mechanism systems and increased mold cavity dimensions.

In response to the increasing use of high-speed casting technology that places extreme demands on the copper liners, we work closely with our customers to find ways to extend their mold life and to produce consistent, high-quality products at world-class casting speeds.
NEW COPPER MOLD PLATES

Using our depth of experience and state-of-the-art machining technology, our Oil City Division produces copper plates for conventional-, medium- and thin-slab, bloom and near-net-shape caster molds.

Our new replacement copper plates are the highest quality available and are manufactured to ISO 9001 standards. They’re made from top grade copper chrome zirconium or silver bearing copper to meet our rigid specifications for metallurgical properties and material strength. With multiple raw material sources and complete manufacturing capabilities in our facility, we can produce plates quickly and competitively.

To help our customers produce high quality crack-sensitive grades of steel at higher and higher speeds, we can also redesign cooling slot configurations to update existing designs.

COATING SERVICES

Our in-house coating department provides a wide range of coatings for copper plates from standard nickel and nickel alloy plating to leading-edge thermal-spray UniGuard® and NanoGuard® Mold Coatings.

UNIGUARD® MOLD COATINGS

The UniGuard® Coating process, our field-proven proprietary technology, can protect virtually every type of caster mold with a single extremely hard, heat-resistant coating.

UniGuard® Mold Coatings are a mold coating breakthrough because they combine a hardness equal to hard chrome and the ability to withstand the meniscus temperatures of most caster molds. As a result, molds coated with UniGuard® Mold Coatings last longer and produce products with more consistent quality.

UniGuard® Mold Coatings can virtually eliminate narrow-face wear. They also reduce taper loss, decrease corner gaps, improve corner support, provide unsurpassed meniscus protection and more even and consistent heat extraction, so campaign life and production capabilities are significantly increased.

Because less copper is removed from mold coppers coated with UniGuard® Coatings during refurbishment, life-cycle costs are reduced.

UniGuard® Mold Coatings and coating configurations are tailored to the specific needs of each mold.

NanoGuard® Mold Coating

Our NanoGuard® Mold Coating has a hardness from 200 to 700 HV and is a proprietary coating process developed by SMS group that provides superior wear resistance.
A hardened nickel-based super alloy, it can be applied as a step or full-face coating and retains its physical properties very well at casting temperatures. Our Nano-Guard® Mold Coating’s wear resistance exceeds nickel and nickel-cobalt alloy coatings and is only surpassed by our UniGuard® Mold Coating.

SPARE PARTS AND MOLD COMPONENTS

We precision manufacture spare parts and mold components for all caster designs to exacting ISO 9001 quality standards. Because we provide OEM-quality parts at lower prices and with shorter delivery times, we can help our customers reduce both maintenance costs and maintenance downtime.

TECHNICAL SERVICES

We also provide technical and manufacturing services and customer service programs to track performance, analyze cost and efficiently manage copper inventories.

Our solutions-oriented trouble-shooting services are tailored to a caster’s operational requirements and use an experienced technical staff, thermal analysis and stress modeling to help ensure peak performance, maximize product quality and reduce downtime.

MACHINING SERVICES

Using advanced high-speed vertical and horizontal CNC machining centers, we can efficiently machine copper plates of virtually any size to precise specifications. Our three- and five-axis precision high-speed machining technology also allows us to accurately and quickly
machine the complex contours and profiles required by many designs while holding extremely tight tolerances.

SPECIALTY GAUGES

We also manufacture, repair and calibrate gauges that help improve mold and continuous caster performance.

The Roll Gap and Cavity Gauge measures roll gaps in caster segments to diagnose and correct operating problems or to realign rolls after repairs.

Our TG/2 Electronic Taper Gauge is used extensively around the world. Because this gauge precisely measures the caster narrow-face mold taper, proper taper can be quickly established and maintained and narrow-face wear and breakouts due to poor endwall taper practices can be minimized.

Because our hand-held Mold Wear Gauge provides precise measurements and statistical data on the amount of mold copper wear, accurate, quantifiable standards for mold removal can be established.

With our Mold Wear Gauge, precise mold cavity sizes can be calculated and accurately set, which helps maintain consistent product quality. And because worn coppers can be identified and removed, breakouts from poor mold taper can be eliminated.

All of our gauges are easy-to-use and provide fast, easily obtainable, highly accurate and repeatable measurements with consistent readout accuracy to 0.01mm or 0.001 inches.

We also provide ISO-certified calibration services and inventory many replacement parts at our facility to expedite repairs for all of our gauges.