

SEVERCORR LLC

A GREENFIELD PLANT FOR AUTOMOTIVE SHEETS

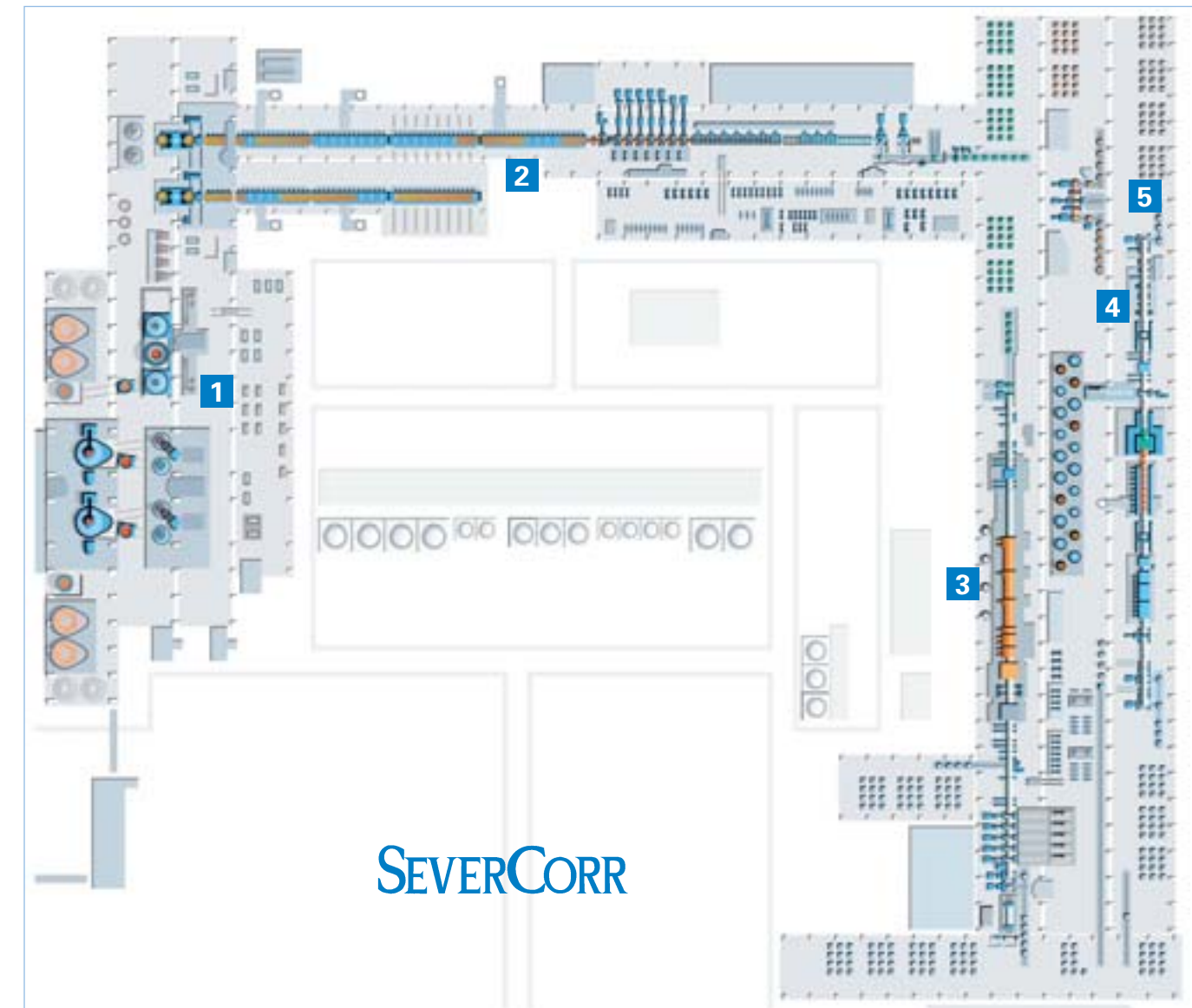


GREENFIELD MINIMILL – A NEW GENERATION OF STEEL

The Greenfield minimill of SeverCorr will be erected in Lowndes County, Mississippi/USA. The decision to arrange the steel mill in Lowndes County was driven by the site's proximity to the growing number of automotive producers located in the southern United States, access to low-cost and reliable electric power from the TVA and the business-friendly environment in Mississippi. The 1400-acre mega-site, situated approximately seven miles west of Columbus, offers the required transportation infrastructure.

The recent location of a number of foreign automotive manufacturing companies in the southern United States has created the need for a steel sheet mill capable of producing doors, fenders, hoods and panels. The SeverCorr sheet mill can supply the high-quality steels at competitive prices relative to competitor steel mills located farther from the targeted customer. Minimills, similar to the one being constructed at SeverCorr, have combined lower capital and operating costs with advanced technology, in creating more efficient plants than integrated steel sheet plants relying on virgin ore ironmaking and aged facilities.

Layout of the new minimill: 1 Melts shop, 2 CSP plant, 3 Pickling line/tandem cold mill, 4 Continuous galvanizing line, 5 Temper mill.



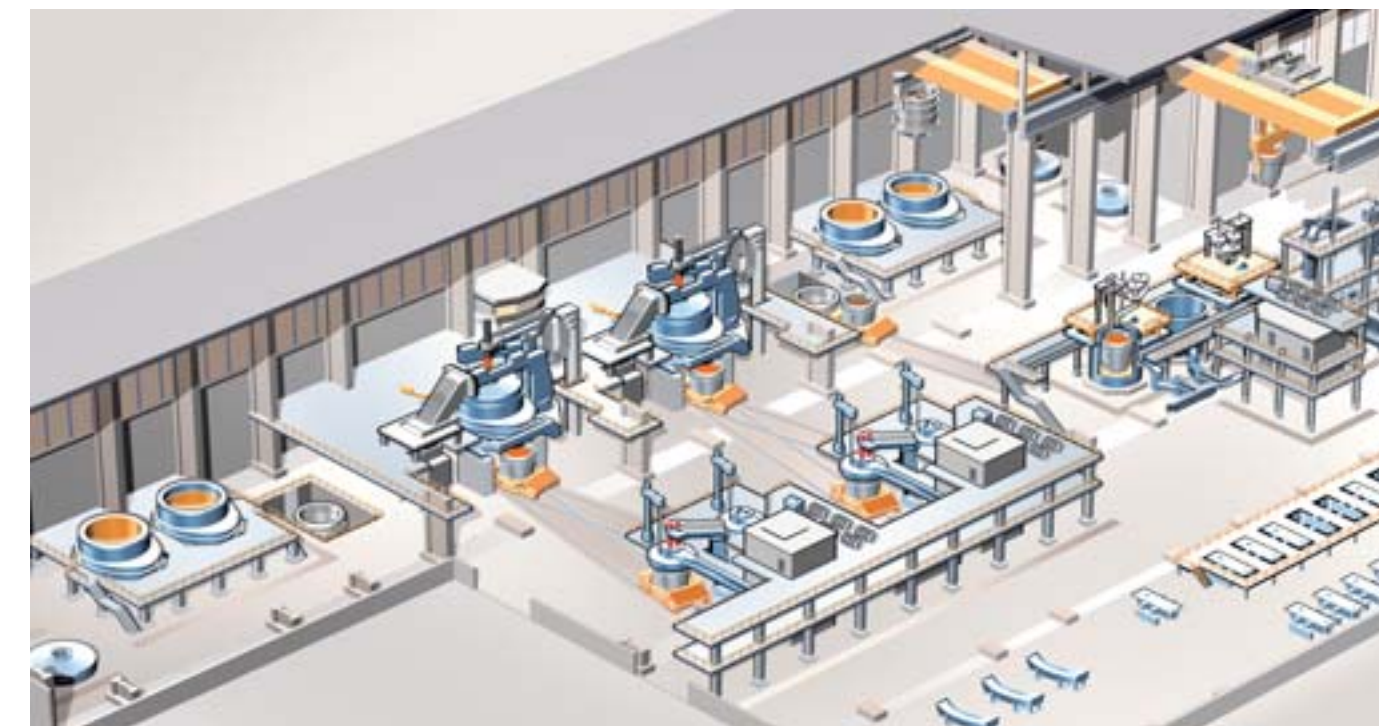
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THE STEELMAKING PLANT

The SeverCorr melts shop is designed for high productivity of high-quality steel grades up through ULC-IF grades for automotive-exposed applications. The DC electric arc furnace can produce heats at the rate of almost 220 tons/hour. The twin-station ladle furnace offers the flexibility to treat two heats simultaneously, as does the twin-tank vacuum degasser. This proven steelmaking technology assures that only the highest-quality steel will be sent to the CSP thin-slab caster.

MELTSHOP	
EAF, heat weight	nominal 150 tons
EAF, type	DC, EBT with patented pin-type anode
EAF, power	max. 160 MW
LF, type	Twin-station with joint electrodes
LF, power system	25/28 MVA
VTD, type	Twin-tank with joint vacuum system
VD pumping capacity	400 kg/h
Steel grades	Sheet steel including ULC and advanced automotive steels

Layout of melts shop, second construction stage.



2

CSP® PLANT FOR AUTOMOTIVE SHEETS

SMS Demag's supply package for the CSP plant comprises the mechanical equipment including automation for casting machine, pendulum shear, hot rolling mill, cooling line, coilers and coil transport facilities. The automation scope includes technological process models, technological controls, basic automation, plant operating elements and visualization as well as the required measuring instruments and sensors.

The CSP caster produces 1,880-mm-wide thin slabs - a width never cast before - with a variable thickness between 65 and 55 mm which serve as starting material for the production of carbody sheets and high-strength multiphase steels as well as other types of thin hot strip in the CSP hot rolling mill.

All of the six four-high roll stands come with hydraulic screw-downs, CVC^{PLUS} shifting and work-roll bending systems. The rolling mill features roll gap lubrication and differential tension loopers. The mill equipment is particularly designed for processing strip with very good surface quality conforming to the O5 quality standard at the end of the entire process chain. The runout roller table incorporates a laminar cooling system offering great flexibility in setting specific strip properties and processing dualphase steel. To safeguard the flatness of the cooled strip, the laminar cooling section is equipped suitable for edge masking.

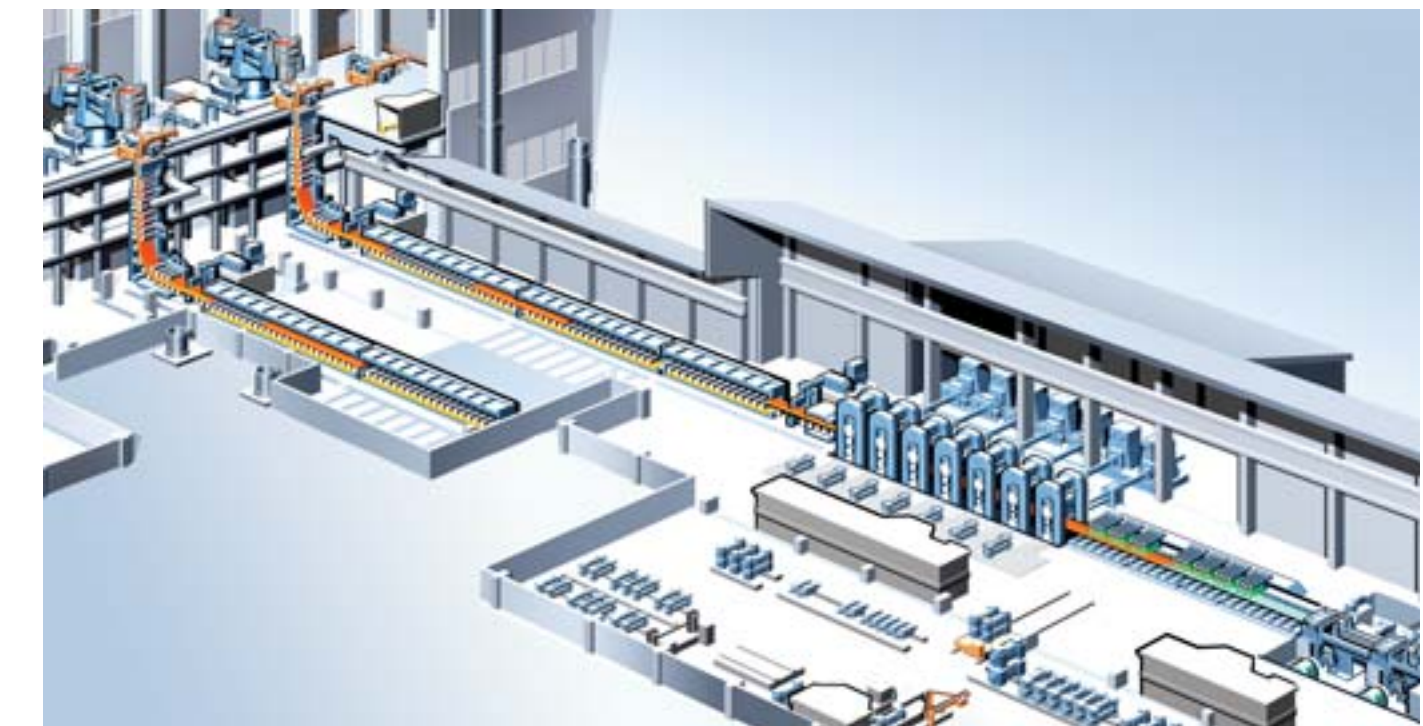
CSP CASTER

Ladle capacity	150 tons
Slab thickness as cast	70/55 mm (with LCR)
Slab width	900/1,880 mm
Casting speed	max. 6 m/min
Tundish capacity	36 tons
Shearing force	8.5 MN

CSP MILL

Six four-high stands	
CVC ^{PLUS} system, work roll bending	
Roll separating force	46 MN
Main drives	10,000 kW
Work roll diameter	950/620 mm
Backup roll diameter	1,500 mm
Final gages	1.4/12.7 mm
Specific coil weight	21.4 kg/m

Principle of CSP plant, second construction stage.



ALL PRODUCTION PLANTS FROM SMS DEMAG

CONSTRUCTION IN TWO STAGES

US steelmaker SeverCorr LLC has launched a project to set up a new greenfield minimill for the production of automotive sheets that will be installed on a greenfield site in Columbus/Mississippi. SMS Demag was awarded the contract to supply all production facilities from steelmaking through hot and cold rolling right up to strip galvanizing.

In its first construction stage, the plant will be designed for an annual capacity of some 1.5 million tons of hot strip, of which approx. 1.0 million tons will be further processed into cold strip. In the second stage, hot-strip production will be boosted to some 3.0 million tons/year.

NEW ON THE SCENE

SeverCorr is a Joint Venture between Russian Severstal and SteelCorr from the USA. The new enterprise wants the plant to go on stream as soon as possible, so commissioning of the cold rolling mill will already begin in the spring of 2007. The steelmaking plant and the CSP hot-strip production facility are due to start up in summer 2007.



STEELPLANT, CSP® PLANT, PL/TCM, CGL AND TM

The steelmaking plant consists of an Electric Arc Furnace (EAF), a Ladle Furnace (LF) and a Vacuum Tank Degasser (VTD). The downstream CSP plant comprises a thin-slab caster, a roller hearth furnace and the six-stand hot rolling mill. The key components of the cold rolling complex are a pickling line coupled with a five-stand tandem cold mill (PL/TCM), an offline temper mill (TM) as well as a continuous galvanizing line (CGL).

CSP® PLANT AS CORE COMPONENT

The core of this process chain is a state-of-the-art CSP plant which will be equipped with the latest technologies for the production of carbody sheets and high-strength multiphase steels for the automotive industry, and which will also be capable of producing thin hot strip to substitute cold strip in various fields of application.

The pickling line/tandem cold mill (PL/TCM) will be provided with our proven turbulence pickling technology as well as five four-high stands with CVC[®] technology. For hot-dip galvanizing, we will supply an alkaline and an electrolytic cleaning system, a vertical furnace and a Galvanneal line. In addition, the line will incorporate an inline skin-pass mill.

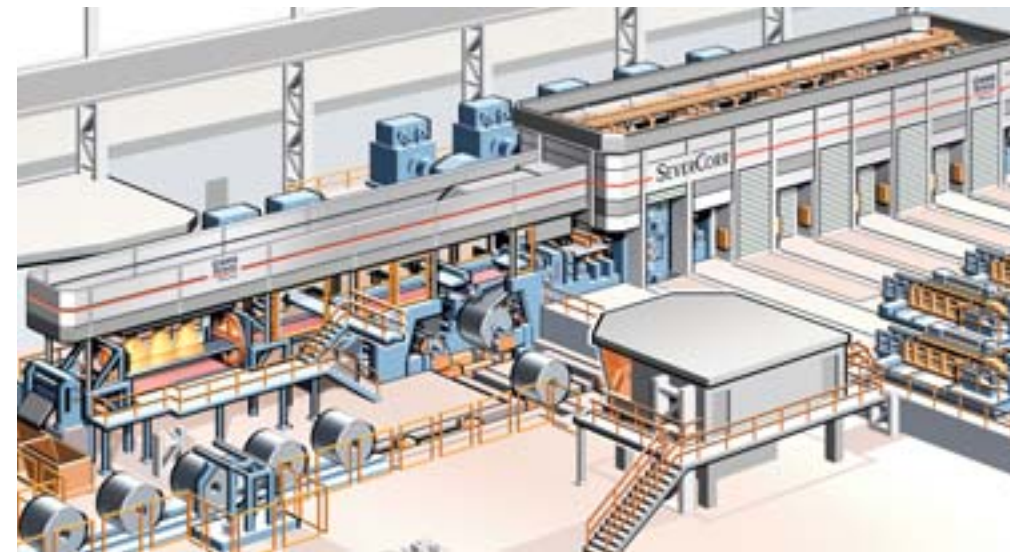
FOR SUPREME-QUALITY AUTOMOTIVE SHEETS

Winning this major order for all the facilities of a complete plant for the production of new steel products in a future-oriented market impressively underlines SMS Demag's technological leadership throughout the entire production chain.

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PICKLING LINE/TANDEM COLD MILL

Prior to further processing (cold rolling, annealing and galvanizing), the surface of the hot strip is freed from scale. This is done in a 3-stage pickling section using hydrochloric acid. The downstream counterflow cascade rinsing section takes care of removing chlorides from the pickled surface which is then dried in the strip drier. The tension leveler arranged upstream of the pickling section improves the flatness of the strip and assists the pickling process. The pickled hot strip is then trimmed to desired width.



Runout section of the cold mill with turning-type inspection system. After inspection of top surface, the system turns the strip through 180° for inspection of the underside.

The pickling line is directly coupled with the tandem cold rolling mill with the additional possibility to produce pickled/oiled hot strip. Provisions have been made for future extension to boost production to 2.0 million tons/year.

The mill stands of the 5-stand CVC-4 tandem mill are equipped with AGC cylinders, positive and negative bending, work roll axial shifting system (CVC[®]) and multizone spot-cooling in closed-loop flatness control at stand No. 5. On the exit side, the tandem mill is equipped with a double coiling section as well as an inline inspection station.

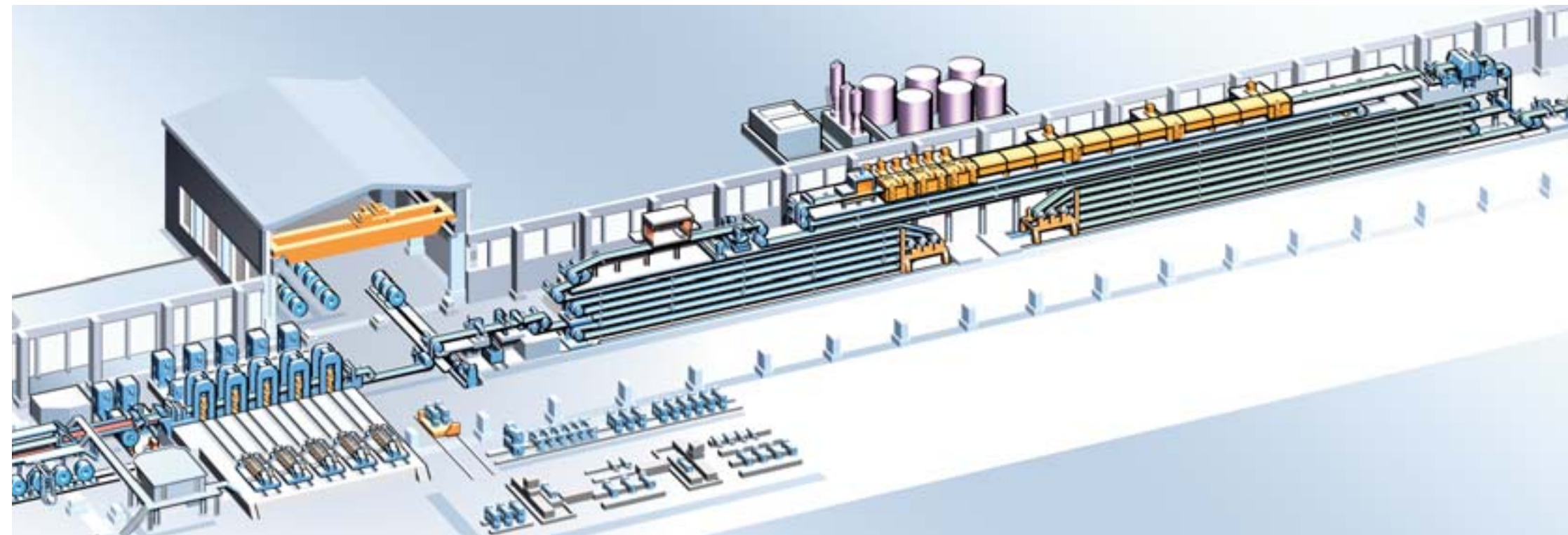
PICKLING LINE/TANDEM COLD MILL

Mill stands 1 to 5	CVC [®] 4-high
Roll separating force	max. 30,000 kN
Capacity	1,000,000 tons/year
Strip width	914 to 1,880 mm
Strip thickness, entry	1.4 to 5.0 mm
Strip thickness, exit	0.28 to 1.4 mm
Coil weight	max. 40,000 kg
Rolled material	low-carbon steel, high-strength steel

LINE SPEEDS

Pickling line, entry	450 m/min
Pickling line, process	150 m/min
Cold mill, exit	1,250 m/min

Principle of the pickling line/tandem cold mill.



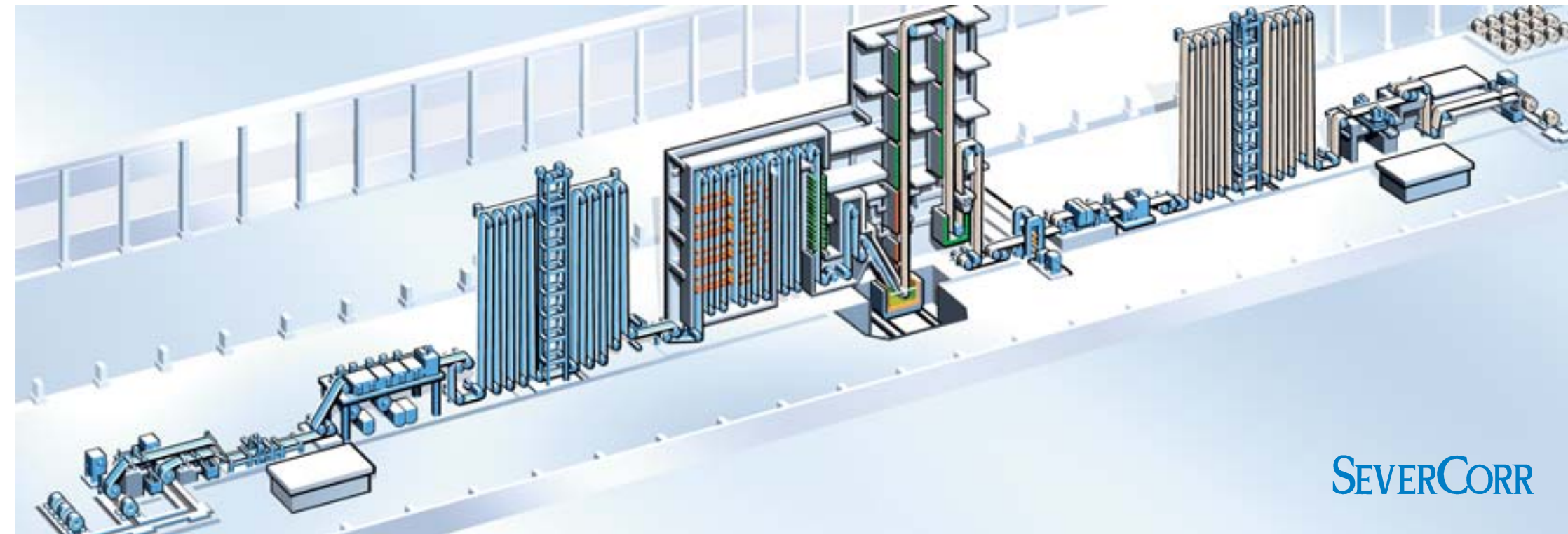
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CONTINUOUS GALVANIZING LINE (CGL) WITH INLINE SKIN-PASS MILL

The SeverCorr hot-dip galvanizing line (CGL) is suitable for the continuous production of highest galvanized steel strip for the automotive and building industries. To meet these requirements, the following machine groups are integrated, for instance: the highly effective strip cleaning system including electrolytic degreaser, the strip loop towers that ensure a continuous galvanizing process, the vertical annealing furnace for top surface quality and mechanical properties, one galvanizing pot system which can be changed to two-pot system in a future step, as well as the post-treatment sections.

The hot-dip galvanizing line also features an inline skin-pass mill, tension leveler for optimal strip flatness and the chemical post-treatment section for chromating to extend the product range.

Principle of the continuous galvanizing line.



CONTINUOUS GALVANIZING LINE

Strip width	900 to 1,850 mm
Strip thickness	0.28 to 1.4 mm
Capacity	400,000 tons/year

LINE SPEEDS

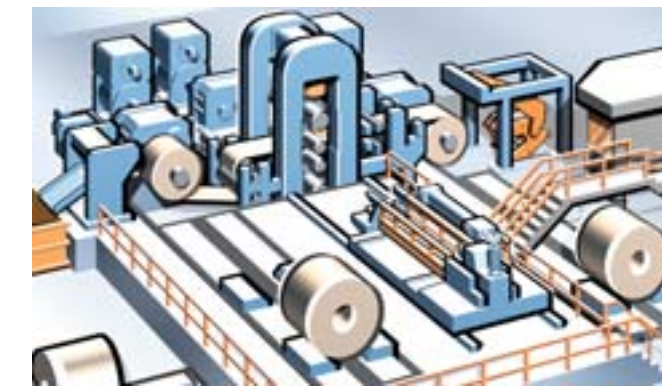
Entry section	220 m/min
Process section	150 m/min
Exit section	220 m/min

Material data	low carbon Al-killed steel, ULC-IF, HSLA, cold-rolled steel strip
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OFFLINE TEMPER MILL, TM

The single-stand 4-high mill is designed for a capacity of 550,000 tons/year. The maximum rolling speed is 700 m/min, the maximum roll separating force 13,000 kN. Strip widths range from 914 to 1,830 mm. The mill is rated for coil weights up to 40,000 kg. It rolls annealed material from 140 N/mm² to max. 370 N/mm² yield strength.

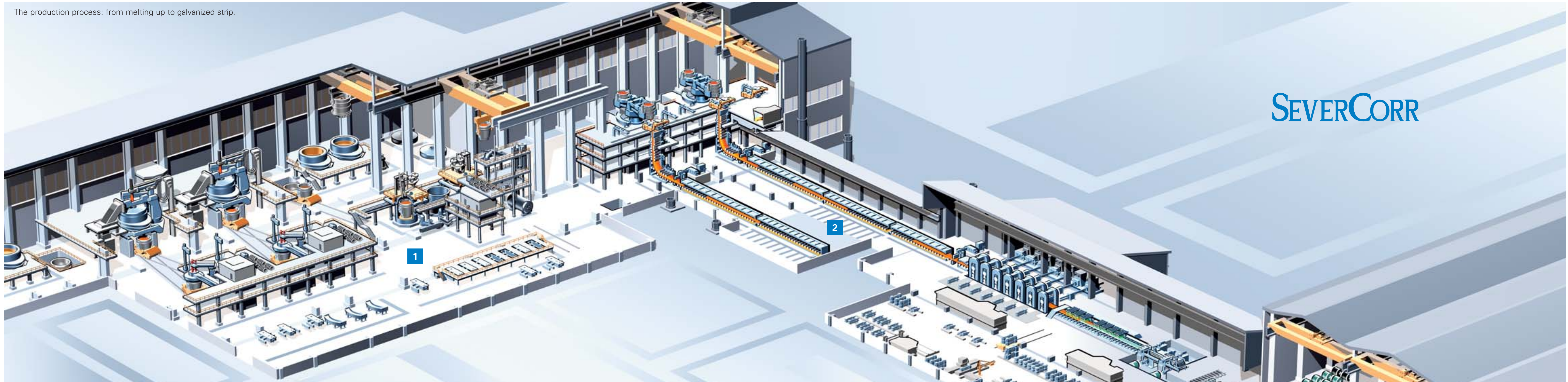


Principle of the temper mill.

THE NEW GREENFIELD MINIMILL AT SEVERCORR LLC, MISSISSIPPI / USA

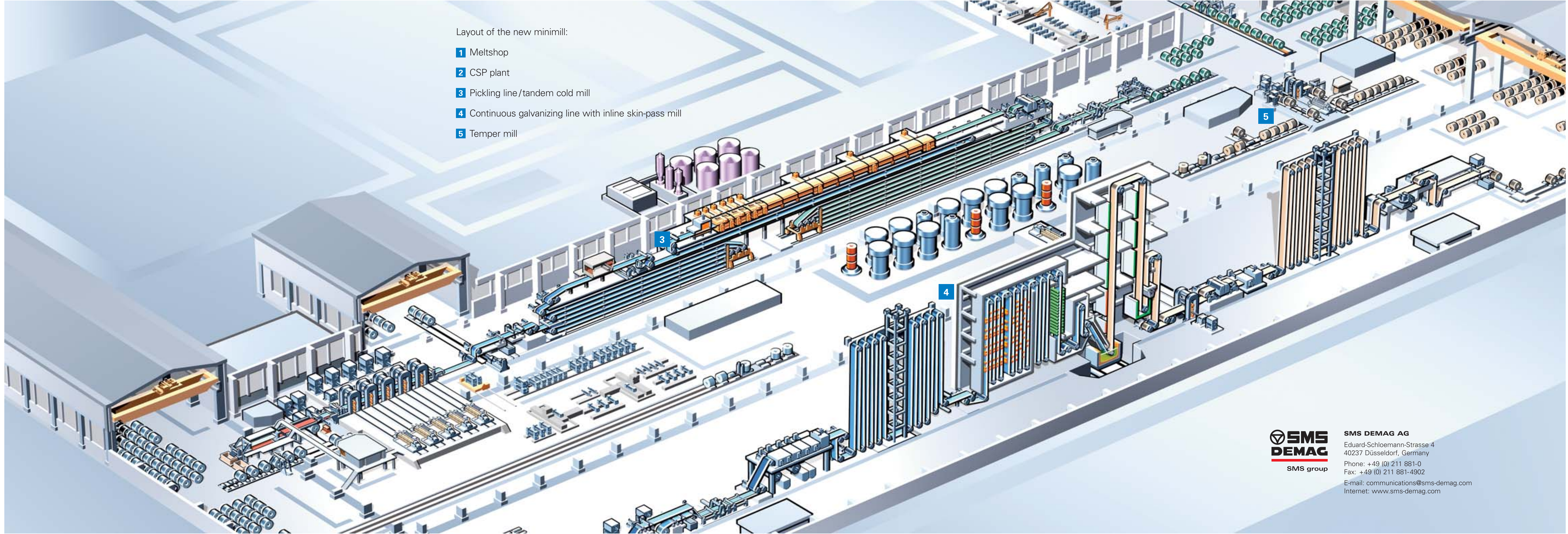


The production process: from melting up to galvanized strip.



Layout of the new minimill:

- 1 Meltshop
- 2 CSP plant
- 3 Pickling line/tandem cold mill
- 4 Continuous galvanizing line with inline skin-pass mill
- 5 Temper mill



SMS DEMAG AG
Eduard-Schloemann-Strasse 4
40237 Düsseldorf, Germany
Phone: +49 (0) 211 881-0
Fax: +49 (0) 211 881-4902
E-mail: communications@sms-demag.com
Internet: www.sms-demag.com