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CISDI1 NEWSLETTER

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Technology and Solutions Partner for the Global Metals Industry

🔍 **FULL-PROCESS SERVICES**

CISDI provides full-process services from the bulk material handling yard to the final post-processing line of rolling mill.

🔍 **FULL-FUNCTION SERVICES**

CISDI provides standard and customized consulting, execution, and operations management services.

🔍 **FULL-LIFE-CYCLE SERVICES**

CISDI provides the FEED (front-end engineering & design), implementation, and production and operations management services throughout the entire project life cycle and provides continuous after care services and support.



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China's first copper-smelting Smart Plant launches



The Smart Centre's centralised control hall enables smart operation, control and decision-making throughout all production processes

CISDI is claiming a new first in the country's non-ferrous metals industry.

A digital copper smelting plant has been built by CISDI Information Technology Co at Hongsheng Copper Corporation for China Nonferrous Metal Mining Group (Daye).

It is the first of its kind in China to feature lean production management.

Based in the Hubei Province, CNMC Daye is a state-owned mega copper corporation encompassing geological surveying, mining, mineral dressing, smelting and processing. Its production capacity ranks top in the country.

The clean cathode (electrolytic) copper production project was launched by the Daye

Corp. to aid the creation of an eco-friendly, technically-advanced Smart Plant at its nonferrous metal industry base.

The Smart Plant will produce 400,000 tonnes of high-purity coppers a year, and with lower production costs.

With many years of intelligent ferrous metal manufacturing experience, CISDI Information Tech applied an innovative digital, lean product management architecture. It comprises of "1 platform and N (numerous) applications plus 1 centre" and will be a nonferrous metal sector benchmark.

CISDI's Shuitu Cloud industrial internet platform was integral to the development of Hongsheng Copper's corporate-level, digitalised production



Aerial view of the Hongsheng Copper Smart Plant

and operation base.

Its smart applications are creating a high standard of coordination, lean production management and optimal decision-making. This enables smart operation, smart control and decision-making



Hongsheng Copper's Smart Centre gives all-round centralised control on production and operation

throughout the copper smelting process.

Hongsheng Copper's plant-wide smart centre is achieving centralised, coordinated and flat production organisation. As a result, the cost of copper smelting has been reduced.

CISDI to supply CCL to Hebei Jingye

CISDI Thermal and Environmental Engineering Co. is to supply a colour-coating line at Hebei Jingye Group's High-Quality Steel Technology Co.

The order strengthens the long-term partnership between CISDI and Jingye, which began during the successful development of the plant's CAL and its phase II CGL 3 & 5 projects.

The high-end, 100,000-tonne per annum production line will produce steel sheets for household appliances, expanding Jingye's product mix and enhancing its market competitiveness.

The line is comprised of inlet, process and exit sections. They perform a number of functions - degreasing and cleaning, chemical coating, triple coating and triple drying, hot filming, 3-colour printing, tension leveling and cold filming.

The line's surface-cleaning, chemical-coating, RTO heat exchanging air auxiliary burner drying, curing oven and offgas treatment expertise means Jingye's existing galvaluminium production line can be upgraded.

It will be capable of producing high-value-added, colour-coated household appliance and construction sheets.

CISDI's new coke screening building makes Formosa Ha Tinh's site cleaner and greener

CISDI has transformed site conditions and reduced emissions at Formosa Ha Tinh's coking plant in Vietnam.

Vastly improved results have been achieved by upgrading a dust collection system and rebuilding a coke screening building.

The site now has a cleaner indoor environment for workers and is meeting all emission target indicators.

"Our working conditions have been greatly improved, thanks to CISDI's environmental protection solutions," a Formosa Ha Tinh spokesperson commented.

Upgrades to the dust collection system were required under FHS's Environmental, Social and Governance Improvement programme.

The coke screening building needed to be rebuilt because the plant's coking process had been changed from a wet quenching method to dry and had created a dustier environment.

During a lengthy design process, CISDI engineers visited the Vietnamese site on multiple occasions, carrying out numerous investigations in order to fully understand the complex interfaces between design disciplines, the complicated equipment and the building's internal structure.

CISDI recommended the replacement of the original plate-type dust collector with a dry bag

filter system.

The team defined appropriate air volumes and optimised the necessary dust collection points and pipelines.

To counteract the fact that site space was limited, CISDI installed new facilities on elevated structures.

Despite challenges posed by stormy weather, cramped site spaces and the Lunar New Year holiday period, CISDI's team completed construction ahead of schedule by painstakingly organising all design, supply and installation work.



An upgraded dust collection system has made FHS's coking screening building greener

Baosteel Zhanjiang Steel's PV power generation on-grid

First power generation project across water, land and air, generating 47.458×10^6 kWh electricity a year and reducing carbon emissions by 29,000 tonnes a year



An aerial view of the PV power-generating facilities at Baosteel Zhanjiang, which were built by CISDI to an EPC mode

CISDI has put Step 1 of phase II of Baosteel Zhanjiang Steel's photovoltaic power generation on-grid, with full capacity.

It is the first distributed PV power generation project in China's steel industry which operates across water, land and air and is also the largest single generator in the ferrous metallurgical new energy sector.

Its installed capacity totals 46.89MW, transmitting around 50×10^6 kWh of green power a year to Zhanjiang Steel.

Achieving an annual 29,000 tonnes carbon reduction, the CISDI-built PV power generator plays an important role in boosting Zhanjiang Steel's goal of becoming the world's most efficient and competitive green carbon steel manufacturing base.

• Pioneering total solutions for ferrous metallurgical green energy

A pioneer of new energy for the metallurgical sector, CISDI's innovation-driven solutions enable the safe, highly-efficient and eco-friendly conversion and application of new energy.

Its expertise results in highly efficient power generation and reliable and safe power consumption.

Determined to reduce carbon emissions and readjust its energy structure, Baosteel Zhanjiang Steel turned to CISDI for the building of a Green Power Plant which had the capability to create energy from wind, PV and stored energy and create green power for hydrogen.

With an in-depth understanding of electric load characteristics for steel manufacturing, CISDI created total green energy solutions for the plant, and negated a number of the recognised issues of new energy supply - unstable output, weak support to the grid, low resistance to interference and large impact of metallurgical loads.

The PV power generating system has been built onto the roofs of large buildings at the East Plant, which are used as maintenance workshops for cold rolling, hot rolling and continuous casting.

A PV system has also been built on the surface of the Dongshan Lake.

Working at these locations meant many major challenges had to be overcome. The risk of typhoons and the issue of metal corrosion meant the locations required a higher standard of electricity consumption safety and electric energy quality.



Rooftop PV-installations at Zhanjiang Steel's 1,780mm hot rolling building

• Saving space and maximising PV power-generating efficiency

With space at a premium, and to ensure construction was carried out safely and reliably, CISDI's engineering specialists analysed and verified each production process during the fitting of PV panels to the workshop roofs.

They negated risks posed by high heat conditions and corrosive and explosive areas; and conducted a refined simulation and arrangement of water and terrestrial regional arrays.

As a result, the maximum number of PV panels

has been installed and these areas are enjoying a consistent radiation intensity on their matrix divided.

• Bedrock structures will withstand coastal corrosion and the worst of typhoons

All PV power-generating facilities have been built to cope with the harshest of environmental hazards the coastal site is exposed to.

Although they are rarely seen in the area, structures are designed to withstand the destructive power of intensity-level 18 super-typhoons.

• Grid connection features safer power consumption and higher electric energy quality

To ensure the power system runs safely and does not interfere with production, during the engineering phase CISDI's team carried out an in-depth survey of the plant's power supply and distribution system.

The process and load characteristics of each individual production plant were taken into account and their switch-in options were compared by collecting all existing electric room design and operational data. This led to an optimal definition of the points for switch-in.

A comprehensive simulation and analysis of power flows across the plant's power supply and distribution system was implemented and

The entire PV power generating efficiency has been systematically enhanced.

To facilitate installation and also to give extra strength, all fittings on roof, ground and water surfaces are designed with floating component simulation and stress support distribution.

High-strength equipment, and use of materials with a high property of corrosion resistance, were selected.

a rigorous grid connection solution was created. It encompasses relay protection, disconnection troubleshooting and emergency power supply measures.



A CISDI engineer provides technical assistance at the PV power generating site

Taihang Steel's ASU 35kV substation is powered up

A 35kV substation for an air separation unit at Taihang Steel has been powered up.

It is part of the steelworks' phase II substation project, which is being completed by CISDI on an EPC basis.

The Hebei Province's substation will be providing reliable power conditions for the air separation unit when it goes into operation.

The four-storey substation, which covers 2,677.08m² of floor space, is the largest at phase II.

It creates a stronger plant-wide power network structure and is equipped with a smart regular inspection system.

Working in line with the ASU's construction, CISDI Electric's team staged regular meetings to manage the construction schedule and resource coordination and discuss proposals. A high standard of safety, quality, efficiency and



Two CISDI engineers (left) are pictured onsite, discussing a solution

cost control was achieved.

Optimising construction procedures and enhancing concrete grades and strengths accelerated the electric project.

Team brainstorming improved construction efficiency, with the roof covering being completed two and a half months ahead of schedule.



The 35kV substation at Taihang Steel

NISCO's urban steelworks production is now controlled remotely

An integrated control centre has been built at the Nanjing Iron and Steel Co in China's Jiangsu Province.

Sited some 7km from NISCO's plants, which are based in Nanjing City's Liuhe District, the streamlined and modern ICC building is where full-process, centralised control takes place for five blast furnaces, three sintering plants, three stockyards, a pelletising plant, three coke ovens and two chemical recovery plants.

The centre, which creates a new fusion between steelworks and city, remotely controls these procedures for the production of 10 million tonnes of hot metal a year.

Its material tracking system is based on the ICC



From its urban location seven kilometres away, NISCO's ICC has control of a wide range of production procedures

smart platform – a sector first. This has transformed ironmaking production from experience-based decision-making to digital and intelligent levels, advancing partial optimisation to holistic dynamic dimensions.

Steel production's Smart Brain

360 screens in the 1,600m² ICC room monitor and control displays of real-time production data and status and operations and management across NISCO's three km² site is under its control.

CISDI's smart platform has integrated the steelworks' 56 control rooms, 1,800-plus monitor and control systems and over 290 automation control functions. Staff can manage and control production lines seven kilometres away.

A unique and smart control system to increase

safety and environment protection features an electronic fence, video interconnection, wireless trunking communication, 3D visualisation and collection and distribution connection technologies.

These smart features mean NISCO can monitor real-time conditions for onsite equipment, emissions and staff and ensure all sources of danger are instantly identified and eradicated, while technological and management methods efficiently reduce carbon emissions.

Innovative material tracking system – playing a critical role in cost reduction

The pioneering material tracking system CISDI has created for NISCO is a first for China's steel sector.

A digital, twin-based NISCO production process is vividly displayed on a 3D visualisation system – from the unloading of raw materials at the wharf to their primary blending and proportioning, followed by their charging into the blast furnace's stockhouse.

By following a cursor on the screens, operations staff can capture all material flow and understand each procedure's transfer, storage and mass data.

The most logical way for the steel sector to make savings at an integrated plant is by reducing the

cost of ironmaking materials.

In ironmaking, NISCO's system keeps track of more than 900 belt conveyors, around 2,000 flow items, 220 storage positions and 117 metering points.

A dynamic balance of production materials, accurate control of production tempo and efficient analysis and tracing of product quality have all been achieved.

As a result, the sinter ratio with a grade 1 basicity level has risen by 7 per cent and the return fine ratio has fallen by 4 per cent. The blended iron to silicon standard ratio is reduced by 0.1 per cent.

These achievements lay a solid foundation for smooth blast furnace production.

Lean production management leads to record techno-economic indicators

When CISDI developed the smart platform it combined NISCO's production expertise into 200-plus assistant operation models for smart proportioning, blast furnace stack mirroring and temperature forecasting and profile optimisation.

More than 400 reports from the platform have enabled a number of record indicators to be achieved:

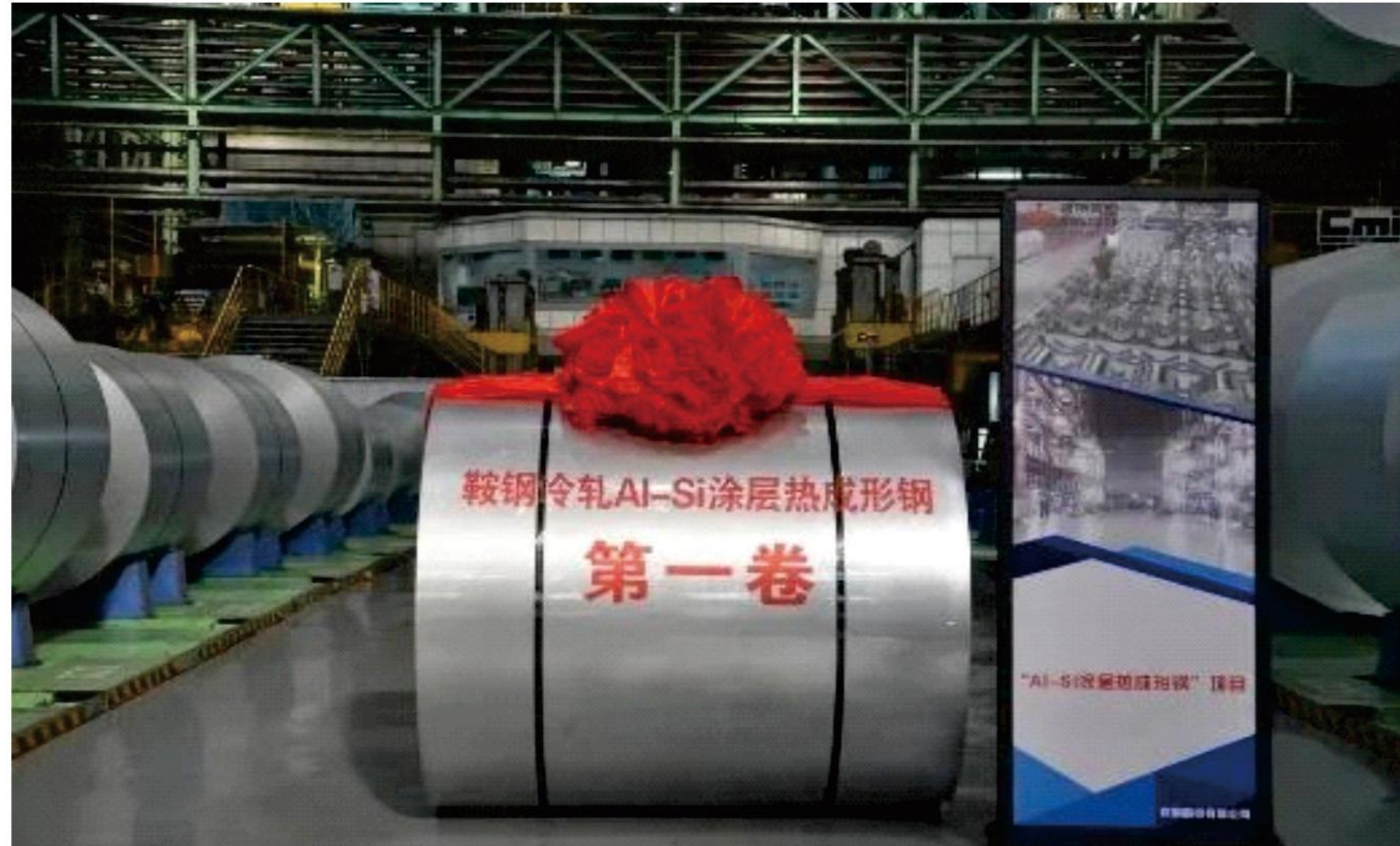
- A furnace temperature forecasting accuracy ratio of over 90 per cent
- A 10kg/t higher coal ratio
- A fuel ratio reduction of at least 20kg/t
- Zero hanging incidents in a continuous five-month period at the five blast furnaces
- The blast furnaces are operated in a

standardised way to ensure smoothness and stability. Since the ICC was put online, their output and blasting volumes have risen steadily.

NISCO's production organisation has been transformed and conventional borders have been removed. Borderless coordination across the plants brings operational and production control to wider, deeper dimensions.

The ICC has integrated and streamlined conventional organisation, reduced the number of workshops by 42 per cent, decreased section or department numbers by 53 per cent and removed 480 workers from posts in hazardous conditions.

First application of CISDI's Al-Si plated coil heat treatment tech sets a world record



The first heat-treated Al-Si plated coil produced by Ansteel, with CISDI's expertise and critical equipment

The world's strongest Al-Si plated coil was recorded when Ansteel Cold Rolling Plant's galvanising line 3 discharged its first hot-test.

The coil had a strength of 2,000MPa and this achievement marks the highly successful launch of Ansteel's Al-Si plated coil heat treatment technology.

The plant's original line had been operating since 2005 and was rebuilt to meet today's market demands for upgraded products.

CISDI Thermal and Environmental Engineering Co designed and supplied the critical equipment for the rebuild, which adds high-end Al-Si plated coil production to Ansteel's existing galvanised (Zn-plated) coil expertise.

This line, which is based in the Liaoning Province, marks another chapter in CISDI Thermal's new plating technology and application, superseding its leading expertise of Zn-Al-Mg plating.

CISDI

THE FUTURE OF MAKING STEEL



Meet Us at METEC Hall 4/ C24 — CISDI Booth

