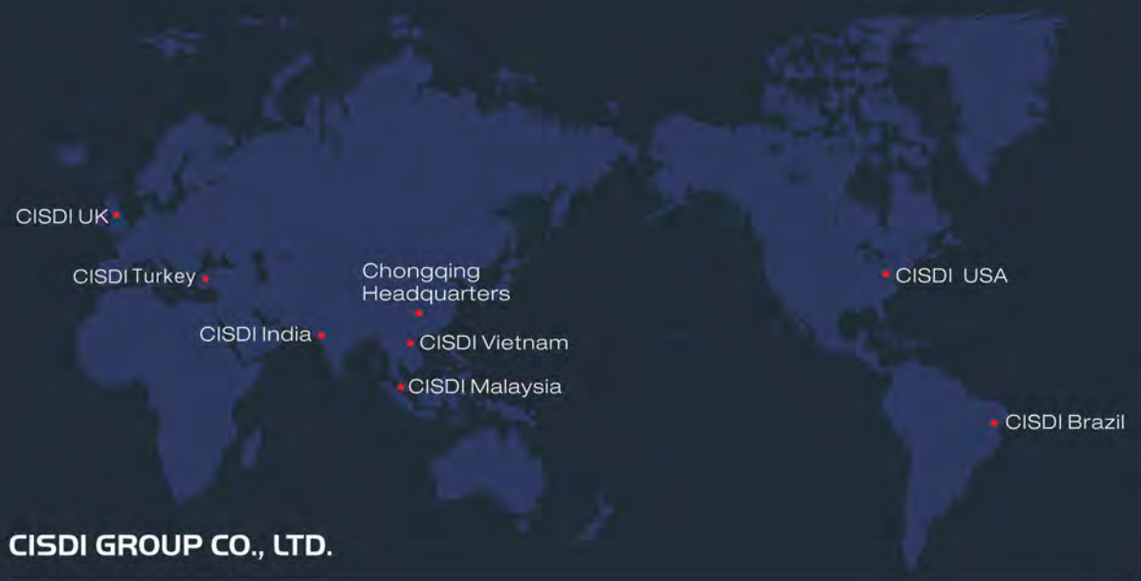

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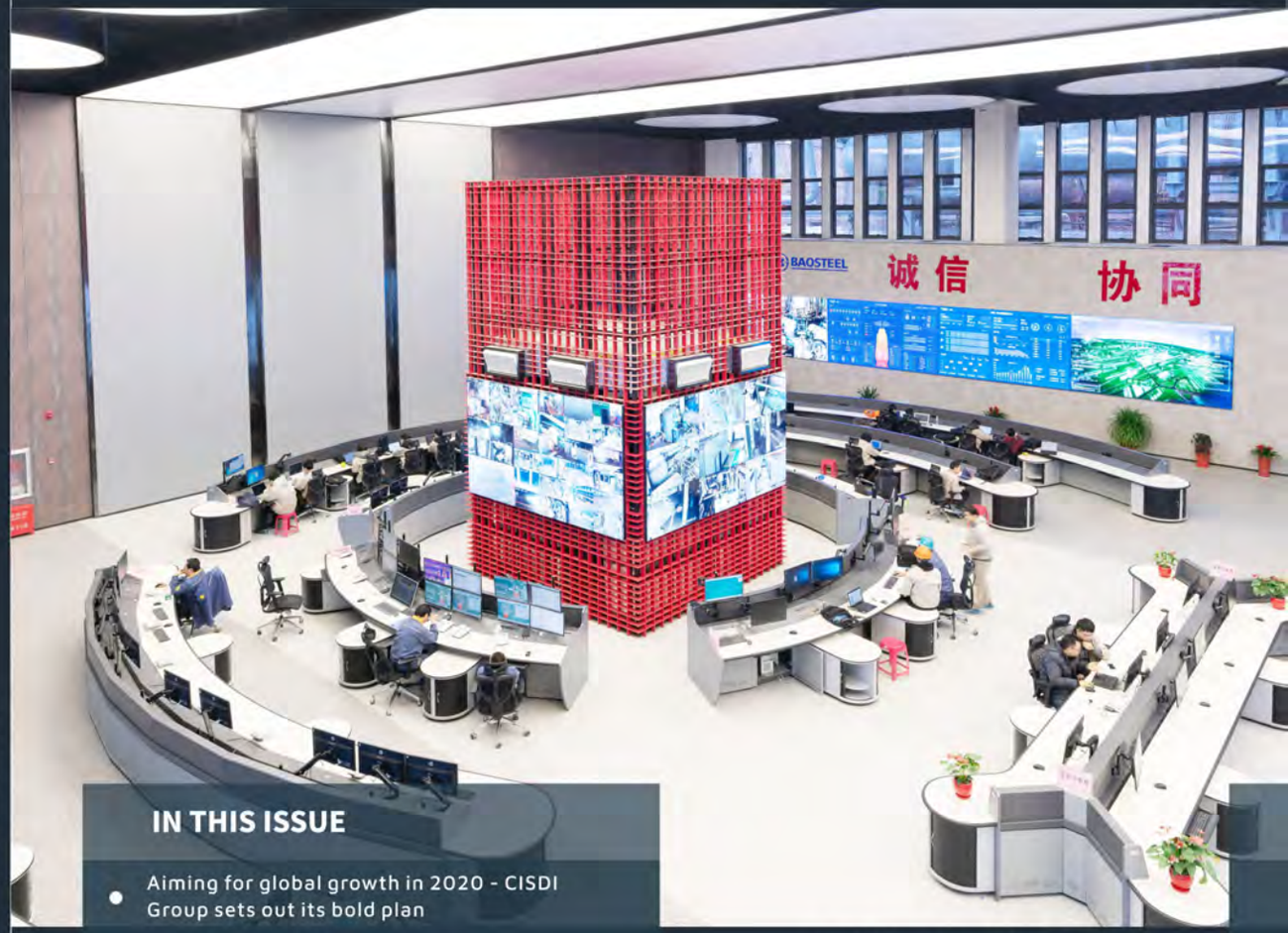

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WISCO's ironmaking and rolling goes state-of-the-art

CISDI

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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Aiming for global growth in 2020 - CISDI Group sets out its bold plan

—— Steel sector is the core focus

CISDI Group's 2020 annual meeting, staged at the company's headquarters in Chongqing

CISDI Group set out its key objectives for 2020 at its annual general meeting in mid January.

Based on analysis of the economic situation in China and abroad and development trends facing steel enterprises and engineering companies, each of CISDI's businesses will firmly focus on the steel sector.

The Group has also pledged advancements in intelligence, urban and green projects.

CISDI has been firmly focussed on internationalisation and intelligent development for a number of years and is marching ahead with its ambition to become one of the world's top engineering companies.

The Group's core technology and equipment and its intelligent and green manufacturing expertise consolidated its competitiveness in the global steel sector in 2019, a year when critical areas of the business, core products and services offered to major customers were significantly strengthened.

A multitude of significant high-level projects were successfully carried out inside and outside China, including the master designs for Baowu Group's Yancheng Steel and Hebei Jinxi Steel's Fangchenggang Plant.

The previous year 2019 saw the Group make vigorous advancements in its expertise for intelligent manufacturing.

A number of benchmark intelligent projects went operational, following Baowu Group's Shaogang new CISDigital Integrated Control Centre (ICC) for the plant's stockyard, coke oven, sinter plant, blast furnace ironmaking, energy and water.

CISDigital products are also transforming WISCO's hot mills, Zhanjiang Steel's stockyard C and its water treatment plant.

2019 also saw the Group achieve strong momentum in international arenas. Its UK-based overseas business centre launched and CISDI Vietnam and CISDI Malaysia were registered.

CISDI's operations in the UK, the USA and India continued to play a pioneering role in creating relationships with partners and customers in their home nations.

Orders came in from ArcelorMittal, TATA Steel, OYAK and Gunung Steel for plants across the globe – from Europe to the Middle East, Latin America to the Belt-Road Initiative route.

CISDI also saw one of its BRI plants win China's Lu Ban prize for achievements in overseas construction. Malaysia's biggest and most advanced steelworks, ASSB's 3.5-million-tonne plant is situated on the Belt and Road Initiative route and has created many local jobs. CISDI was the master designer and core equipment package supplier for the steelworks.

During 2020 the Group will push ahead to optimise the development of its four major sectors.

A comprehensive alignment with international standards will boost the company's quest for internationalisation.

Upgrades will continue to be strived for in engineering design, project management, cross-cultural communications and business management. Investment will be made in increasing staff expertise and experience.

The company is also pledging to achieve more research and development results and create further market and efficiency-driven technologies.

CISDI puts safety first during the COVID-19 pandemic

CISDI has been prioritising the health and safety of its staff since the COVID-19 outbreak in China.

Following the country's national guidelines, on February 3rd, the company was able to resume work. Most employees are working online from home and a limited number of staff are now back in their offices.

Detailed instructions have been released to employees to ensure safe travel and personal protection in relation to the virus.

Resuming work on its EPC-based projects, CISDI has organised project evaluations according to schedule, cost and labour and will ensure critical projects are not delayed.

Around 100 project managers are working with customers, sub-suppliers and construction companies to create catch-up procedures.

To ensure overseas projects can progress, CISDI has studied epidemic control requirements in the countries in its target market.

CISDI Equipment Co.'s engineers and staff, working in full PPEs and face masks in their Chongqing workshop

At CISDI's global offices in the UK, USA, Germany, India, Vietnam, Malaysia and Brazil, teams are staying abreast of new changes in government health guidelines and staff are working remotely wherever possible to support local suppliers and international customers.

CISDI staff stationed at project sites in Vietnam, Indonesia and Bolivia currently remain at their posts during the epidemic as CISDI makes every attempt to fulfill its contracts while protecting its employees and the communities they are working in.

CISDI Group is hugely appreciative of the help and support it has received from its customers and partners at home and around the world and pledges to return those favours should they be needed at any point as the epidemic's global situation changes.

Strict controls and temperature measurements are in place at the main gate to CISDI's headquarters in Chongqing (left) and at the gate to MCC SFRE in Xi' an (right)

Clad in PPEs and face masks, workers handle heavy components at SFRE Heavy Industry Equipment Co. in Xi'an

Work has resumed at Caofeidian International Ores Trade Co. in the Hebei Province

CISDI wins top award for its green EAF

The CISDI-supplied 90-tonne EAF for SPCO's VKS Plant in Vietnam

CISDI's expertise in green and ultra-efficient electric arc furnaces has won the company a national technological prize.

The electric arc furnace melting process is key to the scrap re-utilisation industry. It consumes two thirds less energy and produces only a third of the carbon emissions of the blast furnace - basic oxygen furnace integrated process and is an important new method for metal recycling.

EAF melting is already playing a vital role in China's steel re-engineering programme.

It took CISDI over a decade to develop its world-leading green, high-efficiency EAF.

Having partnered with other organisations, CISDI addressed the issues which occurred in the all-scrap-charged EAF melting process - high energy consumption, unstable quality and dioxin pollution.

CISDI's green model features an ultra-high-powered intelligent power supply system and an efficient and ultra-clean melting process.

In addition, the EAF has an eco-friendly scrap transport and pre-heating system and an efficient, coordinated control system.

The EAF's UHP intelligent power supply and the eco-friendlier melting process have achieved top global indicators.

The green EAF has been widely promoted to markets in China and abroad and has been exported to Russia, Italy, Turkey and Indonesia, where it is demonstrating tangible social and economic benefits.

It has been awarded 20 invention patents, 37 patents for utility, five software copyrights and three applications for the WIPO's Patent Co-operation Treaty (one licensed).

Patents have also been granted by the EU and Japan.

In addition, eight standards have been formulated, two of which are international, four are national and two are industrial.

Some 91 papers have been published, including 34 under the Science Citation Index.

The EAF award is the second of its kind in China. The first award was also won by CISDI in 2016 for its high-efficiency, low-consumption mega blast furnace expertise and equipment.

WISCO's ironmaking and rolling goes state-of-the-art

WISCO's intelligent centralised ironmaking (top) and rolling (bottom) centres, which were built by CISDI to an EPC mode

WISCO's intelligent centralised ironmaking and rolling centres went operational in January.

WISCO's two intelligent centres uphold the "All in One" concept – making production simple and enable centralised control of all manufacturing operation rooms, robots on operational posts, remote operations management and online services.

Built by CISDI to an EPC mode, they are the second reference for the CISDigital Integrated Control Centre (ICC) in China and an upgrade of the first reference, which has been operating at Baowu Group's Shaogang since the end of 2018.

IMAP, an intelligent ironmaking philosophy, has also been introduced at WISCO, an industry first.

The integrated centralised control centre has transformed conventional centralised controls. The integrated system covers the operation, control and management of seven procedures – ironmaking, sintering, coking, stockyard, energy, rotary hearth furnace and environmental protection.

Mass integration of major production procedures and mass optimisation of technological processes has been achieved.

The plant has been made safer and management is more organised as a result.

Based on big data decision-making expertise, the intelligent ironmaking centre collects a mass of data and puts online new-generation intelligent applications for monitoring, identification and diagnosis. As a result, production becomes self-adaptable, self-diagnostic and self-optimised.

"One Map" control, based on remote sensing visualisation and artificial intelligence expertise, is innovatively applied to the pan-ironmaking areas where a wide variety of dispersed information has been very difficult to manage.

The three-dimensional dynamic "map" roams around those areas, acquiring and accurately positioning the information and data needed for production, equipment, staff, safety, environmental protection, video and pre-alarm.

The WISCO pan-ironmaking plant is working as a Digital Factory.

WISCO's intelligent centralised rolling centre is the industry's first creation of an integrated control for multi-mill operations, production and maintenance.

The centre successfully passed its hot-commissioning with remote controls at the end of 2019 and has since been smoothly and continuously producing wide strips by remote rolling.

Application of the internet of things, fault diagnosis and big data analysis enables comprehensive data acquisition and intelligent analysis for the rolling lines. Equipment status can be pre-alarmed, a fault can be accurately positioned and rolling quality be optimised.

3D visualisation, digital coil warehousing and big data analysis are all contributing to the creation of a smart, safe, green and highly-efficient digital hot rolling line.

Fact file

Construction of WISCO, the first large steel complex founded after China's liberation, began in 1955 and was completed by 1958.

WISCO merged with Baosteel into Baowu Group in 2016.

Current production capacity is around 40 million tonnes and the complex is equipped with state-of-the-art equipment and facilities for mining, coking, ironmaking, steelmaking, rolling, logistics and utilities.

CISDI's stockyard rebuild has test run at Baowu Group Qingshan

The stockyard C's semi-portal scraper reclaimer travels for reclaiming materials at Qingshan Steel

Baowu Group's Qingshan Steel plant has put its rebuilt stockyard through a trial production, by charging the raw materials into the ironmaking plant.

CISDI's eco-friendly and intelligent ECIA model C stockyard has been applied and stockpile's maximum cross section has been expanded to 1,000 square metres without changing the yard's 90-metre span or its height.

Maximising stockpile improves both the yard's storage capacity and cost savings per tonne of ores.

The top eco-friendly stacker uses long-distance drag chains for its power, water and gas supplies and for its communications.

Innovative use of an air cable supplies compressed air to the stacker. This solves numerous problems encountered by having an air compressor onboard the stacker, such as a high fault rate, unstable operations and high operational cost. It also enables the air-mist dust suppression device to run more stably and efficiently.

The stacking belt conveyor is optimised for its remainder recovery technology and reduced the cost.

Qingshan Steel's stockyard rebuild applies CISDI-patented autonomous process selection, digital stockyard and unmanned stacker-reclaimer expertise.

It will enable intelligent operations management and the Pocket Factory for the foreseeable future.

An intelligent centralised stockyard control centre is now on the agenda, which will co-ordinate with WISCO's intelligent centralised control centre for ironmaking and upstream procedures.

Start-up of new coal silos turns Maanshan Steel greener

Maanshan Steel Phase I's 10 new, energy-efficient coal silos are now successfully discharging materials.

The silos were built by CISDI to an EPC mode and were ready ahead of schedule.

The coal silo plant, located in the southern section of the coking plant, is designed to be fully enclosed, which will protect against material losses caused by wind and rain.

An important step in transforming Masteel into a green, modernised urban steelworks, Phase I's silo start-up is set to bring many environmental, economic and social benefits.

The advanced silos will reduce energy consumption and emissions and improve air and water clarity in the local area.

They will upgrade Masteel's intelligent manufacturing levels and improve coal proportioning accuracy.

Once they are in operation, Masteel's outdated and high energy-consumption equipment will be demolished. Unsafe factors will be eliminated, promoting Masteel's HSE levels.

Ultra-thin sheet now rolling off Jingjin's new cold mill

A 1,050mm 6-hi single-stand reversible cold mill went operational at Tangshan Jingjin Cold Rolling and Galvanising Co. in the Hebei Province. Built by CISDI to an EPC mode, the mill's first coil production was 0.295 millimetre thick and 1,000 millimetre wide.

The cold rolling line is designed to make up to 150,000 tonnes of wide sheets of various specifications a year.

The mill's maximum rolling force is 1,000 tonnes and its maximum rolling speed can reach 1,000 metres per minute.

The mill's unique feature is its capacity to roll an extremely thin specification of sheet, at 0.12 millimetres.

Coils produced at Jingjin's 6-hi single-stand cold mill

The design, manufacture, installation, commissioning supervision and product quality have been praised highly by Tangshan Jingjin.

Switch-on for Meishan Steel BOF dedusting

Three CISDI-supplied HV frequency converters are now operating for the primary dedusting system of Meishan Steel's three basic oxygen furnaces.

CISDI package-supplied the three MVC1200-06k/380 HV frequency converters, which match 6kV/2800kW load motors and a nominal output current of 380A.

Each BOF has a capacity of 150 tonnes.

CISDI Group has now supplied a total of 17 MVC1200-series HV converters to Meishan Steel. There are around 100 references for the BOF dedusting process, proof of CISDI's expertise in highly-reliable critical speed regulation.

CISDI-supplied MVC1200-series HV converters at Meishan Steel

New bar mill running at Xiangtan Steel

A transformational new bar mill at Xiangtan Steel has passed its hot commissioning.

Its operation will upgrade Xiangtan Steel's bar product quality and create higher added values to its products.

Supplied by CISDI, the mill will produce 600,000 tonnes of high-end round bars in a specification range of 20 to 90 millimetres.

Part of the Hunan VALIN Group, Xiangtan Steel is dedicated to optimal wire rod, bar and wide plate production.

The stock material used for the hot test was a piece of 280mm square billet. The mill successfully rolled out a round bar with a 60 millimetre diameter. The final rolling speed reached 3 metres a second.

The CISDI-supplied mill at Xiangtan Steel's bar rolling line

Xiangtan Steel regularly uses CISDI's services in its goal to become one of China's top long products rolling bases and automobile industrial base in Central South China.

January orders report

• Jianlong Group Ningxia's twin high-speed wire-rod mill

CISDI will supply the mechanical, electric and hydraulic equipment for the mill.

With a projected maximum rolling speed of 105 metres a second, the line will produce 1.30 million tonnes of bright wire-rod coils in specifications ranging from 5.5 to 20 millimetres and rebar coils in specifications ranging from 6.0 to 16 millimetres.

The main steel grades are plain carbon steel, quality carbon steel, low-alloy steel, electrode steel, spring steel and cold heading steel.

The line will apply the following CISDI core technologies: reducing and sizing mill, water mist de-dusting and emission reduction and reheating furnace intelligent combustion and centralised control.

• Qingdao Steel's high-speed wire-rod rolling lines 5 and 6

CISDI Equipment Co. will manufacture and deliver the Roughing Mill, Intermediate Mill and Pre-finishing Mill (82 stands in total) and in a type of NHCD550, NHCD450 and NHCD350 short-stress path rolling mill.

Both lines will produce one million tonnes of bright wire-rod coils annually, with a specification range of 5.0 to 7.0 millimetres. The coils will mainly be used for manufacturing steel cords, tyre beads and welding and special-purpose wires.

• EPC Services

CISDI is providing EPC-based services for XUSTEEL's general substation, Cangzhou CEM's 110kV substation for Fe-coal coking plant and Taihang Group relocation projects.

• Taihang Group

CISDI is supplying electro-hydraulic equipment for two single-stand cold mills (1,150mm 6-hi) and with Primetals China is co-manufacturing Taihang Group's ESP down-coiler.

World-record slab is cast at Yingkou Steel, thanks to CISDI tech

—— 470mm-thick slab successfully produced

Minmentals Yingkou Steel has created a world record.

The company has successfully produced the world's thickest slab from a vertical-curved caster.

Its ultra-thick slab caster has been built by CISDI on an EPC basis.

Slab with a thickness of 470mm has been achieved, breaking the record previously created in 2010 by Xinyu Steel's 420mm slab caster, which was also built by CISDI.

Yingkou's caster was hot-commissioned on December 12, 2019. CISDI has been working closely with Yingkou Steel in the plant's quest to produce slabs to a thickness of 335mm, 375mm and 470mm.

A number of CISDI's IIPR-based technologies for casting high-quality slabs have been incorporated, including:

- Mould's online width adjustment
- Intelligent mould distribution
- Dynamic secondary cooling
- Dynamic soft reduction
- Heavy reduction at the solidification end

This significant project has consolidated CISDI's leading role in China's ultra-thick slab caster arena and improved the competitiveness of Yingkou Steel's plate mill production.

INTELLIGENT MANUFACTURING SOLUTION

Baosteel Shaogang upstream-BF integrated intelligent control platform

CISDI is implementing the EPC-based construction for Shaogang's Intelligent Centre, a benchmark of China's steel intelligence levels. An upstream-BF integrated intelligent center has been put into use, a world's first implementation of steelworks' trans-procedure, cross-area and long-distance (over 5km) endless coordination and big data decision-making.

Critical technologies

- Data center and big data platform
- AI-based math model
- Integrated intelligent control
- Big data-based product ion and dynamic optimization of operation
- Systematic optimization and production consulting
- Remote safety control
- Machine vision

Results and returns

- Reducing 40% staff working at the onsite central control room for the integrated intelligent control center
- Increasing productivity by around 30%
- Creating an annual economic benefit of $2.24 million through innovations in organization, flow and management
- Achieving a cost saving of $1.5 per tonne of hot metal