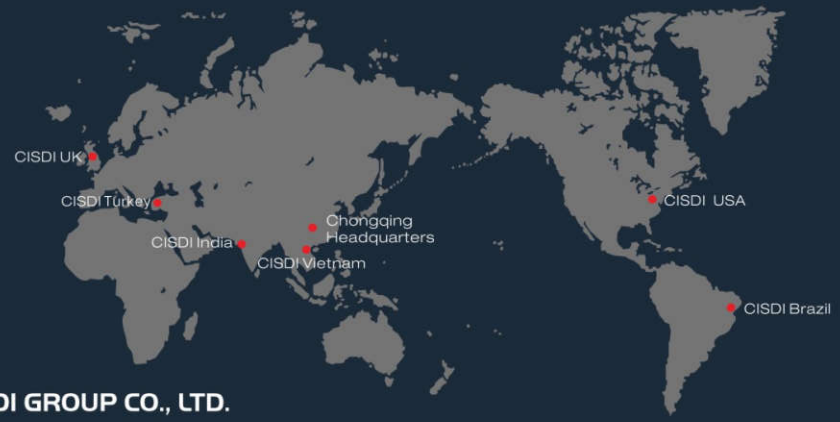

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CISDI
NEWSLETTER

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CISDI and HUAWEI join forces to bring hi-tech to steel manufacture

IN THIS ISSUE

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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CISDI and HUAWEI join forces to bring hi-tech to steel manufacture

“Strategic co-operation agreement will push forward new technology for intelligent steel manufacturing”

CISDI and HUAWEI representatives at the signing of the new agreement

Two of China's biggest enterprises are now working hand-in-hand to create major new technological advances which will transform the country's steel industry.

CISDI and HUAWEI have consolidated their working relationship by signing a strategic co-operation agreement.

The document was signed in early June, eight months after the Chinese giants signed their first agreement on achieving mutual goals.

CISDI leads China's engineering sector when it comes to applying information technology to management systems, and has taken the lead on developing systems for steel intelligent manufacturing, smart city and smart agriculture.

A leading global provider of information and communications technology, infrastructure and smart devices, HUAWEI has been focused on ICT infrastructure and intelligent terminals. The tech giant is committed to building a world-class open public cloud which will enable global offline services.

The latest agreement will see the two companies collaborate across-the-board on cloud computing, internet of things, 5G, big data, artificial intelligence, chip and the industrial internet. Their aim is to apply their new technologies to intelligent steel manufacturing and the smart city.

CISDI's 61 years of expertise and experience will be ploughed into HUAWEI's chip development, a Chinese first which will link to a corporate cloud.

Both parties will jointly conduct studies on the standards for industrial big data, formulating an access standard and setting a benchmark for the industry.

Zhanjiang Steel's chairman pays a visit to CISDI

CISDI and Baosteel are ensuring Zhanjiang Steel becomes a state-of-the-art green steelworks with the highest efficiency ratings in the world

Zhanjiang Steel and CISDI, pictured at the Chongqing headquarters

The chairman of Baosteel Zhanjiang headed to CISDI headquarters to catch up on progress of the second phase of developments at Zhanjiang Steel, which is set to be one of the greenest and most competitive steelworks in the world.

The two steel giants are construction partners for the huge project. Genghong Sheng met with CISDI chairman Xuewen Xiao, who reported on progress of the blast furnace and continuous caster construction, which CISDI is creating by package supply mode.

Mr Xiao also gave an update on Phase II's intelligence systems, and its environmental impact assessment.

"Zhanjiang Steel is being built as the new global benchmark for steel enterprises. The successful completion of Phase I truly set it on that path," Mr Xiao commented.

"Working together on the construction of this hugely significant, future-oriented steel base for Baowu Group has further developed CISDI and Baosteel's mutual values and respect for each other.

"We have always attached great importance to the strategic importance of Zhanjiang Steel," Mr Xiao emphasised.

"Phase II's blast furnace and continuous casting plants are the new starting points of this steelworks. We stand steadfastly alongside Baosteel for Zhanjiang Steel's scale up, enhancement of intelligence, eco-friendliness and overall competitiveness."

Mr Sheng thanked CISDI for its long-term support and contributions. "Both CISDI and Zhanjiang Steel have jointly tided over numerous changes to the industry over the last 15 years and we see CISDI as a reliable and trusted partner.

"We place great hope in CISDI to bring new achievements in the 'service encounter' relationship. Through our concerted efforts, the Phase II projects will fulfill our targets – and become the most advanced, efficient and competitive green steelworks in China and even the world."

Second CDQ power unit goes on-grid at FHS

The CDQ power generator 2 at FHS

CISDI has scored a major victory with its first ever construction of an overseas power plant to an EPC mode.

The second coke dry-quenching power generator went on-grid on-schedule and is supplying power at Formosa Ha Tinh Steel in Vietnam.

This success followed the startup of the first power generator in March. Both are the first of their kind in Vietnam to be created to support a CDQ plant.

Two 36MW steam turbines and auxiliaries are now working, generating a maximum of $6x10^8$kWh of power a year.

They are not only a booster for FHS's energy consumption indicators, but are also increasing FHS's profitability.

Formosa Plastics Group has built over 40 generators of various types. Its most typical installation is a 600MW super-critical unit with the highest performance parameters in the industry.

The construction of Ha Tinh Steel Plant's generator required exacting skills, from the technological process to the installation, the commissioning and project management.

In China, steel enterprises tend to tap internal potential for increasing profit margins rather than relying solely on improving production capacity. Keeping abreast with this trend, CISDI has developed core technologies for recovering steel plant gas, excess heat and energy and enhancing their reutilisation.

Multiple high-performance power generators have been successfully designed and built by CISDI.

Another milestone achieved at Minmetals Yingkou Steel

The new KR hot metal desulphurisation system, which working stably in the meltshop at Yingkou Steel

A new KR desulphurisation system has been successfully hot-commissioned at the steelmaking shop in Yingkou Steel, Northern China.

The KR equipment, which is working stably, can treat an average of 115 tonnes of hot metal per vessel and achieve an annual treatment capacity of 1.426 million tonnes.

It has been arranged in a horizontal configuration inside Yingkou's workshop and extends in an easterly direction from the existing hot metal pretreatment and slag shops.

Commissioning marks a second contractual milestone achieved at Yingkou by CISDI - the first being the hot-commissioning of basic oxygen furnace 3 in April.

CISDI is providing services to Yingkou Steel to an EPC mode and as part of that task, BOF facilities were upgraded to a CISDI-SACS patented product. In addition, new facilities were installed at the existing meltshop. The additions included a KR desulphurisation system, a semi-steel furnace, an LF, RH furnace and a single-strand heavy continuous caster.

The KR system enables Yingkou Steel to apply a mechanical stirring process which removes sulphur from hot metal before it is discharged into the BOF.

This improves hot metal treatment efficiency and improves hot metal quality for steelmaking - a step towards enhancing the steelworks' competitiveness.

CISDI is powering forward with its latest innovation

The exterior and interior of the power-on 220kV general substation for Sinopec-KNPC's integrated refining and chemical plant in Guangdong

CISDI has successfully developed a power transmission for a 220kV general substation.

It is now in operation at Sinopec-KNPC's integrated refining and chemical plant in Guangdong.

CISDI is the EPC-based supplier for the substation and the first of its chemical projects.

The substation will supply power for the entire refining and chemical integrated plant, and is the first unit for completion.

Its successful power-on triggers its sub-units and provides a solid foundation for the power distribution sub-centres and regional substations.

The substation can fulfill the very demanding power requirements of the petro-chemical industry thanks to its systematic structural safety, optimisation and advanced configuration.

Half of the substation has been designed as interior installations. The general power distribution building has five floors and also houses auxiliary facilities.

The substation contains four 120MVA transformers and 220kV and 110kV GIS. The system adopts a double-bus sectionalised wiring scheme.

This major project signifies the substantial international co-operation on energy between China and Kuwait, under the Framework Agreement for Oil and Gas Development Co-operation which was signed in 2004.

Donghai Special Steel's new slab caster passes hot test

CISDI's package-supplied slab caster 2 for Donghai Special Steel has passed its hot test on three consecutive heats.

Slab produced had a cross section size of 200mm x 1,010mm and a steel grade of Q195. The casting speed was 1 metre per minute.

To upgrade the product mix, a pair of new two-strand slab casters has been created in the Meltshop 1 which previously housed an eight-strand billet caster.

The target specification of slab is 180-200mm in thickness, with a reserve thickness of 210mm, and 900mm-1,300mm in length.

The daily output of qualified slabs should reach 5,000 to 6,000 tonnes, and the annual capacity target is around three million tonnes.

Most of the cast slabs will be directly hot-charged via the roller table to the rolling mill.

The CISDI-supplied two-strand slab caster 2, in operation at Donghai Special Steel

Work on hot strip mill starts at Zhanjiang Steel

Construction of the hot strip mill for Zhanjiang Steel Phase II has begun.

CISDI's CEO Zhaohui Yu attended the ground-breaking ceremony on behalf of the hot mill and downstream cold mill suppliers.

CISDI is the engineering company responsible for the hot mill, which has a designed production capacity of 4.50 million tonnes a year and is scheduled to start up in August 2021.

Phase II's rolling mills will produce hot-rolled high-tensile strips, cold-rolled high-tensile strips and high-strength pickled strips.

CISDI will apply model-based fully automatic rolling technology and design the mill as a highly-automated and ultra-efficient, eco-friendly digital production line.

Link:

CISDI will implement the general design for Phase II, plus plant designs for the stockyard, blast furnace, continuous casting, hot strip mill and utilities and part of package supplies.

Blast furnace 3 will be blown-in by July 2021, enabling Zhanjiang Steel Phase II to produce 4.02 million tonnes of hot metal a year, and 3.60 million tonnes of liquid steel, 4.50 million tonnes of hot-rolled strips and 1.66 million tonnes of cold-rolled strips.

By July 2021, the entire steelworks will have a production capacity of 12.25 million tonnes of hot metal, 12.528 million tonnes of liquid steel and 10.81 million tonnes of strips a year.

De-dusting innovation – aiding China's call for ultra-low emissions

CISDI's innovative and highly efficient de-dusting innovation for basic oxygen furnaces is capable of reducing flume dust content by 90 per cent.

The wet electrostatic precipitator for a primary dedusting system was invented in rapid response to China's call for its steelworks to achieve ultra-low emissions.

The precipitator can reduce existing flume dust content figures of nearly 100mg/Nm^3 to the ultra-low emission target of 10mg/Nm^3 or to even lower dust content.

The equipment can be brought online without interfering with existing BOF production, and is safe, explosion-proof, reliable and cost-efficient.

It has already found its niche in the market. The first application is a package supply to TISCO Meltshop 2.

CISDI will be monitoring the precipitator in action at TISCO so it can work on further optimisations or upgrades.

CISDI wins CAL order from Hebei Jingye Group

CISDI has won a bid to supply a continuous annealing line to the Hebei Jingye Group.

CISDI is the only engineering company in China with the ability to package supply ultra-high-strength steel continuous annealing lines.

Hebei Jingye Group's CAL will be the second CISDI has produced for the high-speed production of extra-deep drawing steel and ultra-high-strength steel

Its first reference was package supplied to Anshan Steel and went operational in December 2017.

The new CAL will produce 600,000 tonnes a year to process specifications of 0.3-2.5mm x 750-1,350mm. Peak speed at the process section will be 360 metres a minute.

Extra-deep drawing steel SEDDQ, and ultra-high-strength steel DP and TRIP, will be produced, with a maximum strength level of 780MPa - matching top specifications achieved at similar lines around the world.

The final product will supply automobile and household appliance manufacturers.

CISDI Electric wins top award for innovation

CISDI Electric has been awarded a Top 10 prize at the Energy Storage International Conference and Expo 2019.

The invention, an uninterruptible power supply for a 10kV dynamic flywheel, is operating successfully at Global Foundries' Semiconductor Wafer Plant.

The IPR-based UPS, one of 53 inventions to be shortlisted for the award, solves problems with power supply reliability and electric energy quality, which challenge the Energy Internet (the network which aims to optimise electricity supply).

Its dozen standout features range from intelligent islanding detection, uninterrupted switchover from grid disconnection to connection, multi-machine parallel current-sharing based on distributed clock control, and high-performance internet of things.

The application at Global Foundries is a global first. CISDI Electric were responsible for delivery and commissioning for the 16MW/10kV dynamic flywheel UPS in December 2018.

The UPS innovation has provided ultra protection for the plant's huge power requirements and its stringent requirements on energy quality. It also contributes to the advancement of high-end equipment manufacturing at the plant.

The ESIC is a leading authority for China's energy storage industry. It is sponsored by the International Energy Storage Alliance and its awards are judged by a panel of experts from China's leading scientific research institutes, storage energy enterprises and social organisations.

CISDI to package-supply 52 non-standard stainless steel mills

Shenyuan Special Steel has entrusted CISDI with the package supply of 52 short-stress path rolling mills.

Shenyuan Special Steel is located at a centralised stainless steel production area in Xinghua City in the Jiangsu Province.

It produces 60 per cent of China's engine valve steel. Other main products are tool and mould steel, plus other special-purpose steels.

To enhance product quality and precision, and optimise the entirety of the long products rolling line, Shenyuan Special Steel has decided to replace all the main mills and finishing lines.

The new CISDI-supplied mills, with a specification range of ø650mm to ø350mm, are needed in response to an upgrade requirement at Shenyuan's existing stainless steel combined bar and wire-rod rolling line.

Groundwork starts on second pig machine at FHS

The site of a second pig machine has been marked out at Formosa Ha Tinh Steel.

The equipment is due to be started up on March 31, 2020, and will serve both operational blast furnaces at the site.

The first pig machine, which has been in use since May 2017, was supplied as part of CISDI's EPC-based services for blast furnaces 1 and 2.

Before installation, site preparation work has created a new 290-metre-long railway. Necessary rebuilds and peripheral activities have been completed, including the pig yard leveling, old foundation crushing, the foundation for a spare parts warehouse and the industrial waste water well.

CISDI to build its first intelligent substation

CISDI is to build an 110kV intelligent substation for Baowu Group's intelligent manufacturing at Shaogang.

A groundbreaking EPC-based revamp project, it will set a benchmark for Shaogang's future smart grid.

CISDI's intelligent distribution network has been helping to run Shaogang Intelligent Centre since the end of last year, when the upstream-BF and energy centre were started up.

The substation rebuild will enable CISDI and Shaogang to explore the full potential of the steelworks' intelligent distribution network.

This innovative application of an intelligent substation to a metallurgical enterprise presents CISDI with an opportunity to research and develop critical technologies and new intelligent products – all of which will boost Shaogang's sustainability.

CISDI's team at the Dalipal seamless tube mill

The exit section of the Piercer Mill delivers a hollow bloom, its intermediate product

A stock billet is pictured entering the Piercer Mill

CISDI's designs for Dalipal Pipe Company are hailed as industry breakthroughs in China

Dalipal Pipe Company's new Piercer Mill has passed its hot commissioning on schedule.

The design, manufacture and commissioning of this critical piece of equipment, for the plant's Φ159mm seamless tube rolling line, was a first for CISDI.

So too was CISDI's creation of two other crucial sections - a three-roll multi-stand rolling mill and a stretch reducer mill, which both passed a smooth hot commissioning two weeks later.

The success of these three sections enabled the entire tube mill to go into operation. It is now ramping up production capacity to hit a target of 300,000 tonnes a year.

CSIDI's innovative designs are seen as a substantial breakthrough in seamless tube mill expertise. The three new items of equipment determine the final tube's specification and quality, which Chinese manufacturers have long found problematic.

Mostly imported, they are now being supplied by a competent Chinese engineering company.

Expert Intelligent Solutions

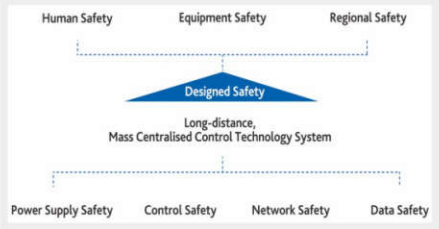
Creating Steel's First Smart Brain – Baowu Group's Shaogang Intelligent Centre

Intelligent Decision-making

IoT technology has been applied to enable intelligent sensing of plant-wide data. Big data and AI algorithms are used for making intelligent analysis and decision-making on production status.

Safety Ensured

Up to 436 operators can now to work in safer and cleaner conditions. Intelligent patrol checks are carried out by AR and mobile monitoring technologies to ensure areas of the plant do not become dirty, difficult or dangerous to work in - the 3Ds.



Improved Efficiency

COMPARISON	Before	Working with Intelligent Center
Quantity of operation areas	50	18
Quantity of central control rooms	42	1
Quantity of operation stations	335	123
Quantity of operation posts	81	50

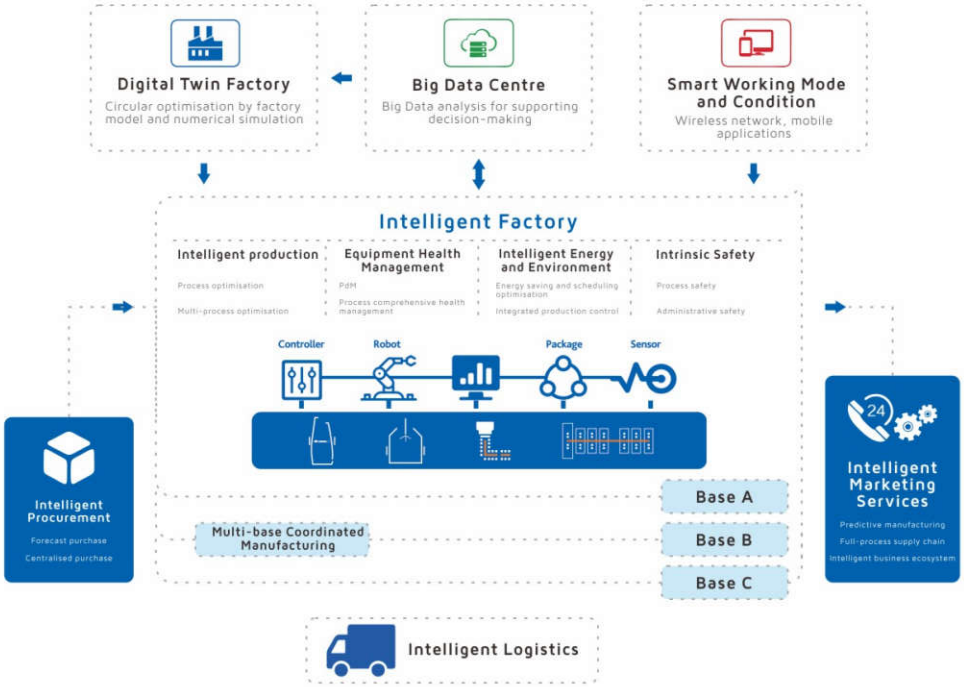
The Intelligent Center has created a new integrated production mode.

Operators at the onsite central control room can be reduced by 30-40 per cent.

Considerable savings are resulted in – a saving of hot metal cost by $1.5-7.5 USD per tonne, and a decrease of fuel ratio by 2-10 per cent.

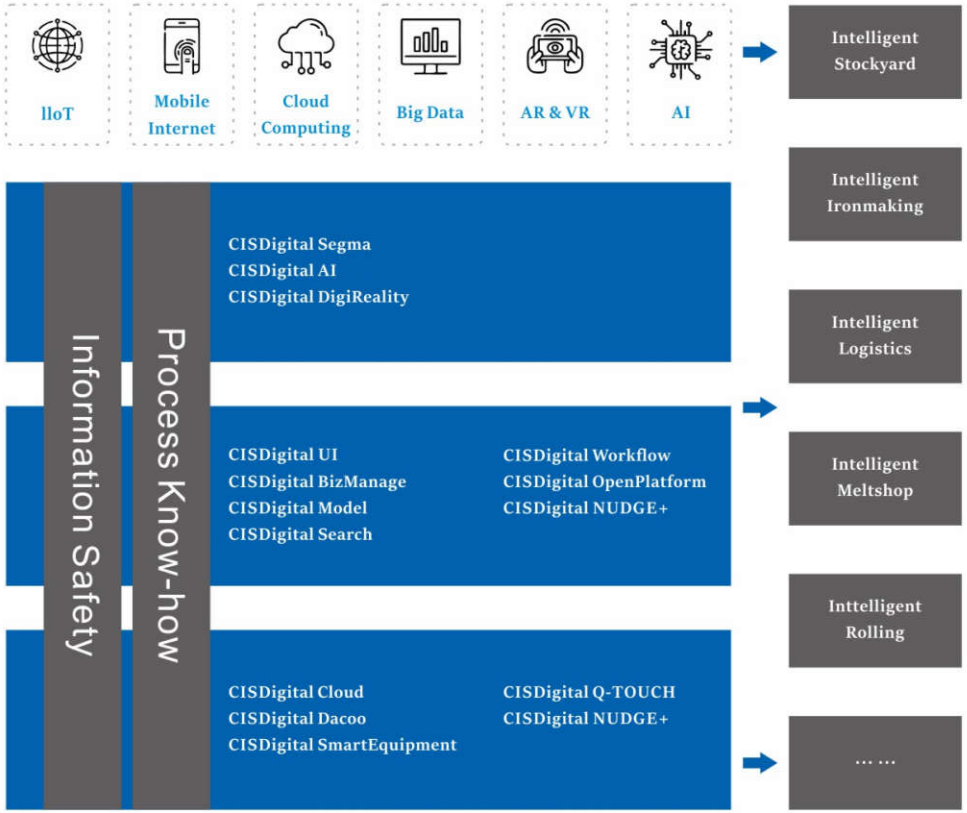
- MCC brings a synergy of expert intelligent solutions and specialist industrial knowledge to the global steel industry.
- Its teams create greener, safer and more efficient digital steel plants which deliver products of optimum quality.
- Its technology brings production automation, network coordination and intelligent decision-making to the manufacturing process, involving production, facilities, quality, logistics, energy and safety.
- A five-pronged intelligent solution system encompasses the IT-based platform, intelligent methodology and product, big data and cloud computing, automation and digital design.

CISDigital
Intelligent Manufacturing Solutions



MCC has created a full-process steel intelligent manufacturing and a new production model by applying cutting-edge technologies to the steel industry – sensing and connecting human and steelworks by Internet of Things, driving analysis and decision making by Big Data, supporting end-less coordination by Mobile Internet. CISDigital products for digital, applied and intelligent orientations have been a showcase of MCC's efforts to push forward data innovation.

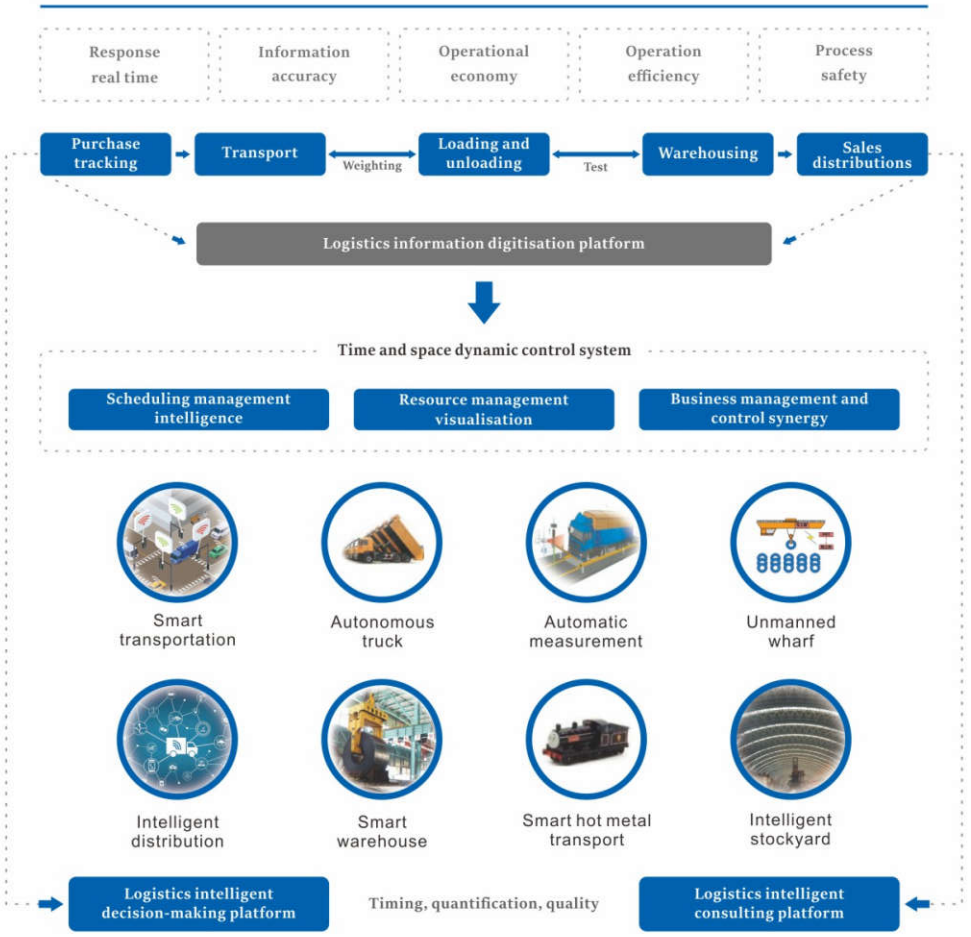
CISDigital Intelligent Products



Products from three levels including digitalization, (data) application and intelligence to promote series of intelligent manufacturing solutions (such as intelligent ironmaking, intelligent rolling etc.)

MCC's smart logistics system is built on industrial AI and a big data analysis platform, with real-time, accuracy, economy, efficiency and security from the perspective of top-level design, realising timed, quantitative and quality logistics services.

Steel Smart Logistics Solution



Intelligent Stockyard

MCC has developed five intelligent stockyard technologies – Intelligent optimised decision-making on flows

The intelligent blending yard

Autonomous (unmanned) stacking and reclaiming

The digital yard

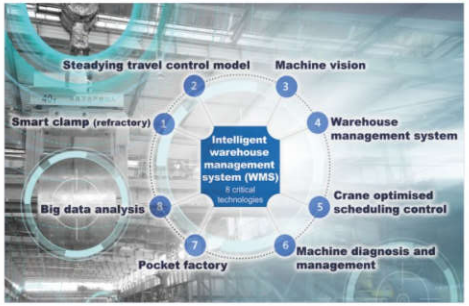
3D production simulation

Intelligent Warehousing

Intelligent warehousing technology is transforming steel slab warehouses, hot rolled and cold rolled coil warehouses and boathouses.

It enables driver-less crane operation in complicated conditions and enables warehouse operations to be intelligently monitored and controlled.

Successful applications have resulted in cost reductions, increased efficiency and workforce safety. In addition, the service life of equipment is being extended.



BIM-based Digital Delivery

Integrates delivery of engineering data

By integrating the project-life-cycle data , a Data · Factory has been created

3D visualisation interaction gives clearer and more efficient collaboration

Supports PC and mobile access

Formulates a steel digital delivery standard system

CISDI's Reliable and Eco-friendly Expertise of Walking Beam Reheating Furnace

4-set 300t/h WBFs for Formosa Ha Tinh Steel 2,050mm HSM, Vietnam

The Walking Beam Mechanism

CISDI has successfully delivered 7 walking-beam reheating furnaces for FHS Vietnam and provided high-quality technical assistance services for their commissioning, start up and ramp up. Among them, 4-set 300t/h WBFs are running for FHS's 2,050mm HSM and the other 3 for its bar & wire-rod mill, all to an EPC mode.

Highlights of CISDI's WBF design and production

- High energy efficiency and high temperature uniformity
- Low-NO_x emission, low fuel consumption, energy-saving
- Precise and reliable L1 and L2 automation control
- Optimized structures of furnace proper
- Long service life and easy maintenance

Products

- Reheating furnaces for flat, long and tubular products (walking beam furnace, annular reheating furnace and mandrel bogie
- furnace)
  Heat-treatment furnaces (normalizing and quenching furnace,
- roller hearth furnace, bell-, bogie- and pit-furnace)
- Annealing furnaces (horizontal, vertical)
  Thermal energy-saving products (evaporative cooling system & heat recovery steam generator, air & fuel recuperator)

Services

- 386 reheating and heat treatment furnaces for slab, bloom, billet, tube and other stock materials
- 180+ Walking Beam Reheating Furnaces for HSM, HPM, Steckel Mill, Bar & Wire-rod Mill
- 80+ Regenerative Combustion Reheating Furnaces, with the maximum capacity of 425t/h (low-NO_x)
- CISDI's ECS & HRSG expertise for saving energy by replacing the traditional water cooling system
- Life-cycle Services from consulting to engineering, procurement, construction, spare parts support and after-sales services