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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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CISDI chairman jets to UK to meet with steel giants



CISDI teams from Chongqing headquarters and the UK office are pictured at the UK office in Sheffield

CISDI's chairman Xuewen Xiao flew to the UK for a succession of high-powered meetings with steel chiefs as 2019 drew to a close.

During a whistlestop visit to promote the company's newest developments, Mr Xiao met with the chairman of GFG Alliance, the UK's fastest growing steel company.

Founded by the Gupta Family, GFG Alliance is an international grouping of businesses specialising in mining, energy generation, metals and engineering, industry-friendly financial services and property.

Continuing its global expansion, GFG recently purchased ArcelorMittal's Czech and Romanian steelworks.

At a meeting in London, Xiao highlighted CISDI's latest developments in systematic optimisation, intelligence and transformation to GFG's chairman Sanjeev Gupta.

Mr Gupta commented: "GFG sees CISDI's full-scale, high-quality products and services involved in the group's development."

In December 2018, CISDI carried out a feasibility study for a new 10-million-tonne integrated steelworks being created by GFG's subsidiary, Liberty Primary Steel. It also carried out a feasibility study and basic engineering for the transformation of the plant's original PCI system.

Chairman Xiao's delegation also made time to visit TATA Steel UK's Port Talbot plant, where bosses spoke highly of CISDI's supplies and services for its 30-plus core units, which included finishing mill modular descalers and reaction blocks and latches for the finishing mill's drive side.



CISDI chairman Xuewen Xiao and his delegation meet with GFG heads



Mr Xiao and his team meet with TATA Steel

TATA's Port Talbot plant is the largest integrated steelworks in the UK and CISDI's most important British client.

CISDI has become a preferred equipment supplier and discussions were held on systematic optimisation and intelligent and green manufacture.

Meetings with ArcelorMittal's leaders and Hatch Global Metals were also held.

During a meet-up in London with Aditya Mittal, CEO of ArcelorMittal, the CISDI delegation detailed its ongoing project services and explained how its companies in the UK and USA were perfectly positioned to provide globally-operating AM with convenient and responsive total solutions, intelligent manufacture and environmental protection services and products.

CISDI is already carrying out AM Ukraine's blast furnace rebuild. The new furnace will have the largest volume in Europe. Mr Mittal commented he hoped for "mutual wider and deeper co-operations."

A meeting with the director of Hatch Global Metals at the Hatch Europe office enabled the exchange of views on developing trends in the global steel market and mutual co-operation in Europe and beyond, and the CISDI group headed to their UK base in Sheffield to meet with Ganpo Li, chairman of China's Hebei Jingye Group, who was visiting the UK at the same time.

Jingye Group is the world's largest rebar producer and is speeding up its overseas investments. Its ambitious investment plan currently focuses on expanding in the UJK

"CISDI is experienced in providing support and services for China's steel enterprise globalisation strategy. With CISDI UK's help, we can provide better services for Jingye Group's risk control, master plan, feasibility study and systematic diagnosis and optimisation in its global businesses," pledged Mr Xiao.

Discussing projects on where there could be mutual cooperation, Mr Li commented he recognised CISDI's achievements in globalisation and the benefits of CISDI UK's local workforce and knowledge of the market.



Mr Xiao (center) is pictured with Aditya Mittal CEO and Ondra Otradovec from ArcelorMittal

IEWSLETTER 2019 No.12 CISDI GROUP CO., LTD.

CISDI intelligence transforming Baowu Zhanjiang

As the scientific and technological revolution led by intelligent manufacturing enters a new phase, CISDI is focussed on developing more intelligence-driven innovations.

Thanks to its 60-year industrial database and expertise, the company has already developed a series of impressive intelligent products.

A number of intelligent products were devised for

the transformation of Zhanjiang Steel, a large steel plant in China's Guangdong Province.

CISDI contributed master-plan solutions and enabled the success of its green and intelligent projects.

Since its startup in 2016, Zhanjiang has become one of the world's most competitive green, intelligent and high-quality steel plants.

Intelligent water centralised control centre: an energy saver and ZLD

The CISDI-built intelligent water centralised control centre started up in October 2019.

Dozens of isolated water systems and 160,000 points of data across the plant have now been integrated into the centre's big data platform. Centralised controls for plant-wide water systems and the unit procedure's circulating water system, which is on a massive scale and covers long distances, can be controlled from one operation room.

Information flows throughout all water links – water preparation, supply and transport, circulation, waste water drainage, treatment and recycling are interconnected.

Because each production plant's water information is seamlessly interfaced, communication between operators is now more efficient and closed-loop



Zhanjiang Steel's intelligent water centralised control centre, built by CISDI

controls among machines are being achieved on the trans-system platform.

Water supply and demand has been optimised. The entire steel plant's water resources are managed more efficiently and products costs have been reduced.

Intelligent autonomous locomotive: reducing energy consumption by 5-10%

With an unmanned drive system at its core, the AI and IoT expertise applied to CISDI's intelligent autonomous locomotive for hot metal transport enables environmental perception, intelligent scheduling and equipment support and features digital twin and big data analysis systems.

Zhanjiang's all-weather, fullprocess unmanned locomotive system has been in operation since July.

At a steelworks with an annual production capacity of 8 million tonnes, CISDI's intelligent autonomous locomotive will create following results:



CISDI's autonomous locomotive, loaded with hot metal, traverses the railway crossing from ironmaking plant to steelmaking at Zhanjiang Steel

- A 70% reduction in workforce costs
- A 12.5% improvement in equipment availability
- A 5-10% reduction on overall energy consumption
- Zero personal injury rates

Intelligent all-weather, manpower-reduced wharf: 50% more efficient

CISDI has transformed Zhanjiang Steel's conventional wharf to one featuring intelligent operations which runs with reduced manpower.

Operators no longer have to work with heavy loads in poor and unsafe conditions; two intelligent port machines are driverless. Coils are automatically lifted and handled and the wharf is smartly controlled.

Stably running, the intelligent wharf has seen a 50% increase in workforce efficiency and has achieved 98 per cent of availability with manpower-reduced operations.



Zhanjiang Steel's all-weather wharf is now working intelligently and autonomously

Highly intelligent stockyard: 10-15% less space needed



Zhanjiang Steel's eco-friendly, intelligent coal stockyard, designed by CISDI

Zhanjiang Steel's stockyard Phase I covers an area of 1.011 million square metres and has an annual receiving capacity of 35 million tonnes.

CISDI supplied stockyard Phase I and its intelligent operations and is now supplying Phase II, which is under construction and features new model-D and model-C

Stockyard production highlights

- Substantial reduction of workforce
- Remarkable increase in overall efficiency
- Far greater operational safety
- A smoother and more stable production
- Savings on operation costs
- Less energy consumption
- Fewer losses from equipment idling

stockyards. CISDI will implement engineering software design and development for the model-C stockyard.

Overall intelligent operations and integrated control have been achieved at Zhanjiang. 85 per cent fewer operators are needed for stacking and reclaiming work. There is now a 30 per cent higher availability of stacker-reclaimer units and 10 to 15 per cent less space is needed for general storage. The misoperation ratio has been reduced by 90 per cent.

Smart traffic: 80% heavy automobile throughput rate achieved

A smart traffic control system went online in April.

Co-built by CISDI and Zhanjiang Steel, the system has applied model algorithm and IoT expertise and interconnects logistics, automobiles and traffic lights and is set to reach Industry 4.0 standard.

After running for four months, heavy automobile turnover rate has been increased by 10 per cent

and average fuel consumption has been reduced by 0.004 litres per tonne of transport.

Heavy automobiles can be given priority at intersections with traffic lights. Priority throughput rate has exceeded design requirements of 80 per cent.

As a result, the steel plant's productivity has improved the energy consumption and operation costs have been reduced.

CISDI plays key role in new international standard for induction diathermy testing

CISDI has played a key role in the development of a newly-released international standard for diathermy expertise and applications.

The drafting of IEC 63078:2019 Electric Heating and Electromagnetic Units—Test Methods for Induction Diathermy Unit was chaired by CISDI.

This new standard specifies complete performance measures for continuous, interrupted and staged induction diathermy units and testing conditions, and procedures and methods for stock materials.

It sets a solid technological basis for:

promoting induction diathermy expertise and

applications

- · improving product quality and performance
- ensuring industrial induction diathermy units' energy efficiency

The new standard will become part of the technical support for optimising energy availability and advancing energy-efficient construction and sustainable development.

CISDI has now completed 9 IEC standards for electric heating and electromagnetic treatment as a chief editor - one third of the ITC/TC27 standardisation system.

CISDI has revised 12 standards and been involved in nearly 20 for that specific system.

Shenglong's 1,780mm hot mill rolls out first coil with EIC

Guangxi Shenglong Steel's 1,780mm hot mill has produced its first coil after successful hot-commissioning of the electrics, instrumentation and computer system was carried out in record time.

The EIC system, package-supplied by CISDI, took only one month to commission the whole EIC system including the hot rolling models and Level 1, 2 and 3 automation controls and main drives.

The first coil was produced fully automatically, with three levels of synchronised automation systems.

The EIC empowers the hot rolling line with intelligent features to achieve high-precision, high-response and high-speed control.



The first coil signals a successful hot commissioning of the EIC for Shenglong's 1,780mm HSM

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CISDI GROUP CO., LTD.

CISDI gets intelligent rolling at Shaogang



Shaqqanq Intelligent Rolling, built by CISDI for remote, centralised control

Intelligent rolling with centralised control has now begun at Baowu Group Shaogang.

As EPC contractor, CISDI developed the new Intelligent Centralised Control Center for Rolling at Shaogang. Known as island 7, it was built at the end of last year and is connected into the new CISDigital Integrated Control Centre (ICC) for stockyard, coke oven, sinter plant, blast furnace ironmaking, energy and water. Now with addition of Rolling the centralised big data system allows a complete plant overview in an island-wise configuration.

Island 7 controls three of Shaoqang's bar rolling lines and has 14 centralised duty positions which can control seven rolling lines and their reheating furnaces, plus the finishing areas of the high-speed wire-rod rolling lines.

The functions of the duty positions are optimised by internal restructuring of a rolling line and by external re-combination among rolling lines.

Operators have become more efficient and no longer have to work in hazardous areas.

HIGHLIGHTS

· Flexibly-configured modular duty position

Operators access a console desk for ID identification and are automatically authorised to operate the permitted screens.

Modular duty position management mode breaks through the physical boundaries and

creates a flexible configuration. In the future, this will lead to the integration of full-process duty positions from ironmaking to steelmaking, continuous casting and rolling.

· Intelligent, real-time monitoring

Conditions and status at conventional rolling mills are closely monitored on screen by multiple operators to ensure any misoperations or mal-functions are swiftly spotted It's a laborious task and is not foolproof.

Shaogang's Al-based intelligent monitor system is real-time and around-the-clock.

It monitors hot stock material charging to

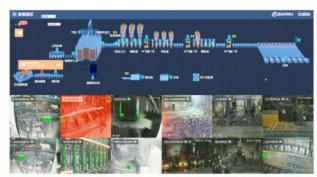
rolling and cooling bed processing. All information from the entire rolling process is collected.

Online analysis and abnormality identification is conducted at a dozen scenes at the three bar rolling lines - at their cobble, flying shear cutting and fan operations - and on video and audio signals at 40 key performance points.

· Integrated control

Onsite production data is sourced from widelyspread users and is difficult to use. But an integrated control system collects all the lines' data for coordinated, across-the-board

management and control - from process monitor to quality tracking and analysis, energy lean management, smart reporting, production and operations.



Map-like, rolling screens enable Shaogang intelligent, real-time monitoring

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Formosa Steel generates power at its CDQ plant



The CDQ power generators at FHS

Formosa Ha Tinh Steel has started up the two power generator units at its coke dry quenching plant in Vietnam.

As the EPC-based contractor, CISDI put unit 2 on grid and ready for generation in October and unit 1 followed in November 2019.

The first of its kind in Vietnam, FHS's CDQ power generation project is equipped with two 36MW steam turbine generators and auxiliaries. Its maximum annual generation capacity will reach 600x10⁶ kWH and it is expected to create around \$43 million of economic benefits a year.

A supportive project for the CDQ plant, both generator units will play a large part in reducing Formosa Ha Tinh Steel's energy consumption and improving its profitability.

The 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 the Ha Tinh Steel Plant's generators required exacting skills from the CISDI team, from the technological process to the installation, commissioning and project management. CISDI team met all the challenges successfully.



CISDI's team, pictured in the generator workshop

CISDI's core equipment gives Aarti world-class edge



The CISDI team, pictured at Aarti's bar rolling workshop

A world-class alloy bar rolling line has entered production stage at India's Aarti Steels.

It features CISDI's first export to India of its patented, core long products rolling equipment.

CISDI supplied the Breakdown Mill, Short-stress Path Rolling Mill and Super-heavy Flying Shear and also assisted Aarti in their commissioning and full operations.

The 400-tonne super-heavy flying shear applies gantry and dual-actuation expertise with electric drive for performing head and tail cutting and low-temperature work-piece chopping downstream Breakdown Mill.

Since startup, the flying shear has not only cut large crosssection 150mm x 150mm lowtemperature work-pieces, but it has done so while accommodating a wide range of rolling speeds for multiple



BDCD Breakdown Mill is pictured blooming a work-piece at Aarti

product specifications.

"We are seeing very trim cut sections being produced and the cut head lengths can be accurately controlled. Blades stop precisely and stably at the desired positions," a representative for Aarti commented.

CISDI supplied one reheating furnace, one online breakdown mill, 13-stand short-stress path rolling mills, the full-line roller tables, stands, loopers, cooling bed facilities, finishing and collection units.

The line will produce 200,000 tonnes of special steel alloy bars a year, including round, square, hexagonal and spring flat bars, with wire-rod and large-coil process routes capability.

Site production data confirms that CISDI's BDCD breakdown mill and NHCD short-stress path rolling mill have created final product precision to within 1/4DIN standard.

The world-class rolling line features the following CISDI developments and equipment:

- · BDCD Breakdown Mill
- NHCD short-stress path rolling mill
- dedicated super-heavy flying shear for large-cross-section bars
- · multi-functional cooling bed
- high-temperature, fast collection system
- · micro-tension control
- · looper control
- · optimised cutting system
- · ghost rolling
- advanced, reliable automation control model
- · profile meter
- · cold shear
- · abrasive-disk saw

CISDI enters coking waste water treatment market

Chongqing Steel is to benefit from a CISDI development which will dramatically improve waste water treatment at its coking plant.

An environmentally-friendly coking waste water rebuild will be carried out by CISDI on an EPC basis.

Cokes at Chongqing Steel are due to increase from 2.80 to 3.20 million tonnes during 2020.

Its current coking waste water treatment system will receive such heavy-polluting desulphurised waste liquids that indicators for treated COD (chemical oxygen demand) and cyanide will be severely affected.

Next year's waste output is due to be even higher, so it is imperative for Chongqing Steel to take action to rebuild and upgrade its existing treatment system to ensure water meets quality standards and is not hazardous to the environment.

CISDI's task is to improve the current treatment capacity of 90 to 110 cubic metres an hour and to upgrade existing facilities to meet a safe and

stable treated water quality standard.

Surveys have enabled CISDI to identify on-site problems and production data and research results have been combined to find a number of effective solutions.

CISDI plans to add pre-treatment equipment before the existing system for removing oil and cyanide. This will reduce oil content and cyanide concentration in downstream waste water and ensure a stable downstream biological treatment operation.

The CISDI team will also be applying a patented combined process - MBBR (moving bed biofilm reactor) - and activated sludge for the system's biological treatment, which has no dilution water added and is able to improve the system's resistance to impact.

This will lay the groundwork for future improvement of discharge standards and may enable a zero liquid discharge target to be achieved.

and commissioning skills, which ensured the rebuild was carried out on schedule.

"We greatly appreciate CISDI's latest contribution to Hengyang Tube's development," a company spokesman stated in a letter to CISDI.

"With your high-quality design and package supplies, the ø89mm 3-roll MPM tube mill has been successfully rebuilt in nine and half months, as planned.

"With your attentive technical assistance and responsive problem-solving capability, it took only 45 days from stopping the old mill to starting up the new one, a record startup cycle for similar mills around the world.

"We're excited to see that new line's metal yield is obviously improved, while the reheating furnace's energy consumption is much decreased."

Yuxi Xianfu Steel

CISDI's entire team won praise for its construction supervision work on an integrated mill rebuild project for Yuxi Xianfu Steel in the Yunnan Province.

"Every CISDI member involved in the construction deserves the highest respect

and appreciation for their dedication," said a Yuxi Xianfu official in a letter to the company.

"It's CISDI's supervision team that has ensured a smooth implementation of this project construction on schedule and to the quality and safety control targets."

Baowu Group's Zhanjiang Steel

An intelligent water centralised control centre (Phase I) created by CISDI for Zhanjiang Steel has drawn applause from its parent company, Baowu Group.

"Thanks to CISDI's utmost sense of responsibility and unremitting efforts, Zhanjiang Steel now has a successful, innovative and intelligent water system in operation," said a spokesperson, who pledged further contracts with the metallurgical specialist.

"CISDI and Baosteel Zhanjiang are close partners and we will forge together to make our steel plant safer, more efficient, more energy-conserving and more friendly to the environment," promised the spokesperson.

CISDI achievements win praise from clients

VALIN Hengyang Tube Co.

A rebuilt tube rolling line at China's VALIN Hengyang Tube Co. has passed all functional tests and is resulting in highly stable and efficient production.

Product is of good quality and an acceptable

hourly output is being achieved.

CISDI has package-supplied the ø89mm line.

VALIN Hengyang have praised CISDI for its project management, design, manufacturing

CISDI's latest green technology upgrades three BOFs

-Wet electrostatic precipitator vital for ultra-lowemissions



TISCO's BOF dedusting rebuild, featuring CISDI's wet electrostatic precipitator

CISDI's wet electrostatic precipitator now features in a number of successful BOF rebuild projects.

At Longsheng Steel in the Shandong Province, CISDI's applied technology resulted in a successful first hot-commissioning of the plant's BOF 2

Immediately after, the same successful result was achieved at BOF 1.

Both rebuilt BOF dedusting systems are operating continuously and stably.

One week later, TISCO's BOF 3 rebuild was also started up smoothly, thanks to CISDI's wet electrostatic precipitator expertise.

The precipitator is used to collect primary dusts from the BOF and is critical for achieving ultralow emissions.

Working principles of CISDI's wet electrostatic precipitator are as follows:

- Electrostatically absorbs negative charges accumulated in dusts from BOF fumes
- An electric field force collects charged dust particles onto the collecting board
- Dusts are flushed off from the board into a dust hopper

Highlights:

- Real-time assessment of gas explosion
- Active resistance to combustion hazards
- O Good flow equalisation
- O Highly efficient dedusting
- Safer and more reliable running of equipment

CISDI Consulting – led Metallurgy to Higher Quality Development

I CISDI Consulting

Creates market-oriented systematic models, methods and toolkits in line with international practices that meet the evaluation standards of international large financial institutions

Method & Highlights

In full compliance with international standards

On the basis of "Manual for the preparation of industrial feasibility studies" issued by United Nations industrial development organization (UNIDO) and the accounting standards in the proposed project country or area.

Offers advice on decision-making for the direct investors and the 3rd-party strategic investors by integrating the project's frontend economy and technology and combining expertise and flows

Integration of Technology and Economy

The Financing Feasibility Study supports the owner's project decision and the third-party financing based on the closed loop of technology and economy and it's a continuous optimization process of technology aiming at economic viability.



References

umber	Country	Project
1	Brazil	3.7Mt/a greenfield integrated steel plant
2		4.5Mt/a greenfield integrated steel plant
3		1.5Mt/a greenfield integrated steel plant
4		5Mt/a greenfield integrated steel plant
5		2Mt/a greenfield integrated steel plant
6	Vietnam	20Mt/a greenfield integrated steel plant
7		7.5Mt/a greenfield integrated steel plant
8	Australia	1Mt/a greenfield integrated steel plant
9		10Mt/a greenfield integrated steel plant
10	Pakistan	2Mt/a greenfield integrated steel plant
11	Tanzania	1.5Mt/a greenfield integrated steel plant
12	Mozambique	5Mt/a greenfield integrated steel plant
13	South Africa	1.6Mt/a brownfield steel project
14	Malaysia	3Mt/a greenfield integrated steel plant

I CISDI General Design

- Focuses on a top-down approach and applies systematic principles and optimization methods to reach the economic performance targets
- Provides total solutions to the enterprise's full life cycle by means of dynamic, accurate design and factoring in forward-looking and trending development

Method & Highlights

Systematic

Top-down approach to general design

Full-process based, synergizing multi-disciplinary coordination advantages

Economy

Set a target for improving the steelworks' cost competitiveness

Build full-process continuous cost analysis models

Sustainability

Foresee an appropriate economy for construction

Build sustainable profitability models

References

CISDI has undertaken an accumulated output of 200-milion-stong tonnes of Greenfield and Brownfield steelworks' general design and master plan consulting services in the past decade, both at home and abroad, with a market share beyond 60% in China for sizes above 3Mt/a.

- A steelworks has been reduced the total investment by 10% and increased the internal return rate by 30%
- A steelworks has been optimized general design to tailor to its rainwater resources, and created tangible social benefits in addition to a reduction of 48% industrial fresh water consumption per tonne of steel









I CISDI Systematic Optimization

- Studies process procedures, interfaces and flows, and analyses costs with 5 flows as a basis (Fe, mass, energy, discharge and information flows)
- Coordinates the rules of technology, management and economy for a dynamic analysis, and pursues an innovative development model through integration between process and intelligence
- Provides solid data methodology for decision-making, reducing costs and increasing efficiency

Method & Highlights

Systematic concept

The production cost is ultimately reduced by comprehensive studies on procedure cost, interface cost and secondary energy recovery.

Technology-economy integrated

Optimization scheme and enterprise's market environment are closely combined for systematic analysis for achieving the best cost efficiency instead of the highest technical indicators.

Adequate site investigation

Dedicated consulting engineers find out breakthrough points through their in-depth surveys on the equipment and technology, site production status, consumption indicators and technical bottleneck.

Quantified results

Optimization proposals are quantified for display to facilitate decision-making on potentials, solutions, investment and input, and benefits.

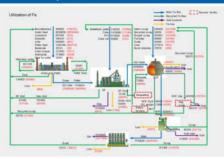
References

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CISDI has delivered systematic optimization and consulting services for nearly 30 clients in China and abroad – with a total steel capacity of 160Mt/a.

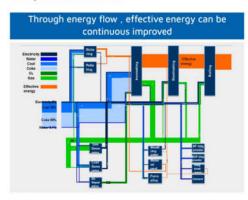
Our services embrace plant-wide operations optimization, enterprise development planning, energy system optimization, individual system

Through optimization of Fe-flow, reduce consumption and improve the utilization of resources



energy conservation planning, logistics system optimization and environmental improvement planning.

We have helped steel plants make energy consumption savings of up to 30kgce per tonne of steel and reduce their costs by as much as USD 5.78 per tonne of steel.



- A steelworks has improved a 0.84% ferric utilization ratio and hereby created an annual benefit of USD 1.88 million
- A steelworks has enhanced the comprehensive energy consumption by 34.3kg/t, and gained an annual benefit of USD 55 million

A steelworks has increased the energy utilization efficiency by 1.5%, and achieved an annual benefit of USD 43 million

I CISDI'S Strategy and Industry Planning

- * Provides total solutions from industry planning to construction and development
- Gives full display of systematic planning for five critical links industry plan, business plan, urban plan, development model plan, and operation and business invitation, and aligns them into implementation during construction and development, pursuing sustainable development of urban industrial economies

Method & Highlights

- Plan and design by partnered investment and development to consolidate workability
- GIS and Tableau visual means to reinforce interactivity
- Big data expertise and cloud computing platform to analyze economy and industry

Targeted investment promotion based on big-data funnel model Prescriptory for behavior through the behavior to behavior through the behavior to behavior through the behavior to behavior through the behavior through the

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References

CISDI has provided 30-plus industry and strategic plans for national-level new zones, economic development zones, high-tech zones and parks.

CISDI has been an expert consulting services provider for national-, provincial- and city-level

agencies and SOEs, nearly 100 consulting items rendered to China's Ministry of Science and Technology, Chongqing municipality, Shenzhen City, China Minmetals, and Baowu Group.





I CISDI'S Logistics Systematic Planning

- Provides integrated logistics planning solutions to specialized, tailored and intelligent levels
- Relies on enriched steel experience and expertise and employs intelligent logistics for contributing to steelworks' reduction of costs and enhancement of the efficiency

Method & Highlights

- Full process: from raw material purchase to final product sales
- Multi-link: facility arrangement, equipment configuration, and management system
- Multi-modal: road, railway and belt conveyor transport
- Intelligent: unmanned wharf, intelligent stockyard, smart scheduling, and other plant-wide intelligent products



References

CISDI has provided logistics' systematic diagnosis, analysis and planning services for global steel enterprises which have achieved the higher logistics efficiency and cost competitiveness and intelligence level.

- A steelworks has been saved a logistics cost by about USD 27 million plus
- A steelworks has been saved a logistics cost by about USD 10.85 million from the logistics systematic diagnosis and optimization
- A steelworks has been saved the overpass construction cost by USD 2.89 million and increased the level-crossing's throughput by nearly 30% thanks to the internal logistics simulation and optimization











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
- Al-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