

SANY INTERNATIONAL

Concrete Batching Plant



SANY Heavy Industry Co., Ltd.

SANY Heavy Industry Co., Ltd.

CONTENTS



01

Comprehensive
Strength

02

Product
Overview

03

Product
Advantages

04

Intelligent
Technologies

05

Case Studies



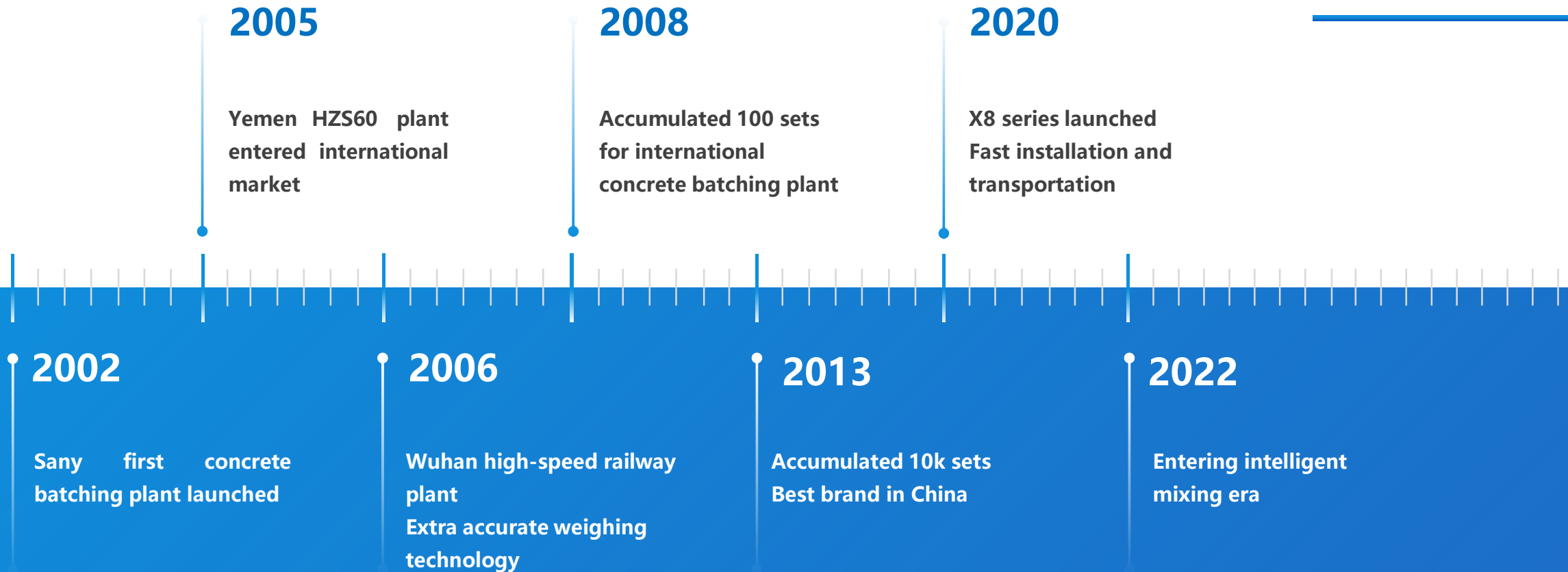
01

PART

PART ONE

Comprehensive Strength

Milestones



The first SANY concrete batching plant was released in 2002, and sold internationally in 2005. So far it has been sold in over 60 countries and territories around the world and more than 20k sets have been delivered, awarding the best seller in China for 16 consecutive years

Comprehensive Strength-R&D Ability

R&D Team

More than 200 engineers
Master and PhD ratio > 75%

Scientific Achievement

718 issued patents
26 national and provincial
awards for Progress
in Science and Technology

Research Input

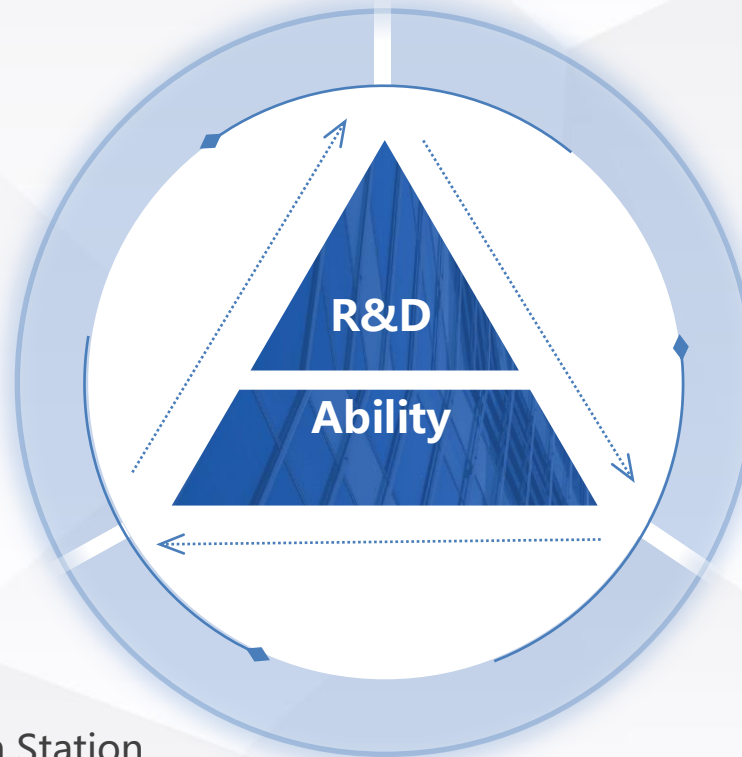
Investing 5-7% out of annual
sales to R&D

2 R&D Workstations

National Postdoctoral Research Station
Academician Expert Workstation

2 National Centers

National Enterprise Technology Center
National-level Concrete Machinery Testing Center



Comprehensive Strength-Manufacture Ability

World' s first concrete batching plant **lighthouse factory**, 12 intelligent production lines, largest and most advanced production equipment, maximum **300** concrete batching mixing plants per month.



Lighthouse Factory



Automatic blanking line



CNC machining process line



Robot welding line



Automatic painting line



Mixer assembling line



02

PART

PART TWO

Product Overview

3 series, 13 products



Inclined belt type

HZS60X8 HZS90X8
HZS120X8 HZS180X8
HZS240C10C



Hoist type

HZS30G HZS60G
HZS90G HZS120TC10



Mixing tower

HLS240C10 HLS270C10
HLS300C10

Inclined Belt Type Plant

HZS60X8/90X8/120X8/180X8/240C10C

High Performance

Highest productivity in industry

Accurate Weighing

High accuracy, can be applied on high-speed railway

Fast Delivery

Container type structure, pre-assembled, deliver time reduced by 30%

All-sided Adaption

Fitting all kinds of sand, and small amount production



Inclined Belt Type

HZS60X8/90X8/120X8/180X8/240C10C

Model	HZS60X8	HZS90X8	HZS120X8	HZS180X8	HZS240C10C
Theoretical Productivity (m ³ /h)	60	90	120	180	240
Mixer Capacity (L)	1000	1500	2000	3000	4000
Mixer Power (kW)	2×18.5	2×30	2×37	2×55	2×65
Max aggregate size (mm)	60	80	80	80	80
Suggested silo (t)	2×50	3×100	4×200	4×200	4×300
Suggested aggregate bin (m ³)	3×10	3×17	4×17	4×25	4×25
Type of aggregate	3	3	4	4	4
Discharge height (m)	≥3.8	≥3.8	≥3.8	≥3.8	≥3.8
Installed power (kW)	110	190	210	250	280
Aggregate measurement accuracy (kg)	(600 ~ 2500) ±2%	(600 ~ 4000) ±2%	(600 ~ 4000) ±2%	(900-3000)±2%	(900-4500)±2%
Cement measurement accuracy (kg)	(100 ~ 700) ±1%	(200 ~ 1200) ±1%	(200 ~ 1200) ±1%	(300-1800)±1%	(400-2500)±1%
Mineral powder measurement accuracy (kg)	/	(200 ~ 800) ±1%	(200 ~ 800) ±1%	(200-1000)±1%	(200-1200)±1%
Water measurement accuracy (kg)	(80 ~ 250) ±1%	(150 ~ 500) ±1%	(150 ~ 500) ±1%	(200-800)±1%	(200-1000)±1%
Additive measurement accuracy (kg)	(8 ~ 20) ±1%	(15 ~ 60) ±1%	(15 ~ 60) ±1%	(15-80)±1%	(15-80)±1%
Reference weight (Ton)	40	59	92	106	132

Hoist Type Plant

HZS30G/60G/90G/120TC10



Small Area Coverage

Linear arrangement with skip hoist, small area coverage

Fast installation

Modular design, block-style installation, fast installation and transportation

Flexible Configuration

Multiple silos, bins and additives combinations

Easy Operation

Adaptive production, intelligent control, labor saving

Hoist Type

HZS30G/60G/90G/120TC10

Model	HZS30G	HZS60G Upgraded	HZS60G Standard	HZS90G	HZS120TC10
Theoretical Productivity (m ³ /h)	30	60	60	90	120
Mixer Capacity (L)	500	1000	1000	1500	2000
Mixer Power (kW)	2×18.5	2×18.5	2×18.5	2×30	2×37
Max aggregate size (mm)	60	60	60	80	80
Suggested silo (t)	1×50	2×50	2×50	2×100	4×200
Suggested aggregate bin (m ³)	3×7	3×10	3×10	3×10	4×17
Type of aggregate	3	3	3	3	4
Discharge height (m)	≥3.8	≥3.8	≥3.8	≥3.8	≥3.8
Installed power (kW)	52	100	87	135	235
Aggregate measurement accuracy (kg)	(200-1000)±2%	(600-2500)±2%	(600-2000)±2%	(600-2000)±2%	(900 ~ 5000) ±2%
Cement measurement accuracy (kg)	(80-300)±1%	(100-700)±1%	(200-1000)±1%	(200-1200)±1%	(200 ~ 1200) ±1%
Mineral powder measurement accuracy (kg)	/	/	/	/	(200 ~ 800) ±1%
Water measurement accuracy (kg)	(40-140)±1%	(80-250)±1%	(80-300)±1%	(100-400)±1%	(100 ~ 400) ±1%
Additive measurement accuracy (kg)	(3-8)±1%	(8-20)±1%	(8-20)±1%	(15-50)±1%	(30 ~ 50) ±1%
Reference weight (Ton)	21	39	35	43.5	83

C10 Mixing Tower

HLS240/270/300C10

High Efficiency

Highest productivity in industry

Energy Saving

Lowest feeding height

Intelligent Operation

1-button startup and shutdown, 24h unattended operation

Accurate Inventory

Aggregate inventory, accuracy up to 95%



C10 Mixing Tower

HLS240/270/300C10

Model	HLS240C10	HLS270C10	HLS300C10
Theoretical Productivity (m³/h)	240	270	300
Mixer Capacity (L)	4000	4500	5000
Mixer Power (kW)	2×65	2×75	2×75
Silo Capacity (t)	4×300	4×300	4×300
Installed power (kW)	280	350	350
Aggregate measurement accuracy (kg)	(900 ~ 4500) ±1%	(900 ~ 4500) ±1%	(900 ~ 4500) ±1%
Cement measurement accuracy (kg)	(400 ~ 2500) ±1%	(400 ~ 2500) ±1%	(400 ~ 2500) ±1%
Mineral powder measurement accuracy (kg)	(200 ~ 1200) ±1%	(200 ~ 1200) ±1%	(200 ~ 1200) ±1%
Water measurement accuracy (kg)	(200 ~ 1000)±1%	(200 ~ 1000)±1%	(200 ~ 1000)±1%
Additive measurement accuracy (kg)	(15 ~ 80) ±1%	(15 ~ 80) ±1%	(15 ~ 80) ±1%
Discharge height (m)	≥3.8	≥3.8	≥3.8



03

PART

PART THREE

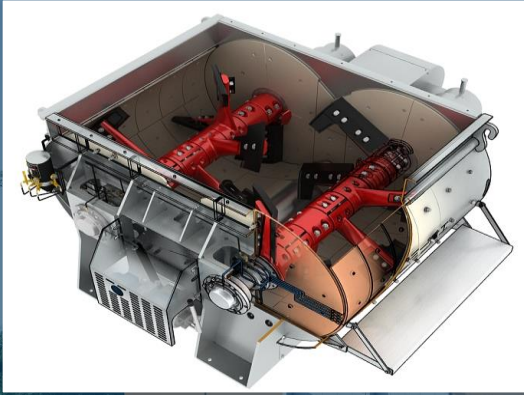
Product Advantages

Product Advantages



Efficient production

- Absolute productivity advantage, **20%** higher than industry's average
- The productivity of 2000L mixer can reach up to **110m³/h**



Boiling-type mixing

Mixing time 10% less

Extra strong power, full-loaded feeding, no overload startup failure, fitting all formulas.

Intelligent feeding

Waiting time 10% less

Sense the hopper status by big-data analysis, and close the discharge gate when empty.

Seamless material flow

Aggregate batching increased by 20%

Aggregate feeding time automatically calculated by intelligent algorithm, avoiding belt starving or overlapping.

Fully open discharge

Discharge time 30% less

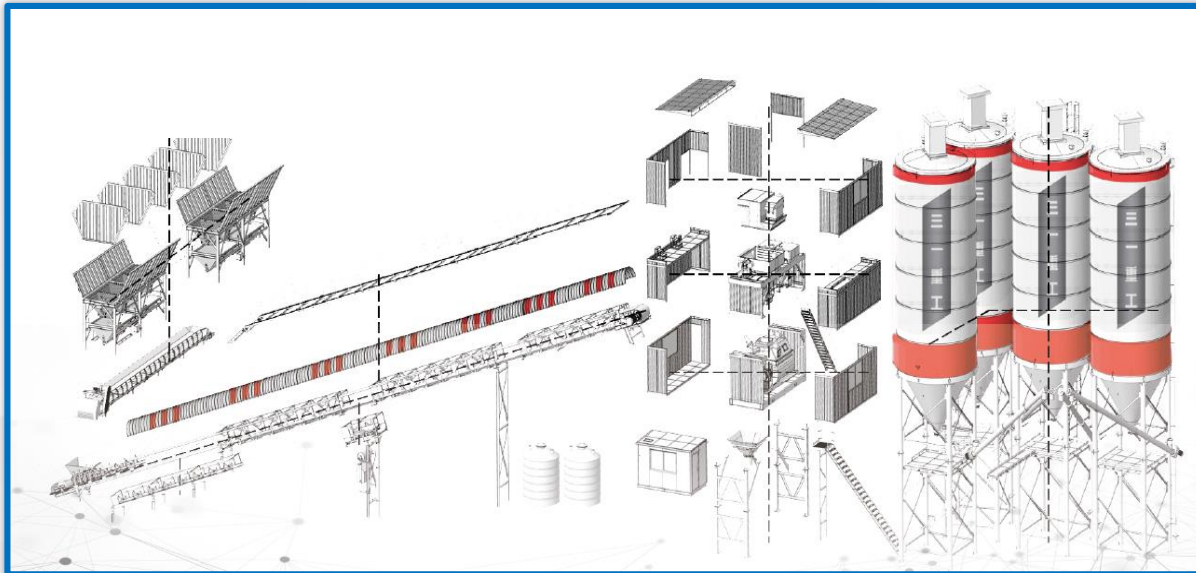
Discharge according to slump, supporting fully-open discharge.

Product Advantages



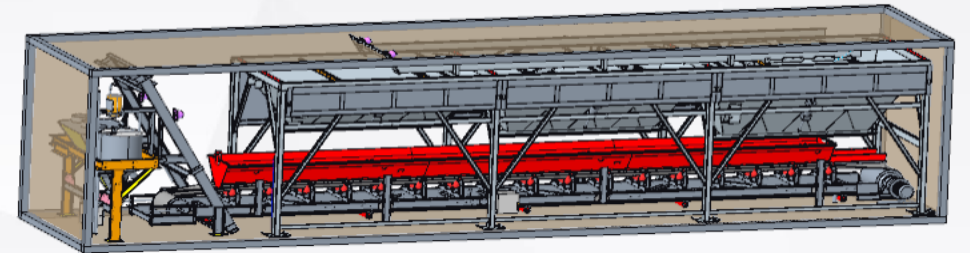
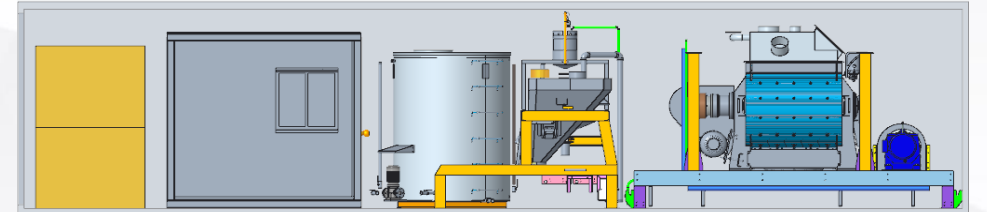
Fast installation and transportation

- Modular design, pre-assembled
- Block-type lifting and assembling, fast installation and transportation
- All types smaller than 240 model can be delivered by standard container
- installation time shortened by **8** days



Modular design

Block-type lifting



Standard container transportation

Product Advantages



Accurate

- Accurate weighing and feeding**, accuracy $\geq 99\%$, which can be applied on high-speed rail construction
- Fully adapt to different raw materials and meet the production need of “**large plant small production**”



05	1-2青石	1-2河石	沙子
190	490	410	720
760	1960	1640	2880
754	1942	1629	2856
-0.79%	-0.92%	-0.67%	-0.83%
754	1942	1629	2856
0	0	0	0.0
3	3	3	3
2	2	2	2



Accurate feeding

pulsating weighing for aggregate fine measurement; applying intelligent anti-arch technology and adjustable discharge gate.

High accuracy weighing

Automatic adjustment of parameters; self-adapted controlling the weighing mode and control curve of each weighing scale

Adaptive water control

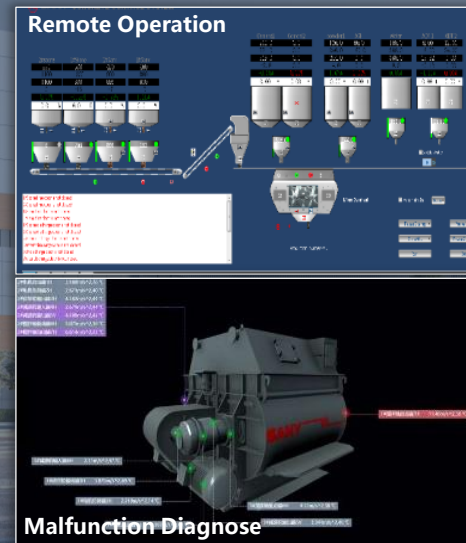
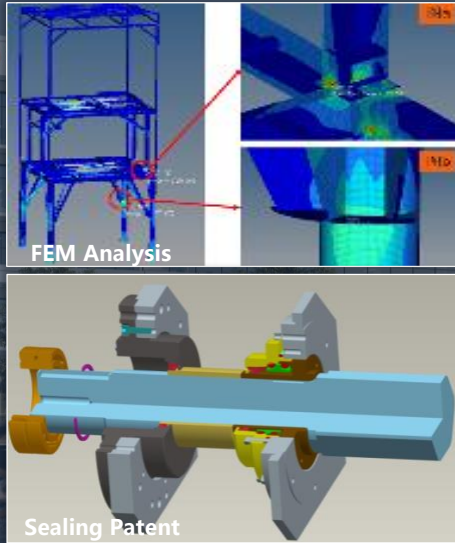
Accurate moisture detection for all models with water retaining technology

Product Advantages



Reliable

More than 20,000 plants supporting infrastructure construction around the world



Reliable design

Wear-resisting lining plate and sealing patent technology; all key parts passed reliability test and digital simulation, and new technologies are verified by test.

Active diagnose

Malfunction self-diagnose, noticing the customer to operate safely in time; remote operation and service, faster response.

Strictly verified

All components are verified by practical working condition, which can work in high-temperature, cold and high elevation conditions.

Product Advantages



Intelligent

-Customized options for intelligent upgrading



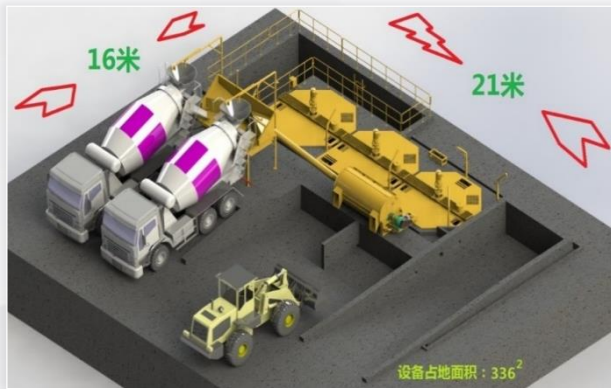
Silo intelligent level

Accuracy reaches up to $\pm 2\%$ of max capacity, and dynamic inventory



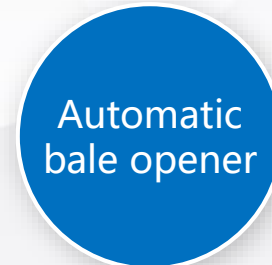
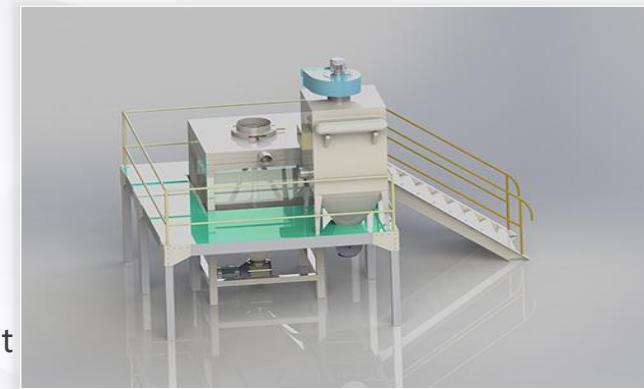
Intelligent low pressure powder feeding

Pressure meter, level meter and valves interacting with control system, avoiding overflow



Sand and drainage treatment

Integrated and independent treatment system, sand 100% reclaimed



Automatic bale opener

Unattended conveying system, high efficiency and automatic powder supply

Profits for Customer

Profit increased and cost reduced by 1.02 million RMB per year

More profits

0.9 million/year

Productivity 10% higher than industry

120 m³ more production per day

0.9 million RMB more profit per year

Less cost

80 thousand/year

Predictive maintenance, less shutdown time

50% less inspection and maintenance

Saving 80 thousand RMB per year

Saving consumables

40 thousand/year

Malfunction reduced by 50%

25% less lining plate replacement

Saving 40 thousand RMB per year

Note: 180 model, 0.2 million m³ annual production, profit 50RMB/m³, 150 working days, 8 h/day operation.



04

PART

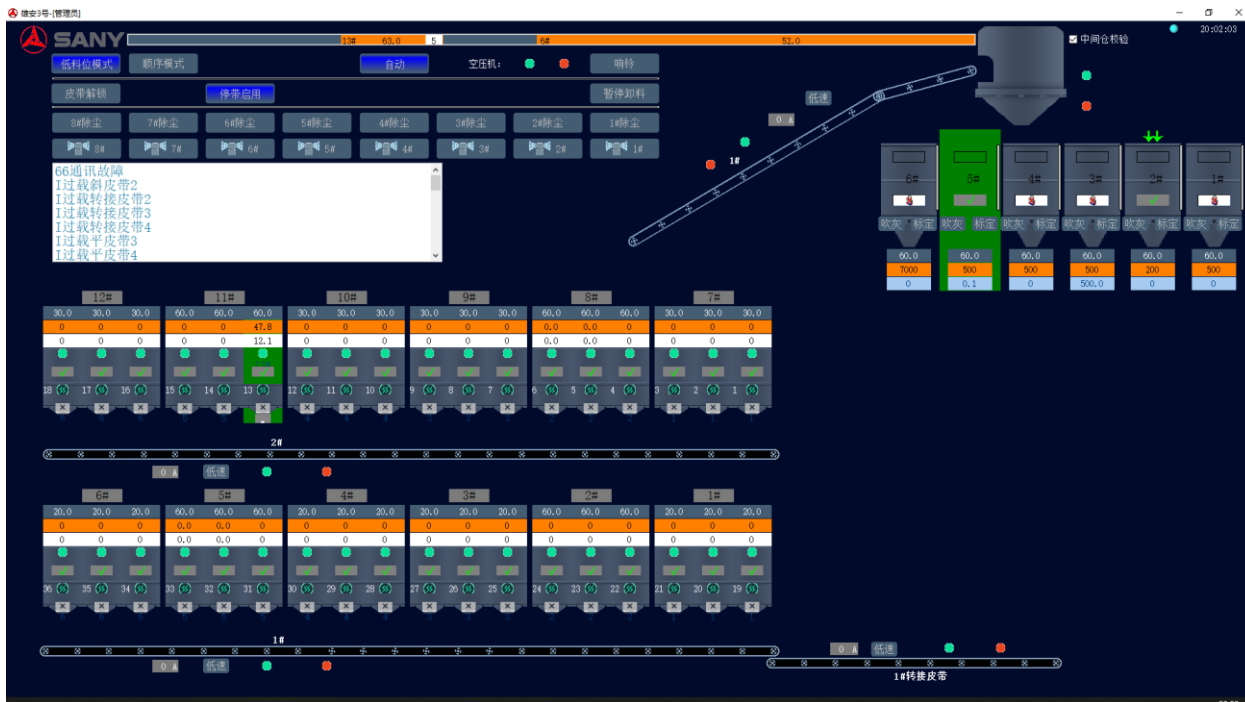
PART FOUR

Intelligent Technologies



Intelligent Aggregate Feeding

The intelligent feeding control technology of the mixing building solves the linkage, matching and safety problems between the rear material yard and the mixing building, monitors and analyzes the status of each warehouse in the mixing building in real time, and realizes the self-balancing of supply and demand, and unattended feeding



Feeding Automation

One-button start, intelligent feeding on demand, unattended, reducing production personnel

High Feeding Efficiency

Belt utilization rate reaches 93.8%



Seamless Material Flow

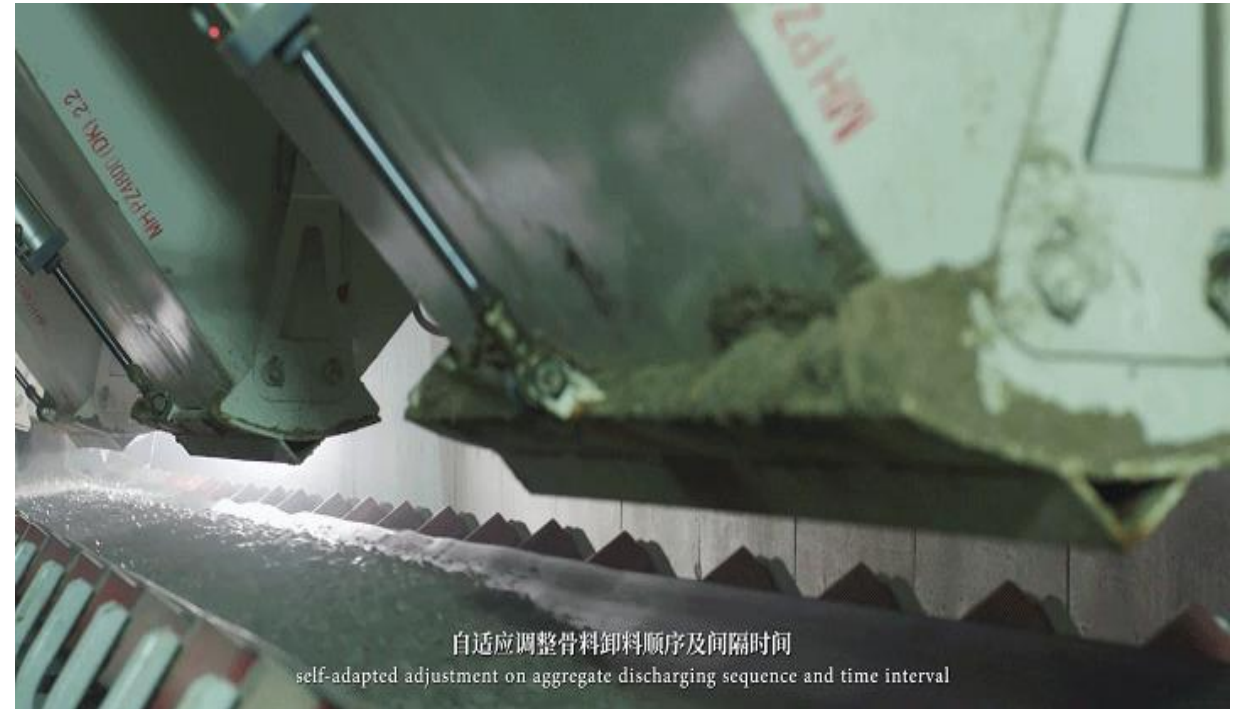
Automatic identification of volume/proportion/aggregate feeding sequence/enabling and disabling of materials, smart adjustment of scale hopper discharge, no need to set feeding sequence and time interval, realizing belt seamless material flow, and increasing belt conveying efficiency by 20%

Seamless Aggregate Flow

Adaptively adjustment of the aggregate feeding interval according to production conditions realizing seamless aggregate flow and preventing overflow and spillage

First Batch Time Shortened by 10%

Smart adjustment of the aggregate feeding sequence according to the production formula, shortening the aggregate feeding time by 10%





Intelligent Material Level Detection for Silo

Based on micro strain sensor and temperature compensation algorithm, we can get the storage of silo online, accuracy up to $\pm 2\%$ of the silo maximum capacity



Accurate Detection

The sensor accurately detects the stress change, and the accuracy reaches $\pm 2\%$ of the maximum capacity

Real-time inventory

View the storage of silo by Computer or Phone anytime

Mutual review

Mutual cooperation of Control system, ERP and silo

Intelligent Discharge

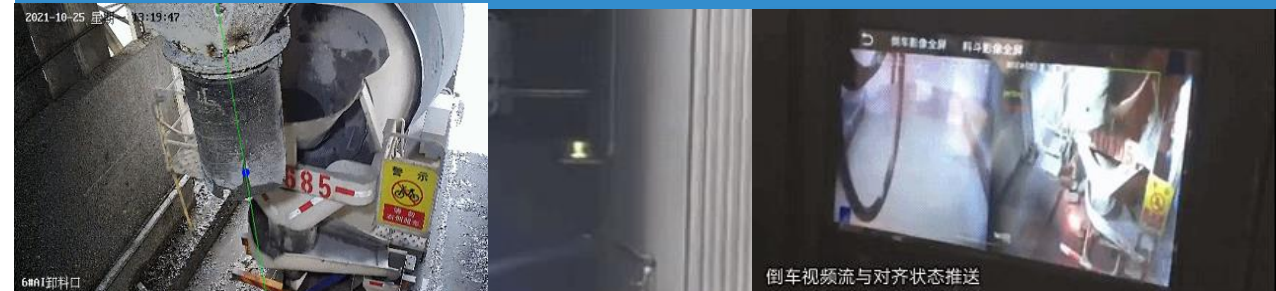
Based on AI technology, it takes over the whole discharge process, perfectly realizes zero manual operation, effectively eliminates overflow and spillage, improves unloading efficiency

Unattended Discharge Process

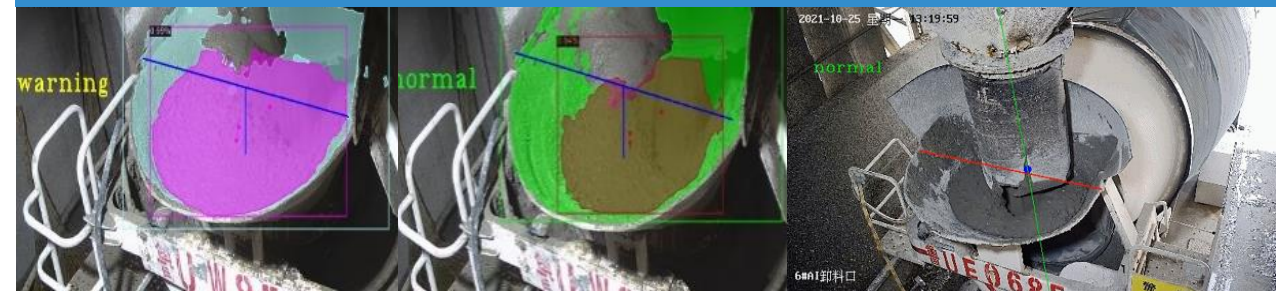
Overflow and Spillage Eliminated

Discharge speed increased by 50%

AI for Aligning



AI for Avoiding Overflow



Application: 6 production lines are traditionally equipped with 6 people/shift, and only 3 people/shift needed after upgrading the intelligent discharge system.

The labor cost will be reduced by **360k RMB** per year, and the cost of environmental protection will be reduced by **12k RMB** per year.

Smart Waiting

It matches the optimal opening time of the waiting hopper according to the bulk density of the aggregate, displays the weight in the waiting hopper in real time, and avoids the risk of incomplete discharge and overflow of the waiting hopper



The aggregate conveying time is shortened by 4S

The time to wait for the hopper discharge is shortened by 2S

The risk of incomplete discharge and overflow is reduced to 0



Smart Backtracking

By applying digital video micro-server and integrating it into the control system, the monitoring and traceability of the production process can be realized, and the purpose of standardizing operator behavior and avoiding disputes can be achieved



Real-time monitoring and recording of the production process which can be replayed



Production history can be backtracked by reports



Online Detection for Aggregate Storage

Based on AI technology, it takes over the whole discharge process, perfectly realizes zero manual operation, effectively eliminates overflow and spillage, improves unloading efficiency

Accurate 3D point cloud

Accurate inventory of aggregate warehouse storage

Adapted to harsh environment



Harsh Environment Interference Test



Point Cloud

Result Upload to ERP

仓库名	料位计库存	最后同步时间	机楼库存ID	最小容积预警	最大容积预警
3号仓	798.0100	2023-03-02 16:11:22		否	否
1号仓	815.5700	2023-03-02 16:11:22		否	是



Intelligent Weighbridge System

Unattended weighbridge system realizes the automation of the whole process of aggregate and powder weighing and storage, effectively strengthens the management of raw materials, which can be recognized in over 50 countries and regions



Intelligent Weighbridge



Online Monitoring



Real-time Weighing Display



Weighing Details

Region	Recognizable Country and Region	Region	Recognizable Country and Region	
China	中国澳门Macau	Europe	俄罗斯Russia	
	中国台湾Taiwan		英国United Kingdom	
	中国香港HK		德国Germany	
Asia	日本Japan		法国France	
	韩国Korea		意大利Italy	
	印度India		西班牙Spain	
	马来西亚Malaysia		波兰Poland	
	新加坡Singapore		罗马尼亚/Romania	
	印尼Indonesia		乌克兰Ukraine	
	越南Vietnam		肯尼亚Kenya	
	菲律宾the Philippines	津巴布韦zimbabwe		
	泰国Thailand	坦桑尼亚Tanzania		
	智利Chile	阿尔及利亚Algeria		
Latin America	巴西Brazil	Africa	埃及Egypt	
	哥伦比亚Colombia		南非South Africa	
	阿根廷Argentina		加纳Ghana	
加拿大Canada	尼日利亚Nigeria			
North America	墨西哥Mexico		Former Yugoslavia	前南斯拉夫Former Yugoslavia
	美国US			以色列Israel
Oceania	新西兰New Zealand		Middle East	土耳其Turkey
	澳大利亚Australia			阿联酋UAE
	哈萨克斯坦Kazakhstan			沙特Saudi
CIS	乌兹别克斯坦Uzbekistan		CIS	迪拜Dubai
	吉尔吉斯斯坦Kyrgyzstan	科威特Kuwait		
	塔吉克斯坦Tajikistan			
	土库曼斯坦Turkmenistan			



Weight-free Calibration

Automatic calibration without weights is realized by establishing a mathematical model of weight and voltage, and the operating status of the weighing sensor is monitored in real time to realize fault self-diagnosis, eliminating measurement accidents, and ensuring production quality



Easy Calibration

The calibration process only needs to input parameters on the operation interface

Convenient Maintenance

Strong adaptability, and sensors can be replaced independently

Application: There are 3 production lines of a batching plant in Huizhou. Traditionally it takes 5 people and 2 days to implement weight calibration. Now with weight-free calibration technology, it can be carried out by 1 person within 1 hour by just clicking the weight-free calibration button, which saves **10 to 30 thousand RMB per year**.



Silo Intelligent Management System

The system automatically identifies the silo position by QR code scanning or card swiping, and the operation box is correlated with the electronic lock, which can effectively avoid powder conveying mistakes and overflow



QR code scanning or card swiping for silo position reorganization

Overflow prevention

Device correlation

Management system



Slump Online Detection

By advanced AI vision algorithms and big data modeling, the intelligent detection and judgment of the slump of the plate can be realized, and the accuracy rate can reach the level of manual judgment of professional senior quality inspectors

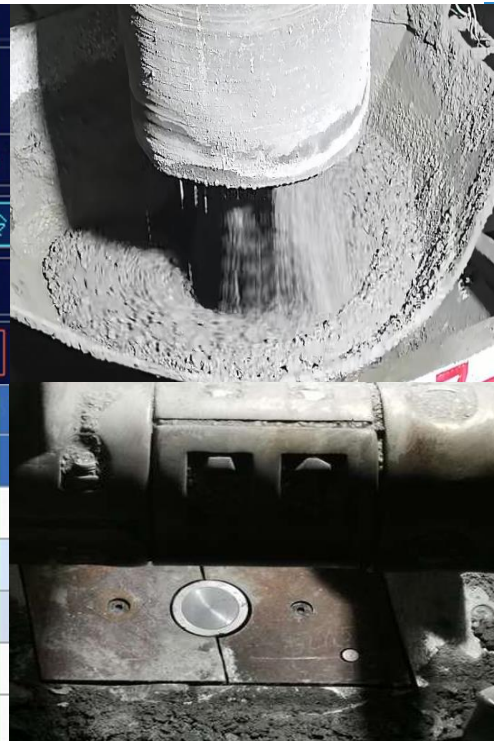
塌落度: 第3盘 预测1: 230 (60.6%)
141031 预测2: 220 (23.5%)

空压机 运行中 每车禁止出料

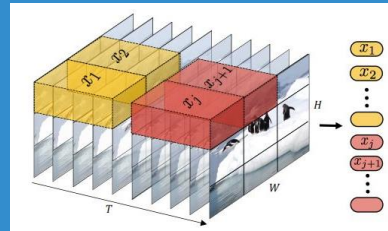
车辆已对齐 37

客户名称	强度等级	塌落度
平建建筑安装股...	C30细石	226
五矿二十三冶建...	C40	201
平建建筑安装股...	C30细石	229
平建建筑安装股...	C30细石	227
五矿二十三冶建...	C40	194
五矿二十三冶建...	C40	193

Intelligent slump detection



Slump feature collection



混凝土标号分类	混凝土塌落度分类
C10-C25	140-160, 160-180, 160±20
C30-C45	180-200, 180-220, 180±20
C50-C60	200, 200-220, 200±20

AI vision model

Prediction of abnormal slump

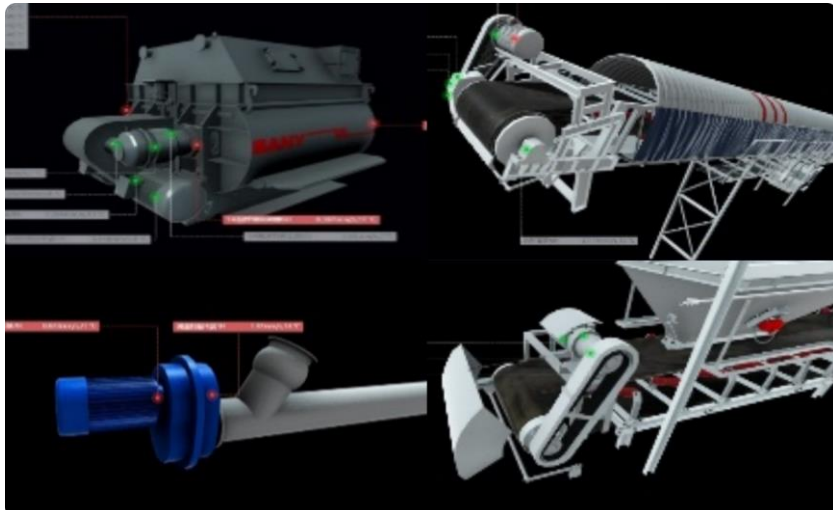
Slump storage and backtrack

Control system real-time alarm



Predictive Maintenance

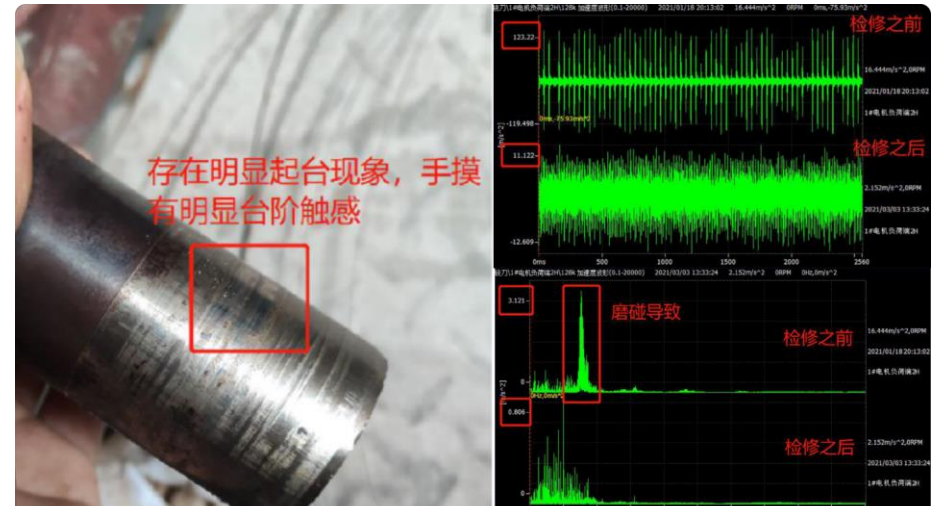
By collecting vibration, temperature and other data, and combining mechanism rules with machine learning algorithms, the technology is able to intelligently identify early failures in key parts such as motors, gearboxes, shafting and other equipment to reduce downtime losses



Key Parts



Intelligent Maintenance Warning



Early and fast failure located

Application: In a bathing plant in Anhui, on February 5, 2023, the system found that the inner ring of the bearing of the 1# motor of the mixer was worn. After the on-site dismantling on February 26, it was found that the motor and reducer were worn and deformed, and the output shaft of the motor was worn out. After the parts were replaced on site, the fault characteristics disappeared. According to the wear and tear of the motor, if the failure was not dealt with in time, the mixer will be shut down within 1-2 months, and the direct/indirect shutdown loss is estimated to exceed **100 thousand RMB**.



Moisture Online Detection

Using microwave sensing technology to accurately detect the moisture of sand

Intelligent

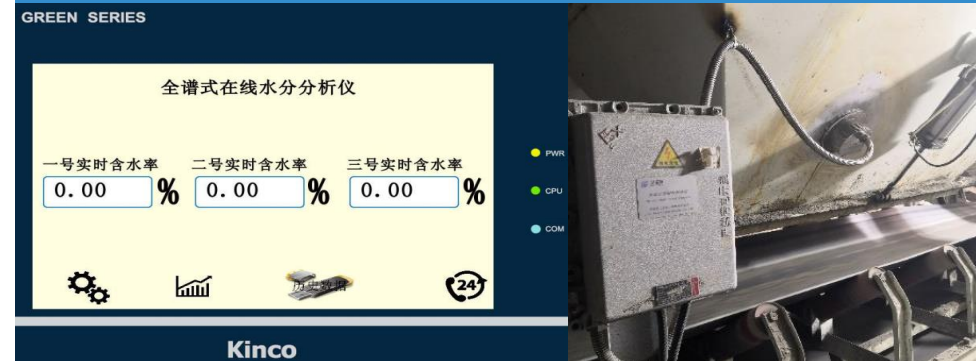
Automatically detection of the moisture content of the sand for each batch

Accurate

Precision can reach 0.5%



Non-contact installation



Contact installation



Belt Intelligent Detection

AI vision detection is applied to realize real-time inspection of belt deviation status, and the system will push alarms for abnormal conditions, and effectively improves the safety level



Horizontal belt video frame



Inclined belt video frame

Scientific Maintenance

Early abnormal detection and timely maintenance

Comprehensive Care

24/7 real-time detection

Personnel Safety

Real-time monitoring of key areas to ensure production safety



05

PART

PART FIVE

Case Studies

United Arab Emirates

HZS180F8



The first company in the UAE to purchase complete sets of commercial concrete equipment from Sany. The plant participates in the world's largest solar thermal power plant project.

Russia

HZS90G



Delivered in 2022, purchased by a large building material company, supporting concrete supply in Moscow.

Philippines

HZS120X8



Delivered in early 2023, participating in the Philippine highway construction. It has become a benchmark plant for local engineering.

Bangladesh

HZS240C10C



Delivered in 2020, participating in the construction of Dhaka Airport in Bangladesh, and has produced millions of cubic meters of concrete.

Case Studies



Sany concrete batching plant has been exported to: Indonesia, Kazakhstan, Uzbekistan, Russia, Thailand, Philippines, Malaysia, etc.



Bangladesh HZS60X8



Vietnam HZS90X8



Uzbekistan 2HZS120X8



Uzbekistan 2HZS180F8



Saudi Arabia HZS240C8



Vietnam HZS180C8



China HZS180X8



Cambodia 2HZS240

Xiong'an No.3 concrete batching plant cluster

—— The largest concrete batching plant cluster in China



Highlight Technology

Automated feeding

- 8m³ high level aggregate bin, no aggregate falling
- Saving 1.5 million RMB annually

Prevention

- Prevention for wrong aggregate, powder, etc.

Environmental batching plant

- Reducing 400T carbon emission per year
- No waste water, material or powder

Qingdao KaiYe Concrete Mixing Company

—— Famous commercial concrete in China

Highlight Technology

Storage control

- Aggregate storage accuracy larger than 95%
- The accuracy of silo level detection up to $\pm 2\%$ of the silo maximum capacity

Material detection

- Classifying aggregate to avoid mistake
- Automatic material report

Environmental

- Photovoltaic power generation

The first “Intelligent Manufacturing Innovation Center” in China



Huizhou No.1

—— New type environmental and intelligent park



Highlight Technology

Digital

- Online detection, automatic maintenance, remote operation.....

Intelligent discharge

- AI controlling discharge process, the speed of discharge improved by 50%

Weight-free calibration

- Calibration without weight
- Online detection for weighing sensor

BeiYuan Commercial concrete

—— Intelligent reformation of concrete batching plant

Highlight Technology

Cost of labor reduced by 50%

- Intelligent production
- Data displayed on the intelligent screen

Production efficiency improved by 12%

- ERP showing the status of production in real time, avoiding the mistake

Income improved by 190%

- The profit margin of cost improved by 65% (compared with last year)





THANKS