Easyland

FUEL CELL COMPRESSOR

Jiangsu Easyland Automotive Corporation

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About Easyland

Become a Pioneer

of Boosting Technologies & Innovative Applications

Resolute

Strive for Excellence
Innovative & Proactive

Cooperative

Achieve Customer Satisfaction and Success
Share and Stand Together

Agile

Simple but Effective
Embrace Change

Jiangsu Easyland Automotive Corporation, founded in 2013, headquartered in Wuxi, is a leading international enterprise specializing in innovative boosting technology solutions for energy-saving vehicles, hybrid vehicles, electric vehicles, hydrogen-powered transportation, and energy storage systems. With a global marketing center and an R&D center for new energy based in Shanghai, Easyland is dedicated to providing cutting-edge solutions for the automotive industry.

- Sales Regions:100+
- Shanghai R&D Center & Sales Center
- Wuxi Factory / Service Center

100+
Nations

70+
Partner

100+
Patent

Shanghai Marketing Center, R&D Center

Wuxi Factory -First Factory

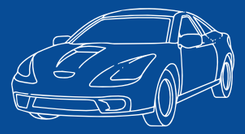
Wuxi Factory -Second Factory

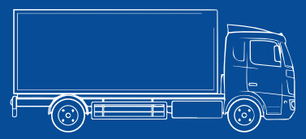
Products & Application

Product Highlights

-Air bearing(oil-free)
-Medium-high pressure ratio
-Continuous operation,fast response
-High comprehensive efficiency
-Compact structure and light weight
-Low noise
-High reliability
-Automotive-grade production

Automotive Field Application





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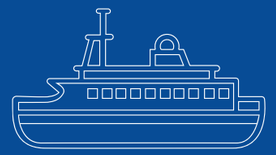
Non-automotive field Application



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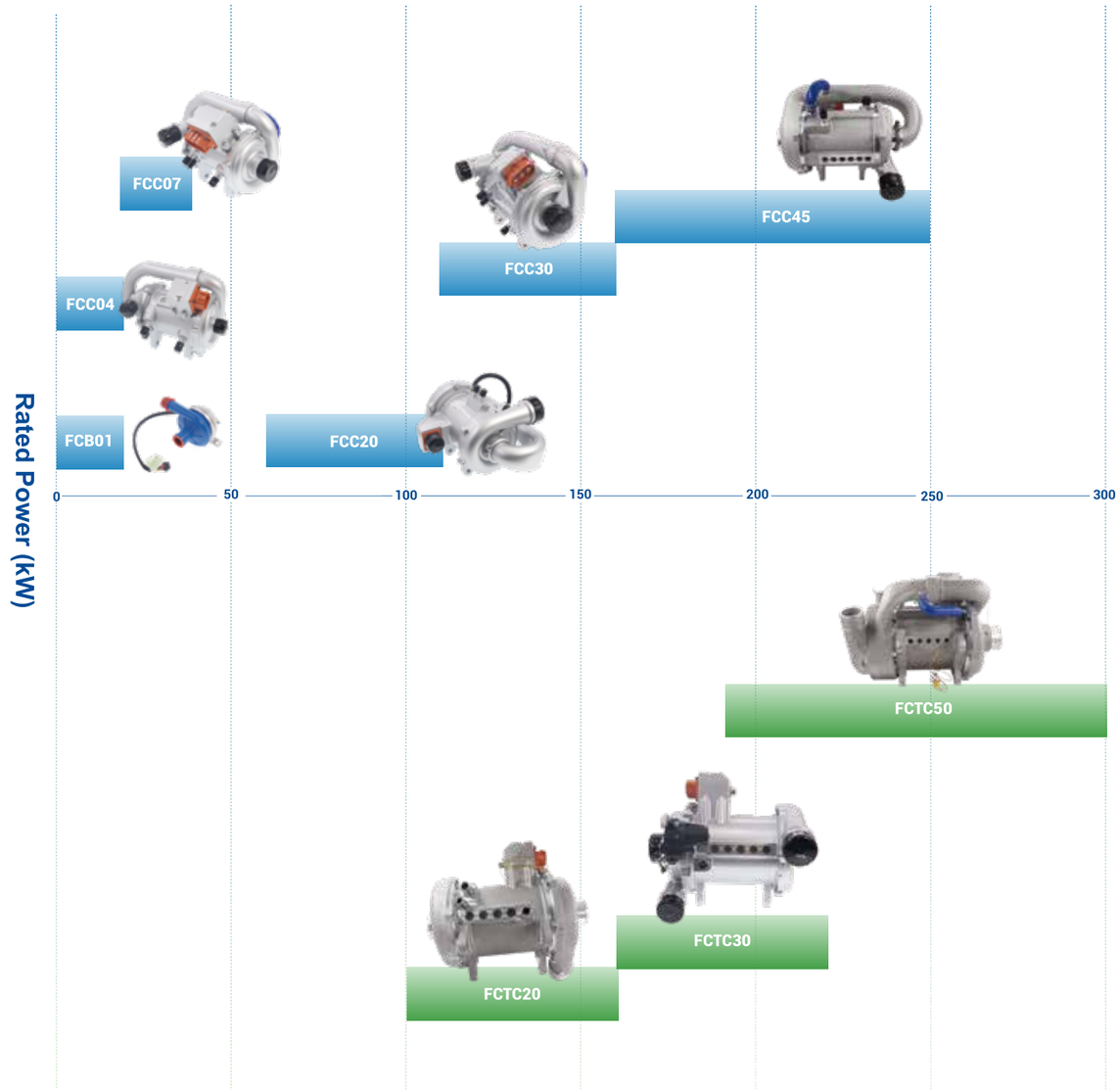
Partner

国鸿氢能 SINOSYNERGY
捷氢科技 SHPT
TROOWIN 众宇 燃料电池专家
国氢 SFCC
天能
youon 永安行
东风汽车 DONGFENG MOTOR
ZONGSHEN
福大紫金氢能科技 FZU ZiJin Hydrogen Power Technology Co., Ltd.
More

Air compressor products have achieved serialization, platform and industrialization, and can be adapted to 0.5kW to 300kW fuel cell systems. Air compressor products are used in forklifts, passenger cars, buses, light trucks, heavy trucks and other automotive fields and UPS, ships, cogeneration and other fields. Our newly developed high-flow high-pressure ratio compressor with high efficiency expander can help fuel electric system improve efficiency by more than 5%.

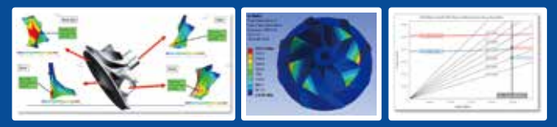
2-Stage Air Compressor



Air Compressor With Tubine Expander

R&D Capability

Aerodynamic Design



01 Fundamental Engineering

Mature design process focusing on performance optimization and safety feature iteration by CFD/FEA tools; Wheels and housing made by qualified material.

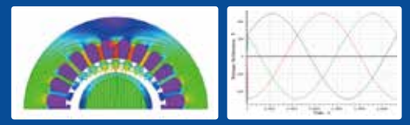
02 Performance Highlight

ompressor efficiency > 75%.

03 Matching and Application

Customized matching & application design for each project.

High Speed PMSM Motor



01 Fundamental Engineering

Slot filling rate>85%; Compact/high power density design by CAE; excellent thermal analysis.

02 Performance Highlight

With good thermal management; Motor efficiency > 95%; Maximum power density @3.2kW/kg; Maximum speed @100,000RPM; Start-stoptimes>200,000.

03 Matching and Application

Advanced electromagnetic design bringing compact design and low vortex loss; low weight rotor reducing the bearing failure risk.

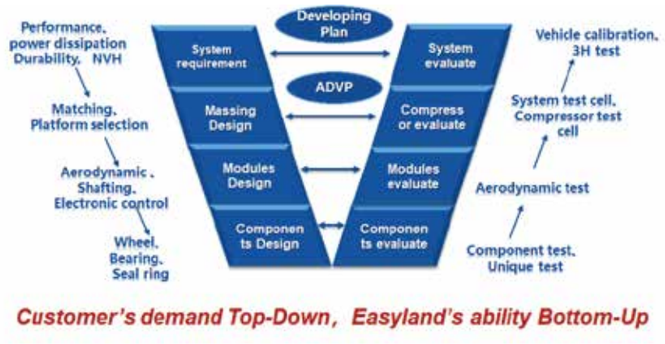
Simulation

01 Wheel stress qualification/optimization

02 Housing stress quailication/optimization

Digital R&D Management

Customer's demand Top-Down，Easyland's ability Bottom-Up.



PLM Product Development Process

PLM product digital development process to achieve unified data management, tracking product life cycle, information sharing

PLM Project Management

It follows the Advanced Product Quality Planning process and manages projects through a visual system.

BOM Management

Easyland achieve the synergy effects of product design, manufacturing and supplier chain management through the BOM.

Engineering Change Management

Ensure effective implementation and control of changes and ensure product compliance.

100+ National Patents Published

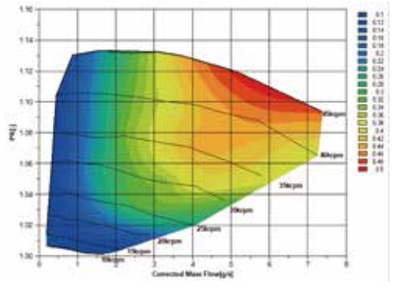
Innovation Platform Certification

Product Portfolio

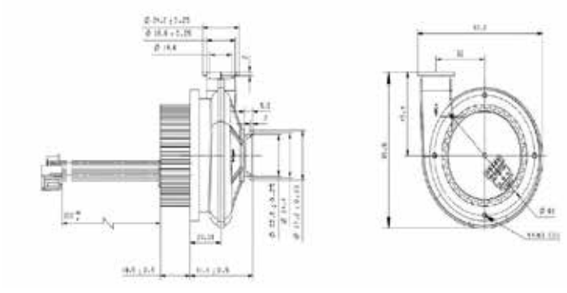
ELD-FCB0104001

Compressor Type	Centrifugal/Single-stage
Bearing Type	Ball Bearing(Low Evaporation Rate Grease)
Cooling Medium	Air Cooling
Ambient Temperature	-20°C to 65°C
Controller Input Voltage	12VDC
Weight	0.34Kg
Maximum Pressure Ratio	1.13
Maximum Flow Rate	7 g/s
Maximum Speed	45,000 rpm
Transient Response	1s(0~idle);3s(idle~maximum speed) 1s(idle~0);3s(maximum speed~idle) with braking
Layout	82.5*85.5mm
Applicable FCS Range	2kW
Maximum Motor Power	120W
IP Level	-

Compressor Map



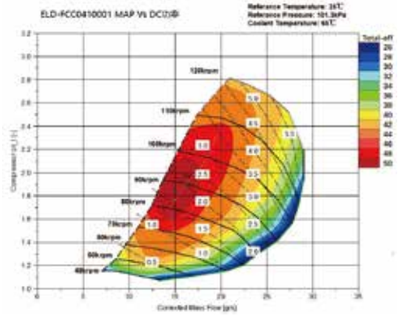
Compressor Layout



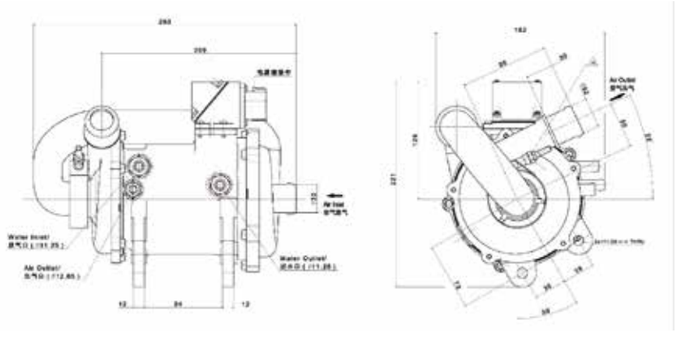
ELD-FCC0410001

Compressor Type	Centrifugal/2-stage
Bearing Type	Air Foil Bearing
Cooling Medium	Water/ethylene glycol
Ambient Temperature	-40°C to 85°C
Controller Input Voltage	48-80 VDC/9-32VDC
Weight	7.0 kg
Maximum Pressure Ratio	2.8(2.0)
Maximum Flow Rate	26 g/s(22)
Maximum Speed	120, 000 rpm
Transient Response	1s(0~30krpm)/ 1s (30krpm-0) 1s(30~100krpm)/ 1s (100-30krpm)
Layout	272x181x180mm
Applicable FCS Range	13~20kW
Maximum Motor Power	4 kW
IP Level	IP67

Compressor Map



Compressor Layout

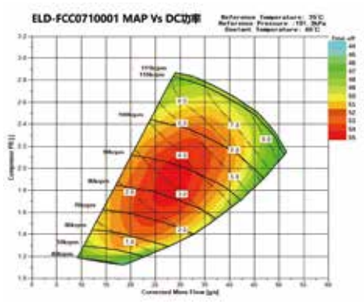


Product Portfolio

ELD-FCC0710001

Compressor Type	Centrifugal/2-stage
Bearing Type	Air Foil Bearing
Cooling Medium	Water/ethylene glycol
Ambient Temperature	-40°C to 85°C
Controller Input Voltage	48-80 VDC/9-32VDC
Weight	7.7 Kg
Maximum Pressure Ratio	2.8(2.6)
Maximum Flow Rate	57g/s(35)
Maximum Speed	110, 000 rpm
Transient Response	1s(0~30krpm)/ 1s (30krpm-0) 1s(30~100krpm)/ 1s(100-30krpm)
Layout	305*235*234mm
Applicable FCS Range	20~35kW
Maximum Motor Power	7 kW
IP Level	IP67

Compressor Map



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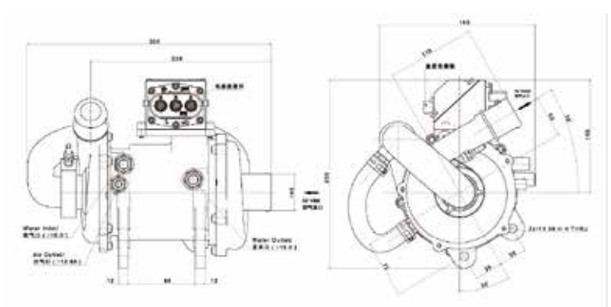
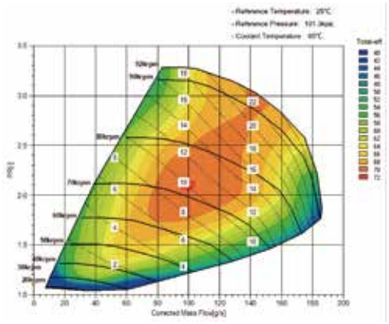


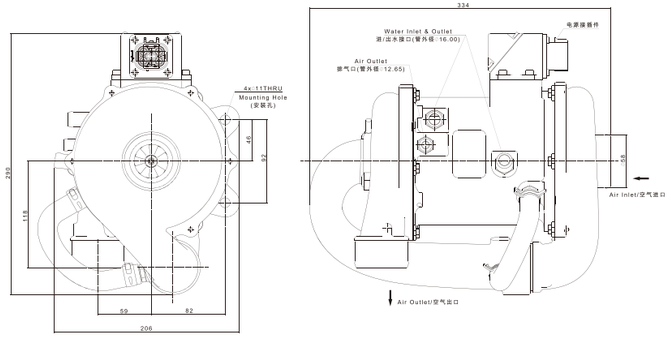
ELD-FCC2010001

Compressor Type	Centrifugal/2-stage
Bearing Type	Air Foil Bearing
Cooling Medium	Water/ethylene glycol
Ambient Temperature	-40°C to 85°C
Controller Input Voltage	450-750 VDC/9-32 VDC
Weight	10.72kg
Maximum Pressure Ratio	3.0(2.65)
Maximum Flow Rate	145 g/s(135)
Maximum Speed	92,000rpm
Transient Response	1s(0~30krpm)/0.6s (30krpm~0) 1.5s(30~100krpm) / 1.4s (100~30krpm)
Layout	328X285 X 185 mm
Applicable FCS Range	45~100 kW
Maximum Motor Power	25kW
IP Level	IP67

Compressor Map



Compressor Layout

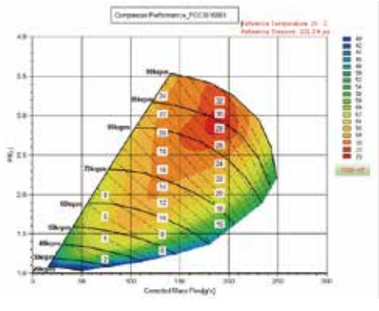


Product Portfolio

ELD-FCC3010001

Compressor Type	Centrifugal/2-stage
Bearing Type	Air Foil Bearing
Cooling Medium	Water/ethylene glycol
Ambient Temperature	-40°Cto 85°C
Controller Input Voltage	450-750VDC/9-32VDC
Weight	15 kg
Maximum Pressure Ratio	3.6
Maximum Flow Rate	240 g/s (180)
Maximum Speed	90 000rpm
Transient Response	1s(0~30krpm)/ 0.6s (30krpm-0) 1.5s(30-100krpm)/ 1.4s (100-30krpm)
Layout	362X 232X 282 mm
Applicable FCS Range	120~150 kW
Maximum Motor Power	35kW
IP Level	IP67

Compressor Map



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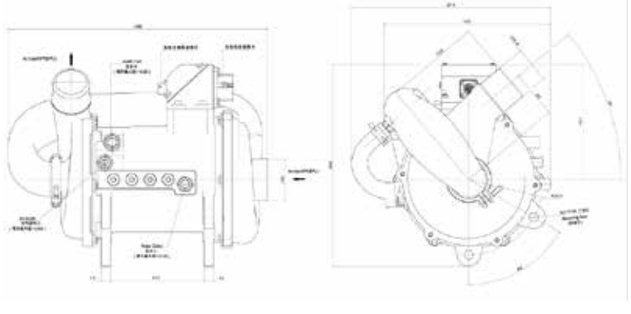
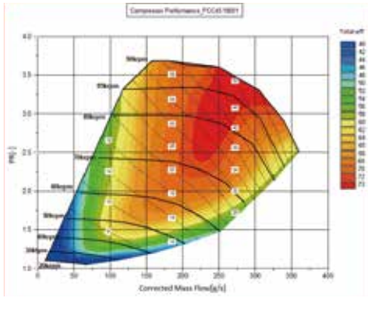


ELD-FCC4510001

Compressor Type	Centrifugal/2-stage
Bearing Type	Air Foil Bearing
Cooling Medium	Water/ethylene glycol
Ambient Temperature	-40°Cto 85°C
Controller Input Voltage	450-750VDC/9-32VDC
Weight	18.6 kg
Maximum Pressure Ratio	3.75
Maximum Flow Rate	300g/s (270)
Maximum Speed	90 000rpm
Transient Response	1s(0~30krpm)/ 0.6s (30krpm-0) 1.5s(30-100krpm)/ 1.4s (100-30krpm)
Layout	403X299X240mm
Applicable FCS Range	150-260 kW
Maximum Motor Power	50kW
IP Level	IP67

Compressor Map



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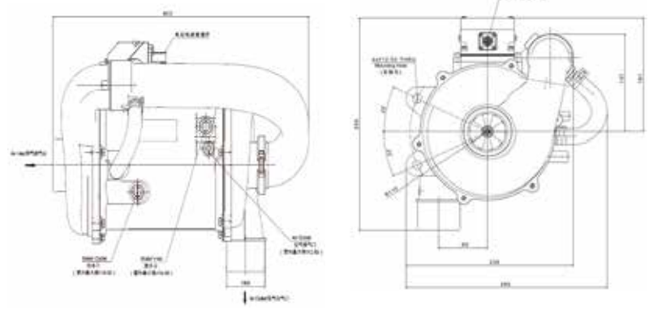
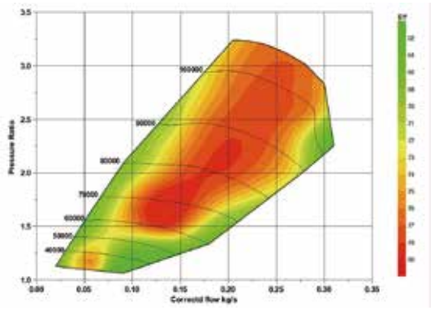


Product Portfolio

ELD-FCTC3010001

Compressor Type	Centrifugal/2-stage
Bearing Type	Air Foil Bearing
Cooling Medium	Water/ethylene glycol
Ambient Temperature	-40°C to 85C
Controller Input Voltage	450-750 VDC/9-32 VDC
Weight	15.544Kg
Maximum Pressure Ratio	3.15 (2.85)
Maximum Flow Rate	260 g/s(220)
Maximum Speed	100,000 rpm
Transient Response	1s(0~30krpm)/ 0.6s (30k~0rpm) 1.5s(30~100krpm)/ 1.4s (100~30krpm)
Layout	334*285*210mm
Applicable FCS Range	120~200kW
Maximum Motor Power	30 kW
IP Level	IP67

Compressor Map



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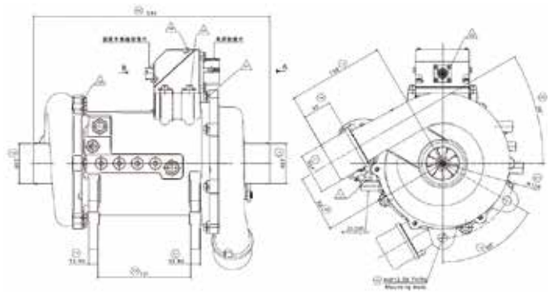


Validation and Testing

DV List

Key verification point	Test criteria
Low temperature/operating test	GB/T 28046.4—2011(5.1.1.2.2)
High temperature/operating test	GB/T 28046.4—2011(5.1.2.2.2)
H&L temperature storage test	GB/T 28046.4 — 2011(5.1.1.1.2)
Damp heat test	GB/T 28046.4—2011(5.7.2)
Salt fog test	GB/T 28046.4—2011(5.5.1.2)
Wibration test	GB/T 28046.3—2011(4.1.2.4.2) (4.1.2.7.2)
IP Protection class test	IP67 method in GB/T 4208-2017
NWH test	GB/T 28046.3-2011(4.1.2.7.2)
Voltage resistance	GB/T 18488.2-2015(5.8)
Thermodynamic Performance Test	<Fuel Cell System-Air Compressor> (7.2.1)
Durability of circulation	<Fuel Cell System-Air Compressor> (7.2.2)
Start stop test	<Fuel Cell System-Air Compressor> (7.6.1)
EMC test	<Fuel Cell System-Air Compressor> (7.3.10)
vibration & mechnical shock test	GB/T 28046.3—2011(4.2.2.2)

FC Compressor Durability Test

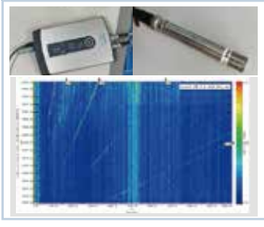
FC Compressor & Turbine Performance Test

FC Compressor /Turbine Durability Test

Foil Gas Bearing Comprehensive Performance Test

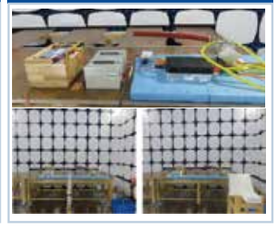
High and low temperature alternating humidity and heat test

NVH testing



High speed motor test

EMC/EMI testing



Intelligent Manufacturing

By introducing advanced equipment and technology from home and abroad, Easyland built an intelligent workshop for the production of fuel cell air compressors, which was awarded as a model intelligent workshop by Jiangsu Provincial Department of Industry and Information Technology. Relying on "Easyland Cloud Industrial Internet Platform", the workshop has realized the integration of CRM, ERP, MES, PLM, WMS and other digital systems.

The system realizes intelligent production process management and control based on automatic equipment information collection and industrial big data-based analysis and management. In addition to this, it also realizes comprehensive fine, digital and intelligent management and control in six aspects, including planning source, process collaboration, equipment bottom-up, resource optimization, quality control and decision support.

01 Intelligent Scheduling

Integration of ERP originates from the planning source to conduct detailed production scheduling.

02 Intelligent Production Collaboration

Realize parallel and collaborative preparation of materials, tools, tooling,molds and processes from the production preparation process.

03 Intelligent Device Interconnection

To realize the distributed network communication, centralized program management and real-time monitoring of digital production equipment.

04 Intelligent Resource Management

Including materials, equipment, cutting tools, measuring tools, molds, Jig and other production resources lean management, inventory intelligent warning, etc.

05 Intelligent Quality Process Control

Real-time collection and control of production process parameters affecting product quality to ensure product quality.

06 Intelligent Decision Support

Decision support based on big data analysis, forming a closed loop of management, in order to achieve a digital, networked, intelligent and efficient production mode.

Digital Twin

Manufacturing Execution System

Intelligent Warehouse Management System

Supply Chain Collaboration

Quality Control

Quality Policy

Customer-oriented, technology-driven, and 100% quality-focused.

Quality Goal

Establishment and maintenance of ISOTS16949 quality management systems, ensuring continuous improvement for achieving zero-defect product quality and exceeding 92% customer satisfaction.

Quality Management Tools

MSA、 SPC、 PPAP、APQP、 FMEA.

01 Project Development Quality Control

Through the systematic analysis of test marketing products, the establishment of a potential test mode diagnostic system, and the development of DFMEA and PFMEA during the development phase, will reduce quality risks to a minimum.

02 Supplier Quality Control

Supervision, inspection, and evaluation of purchased products or services from suppliers ensure alignment with the company's quality requirements and standards, thereby upholding product quality and enhancing customer satisfaction.

03 Feed Process Quality Control

Quality management during the process of strengthening the raw material procurement process; with strict incoming inspections, regular on-site review of suppliers and supervised improvement oversight, to avoid the quality risks during the raw material supply phase.

04 Production Process Quality Control

Through training staff to increase their individual awareness so as to encourage the discovery of inferior products and therefore eliminate these items before they reach the production line process. Whereas the porduction area makes full use of the 'anti-error' technology, visual inspection serves to reduce the possibility of error during this quality control phase.

05 Production Process Quality Control

In the product shipping process, in addition to the normal product testing, refinement of the product protection, transport methods for standardized control have been implimented to prevent the failures in the shipping processing phase.

06 Service and Customer Communication Control

Advocating the philosophy of continuous improvement, the focus lies on finding solutions to problems, analyzing issues, and evaluating customer complaints using the 8D report method, leading to minimized breakdowns in the SCCC phase.

Enterprise Management System

IATF 169469 | IOS 45001:2018 | IOS 14001:2015 | IOS 50001 | SA 8000 | GB/T 23001

Inspection Ability