

山东嘉泰交通设备有限公司

技术介绍

2026年7月18日

TECHNICAL PRESENTATION

Shandong Jiatai Transportation Equipment Co., Ltd.
July 18, 2026



制胜未来

高瞻远瞩



企业核心价值观

和、诚、开拓



企业愿景

传承、专业、高效、创新

CORPORATE VALUES

Harmony · Integrity · Exploration

Corporate Vision

Heritage · Professionalism · Efficiency · Innovation

Corporate Mission

Comfortable Journeys, Better Travel

Corporate Culture

Forward-Looking Vision · Winning the Future

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— 产品介绍

Heritage · Professionalism · Efficiency · Innovation



CRH380A

山东嘉泰是全面具备研发和生产VIP及客室座椅能力的公司，是目前国内唯一一家高铁座椅全资质供应商，下图为CRH380A商务座椅和客室一二等座椅(E27/E28)。



PRODUCT INTRODUCTION — CRH380A

CRH380A VIP Business-Class Seat

CRH380A First-Class Passenger Seat

CRH380A Second-Class Passenger Seat

Shandong Jiatai has comprehensive R&D and manufacturing capabilities for VIP and passenger cabin seats, with a complete range of high-speed railway seat qualifications in China.



CRH380B

研发生产批量交付的380B商务座椅和客室一二等座椅。



PRODUCT INTRODUCTION — CRH380B

CRH380B VIP Business-Class Seat

CRH380B First-Class Passenger Seat

CRH380B Second-Class Passenger Seat

R&D, manufacturing and batch delivery of CRH380B Business-Class, First-Class and Second-Class seats.



CR300AF/BF-标动座椅

研发生产批量交付的CR300AF/BF标动商务座椅和客室一二等座椅, 座椅功能相同, 美工颜色不同 (E43/E43A)。



PRODUCT INTRODUCTION — CR300AF/BF

CR300AF/BF VIP Business-Class Seat

CR300AF/BF First-Class Passenger Seat

CR300AF/BF Second-Class Passenger Seat

R&D, manufacturing and batch delivery of standardized EMU Business-Class, First-Class and Second-Class seats. Same functions, different appearance/color schemes (E43/E43A).



CR400AF/BF-标动座椅

研发生产批量交付的CR400AF/BF标动商务座椅和客室一二等座椅, 座椅功能相同, 美工颜色不同 (E32/E44/E57)。



PRODUCT INTRODUCTION — CR400AF/BF

CR400AF/BF VIP Business-Class Seat

CR400AF/BF First-Class Passenger Seat

CR400AF/BF Second-Class Passenger Seat

R&D, manufacturing and batch delivery of standardized EMU Business-Class, First-Class and Second-Class seats. Same functions, different appearance/color schemes (E32/E44/E57).



CR400AF-智能车

研发生产批量交付的CR400AF智能车蛋壳/鱼骨式商务座椅、优选一等和客室一二等座椅。(E69/E71/E68)。



CR400AF智能车蛋壳VIP座椅



CR400AF智能车鱼骨VIP座椅



CR400AF客室优选一等座椅



PRODUCT INTRODUCTION — CR400AF INTELLIGENT EMU

Egg-Shell VIP Business-Class Seat
Fishbone VIP Business-Class Seat
Premium First-Class Passenger Seat
First-Class Seat with Powered Legrest
First-Class Passenger Seat
Second-Class Passenger Seat
R&D, manufacturing and batch delivery for CR400AF intelligent EMUs (E69/E71/E68).



CR400BF-智能车

研发生产批量交付的CR400BF智能车蛋壳/包间式商务座椅、优选一等座椅和客室一二等座椅。



CR400BF智能车蛋壳VIP座椅



CR400BF智能车包间VIP座椅



CR400BF客室优选一等座椅



PRODUCT INTRODUCTION — CR400BF INTELLIGENT EMU

- Egg-Shell VIP Business-Class Seat
- Compartment-Style VIP Business-Class Seat
- Premium First-Class Passenger Seat
- First-Class Seat with Powered Legrest
- First-Class Passenger Seat
- Second-Class Passenger Seat
- R&D, manufacturing and batch delivery for CR400BF intelligent EMUs.



CR450AF-智能车

研发生产交付的CR450AF智能车商务座椅、优选一等座椅和客室一二等座椅。



CR450AF智能车VIP座椅



CR450AF客室优选一等座椅



PRODUCT INTRODUCTION — CR450AF INTELLIGENT EMU

CR450AF VIP Business-Class Seat

CR450AF Premium First-Class Seat

CR450AF First-Class Passenger Seat

CR450AF Second-Class Passenger Seat

R&D, manufacturing and delivery of Business-Class, Premium First-Class, First-Class and Second-Class seats.



CR450BF-智能车

研发生产交付的CR450BF智能车商务座椅、优选一等座椅和客室一二等座椅。



CR450BF智能车VIP座椅



CR450BF客室优选一等座椅



PRODUCT INTRODUCTION — CR450BF INTELLIGENT EMU

CR450BF VIP Business-Class Seat

CR450BF Premium First-Class Seat

CR450BF First-Class Passenger Seat

CR450BF Second-Class Passenger Seat

R&D, manufacturing and delivery of Business-Class, Premium First-Class, First-Class and Second-Class seats.



铺镇拉林线/丽香线及唐山160商务座椅

研发生产批量交付的铺镇拉林线/丽香线商务座椅及唐山160鱼骨商务座椅，丽香线/拉林线鱼骨商务座椅无会客模式，唐山160鱼骨商务设有会客模式。



PRODUCT INTRODUCTION — BUSINESS-CLASS SEATS

Lalin Line Fishbone Business-Class Seat

Lixiang Line Fishbone Business-Class Seat

Tangshan 160 Fishbone Business-Class Seat

Batch delivery for Lalin/Lixiang Line and Tangshan 160 Business-Class seats. Lalin/Lixiang seats have no meeting mode; Tangshan 160 includes a meeting mode.



长客CR400BF-C老京张商务座椅

研发生产批量交付的长客老京张单双人商务座椅。



PRODUCT INTRODUCTION — CR400BF-C

CR400BF-C Legacy Beijing-Zhangjiakou Single/Double Business-Class Seats

R&D, manufacturing and batch delivery of Changchun-based CR400BF-C legacy Beijing-Zhangjiakou single and double Business-Class seats.



磁悬浮一等座椅

研发生产批量交付的长客磁悬浮一等座椅，采用摇篮式运动方式实现零重力姿态。



PRODUCT INTRODUCTION — MAGLEV

Maglev First-Class Seat

Generation 1 First-Class Seat

Generation 2 First-Class Seat

Batch delivery of Changchun maglev First-Class seats, using cradle-type movement to achieve a zero-gravity posture.



城际车座椅



长客长白山座椅



PRODUCT INTRODUCTION — INTERCITY SEATS

Changchun Changbaishan Intercity Seat
CRRC Sifang Intercity Seat



邮轮座椅



PRODUCT INTRODUCTION — CRUISE SHIP SEATS

Cruise Ship Seats



海外项目-中老项目

研发生产批量交付的海外中老项目蛋壳/鱼骨商务座椅。



PRODUCT INTRODUCTION — CHINA-LAOS RAILWAY

China-Laos Overseas Project — Egg-Shell Business-Class Seat

China-Laos Overseas Project — Fishbone Business-Class Seat

R&D, manufacturing and batch delivery of egg-shell and fishbone Business-Class seats for the China-Laos overseas project.



海外项目-阿联酋项目

研发生产批量交付的海外阿联酋项目商务座椅及客室一二等座椅。



PRODUCT INTRODUCTION — UAE PROJECT

UAE Overseas Project — Business-Class Seat

UAE Overseas Project — First-Class Seat

UAE Overseas Project — Second-Class Seat

R&D, manufacturing and batch delivery of Business-Class, First-Class and Second-Class seats for the UAE project.



海外项目-智利项目

研发生产批量交付的海外智利项目一等座椅。



PRODUCT INTRODUCTION — CHILE PROJECT

Chile Overseas Project — First-Class Seat

R&D, manufacturing and batch delivery of First-Class seats for the Chile project.



海外项目-雅万项目

研发生产批量交付的海外雅万项目二等座椅。



PRODUCT INTRODUCTION — JAKARTA-BANDUNG PROJECT

Jakarta-Bandung Overseas Project — Second-Class Seat

R&D, manufacturing and batch delivery of Second-Class seats for the Jakarta-Bandung project.

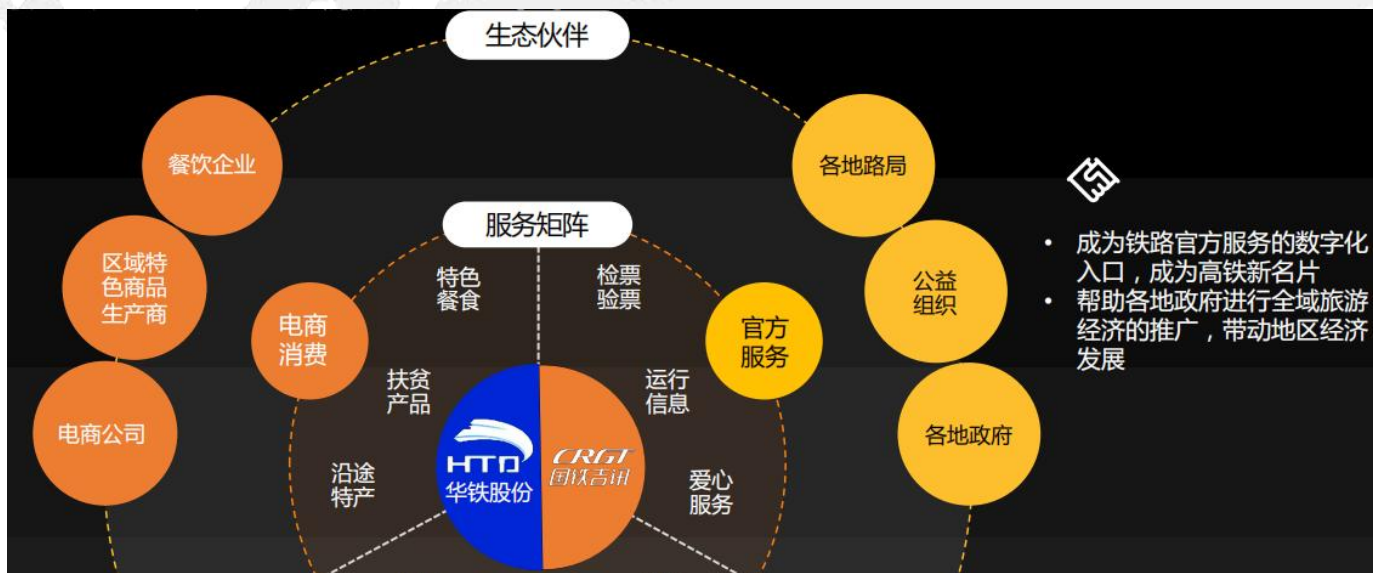


产品介绍



智慧屏系列

建设高铁场景服务生态圈



产品和技术整体架构



公司设立及架构设想

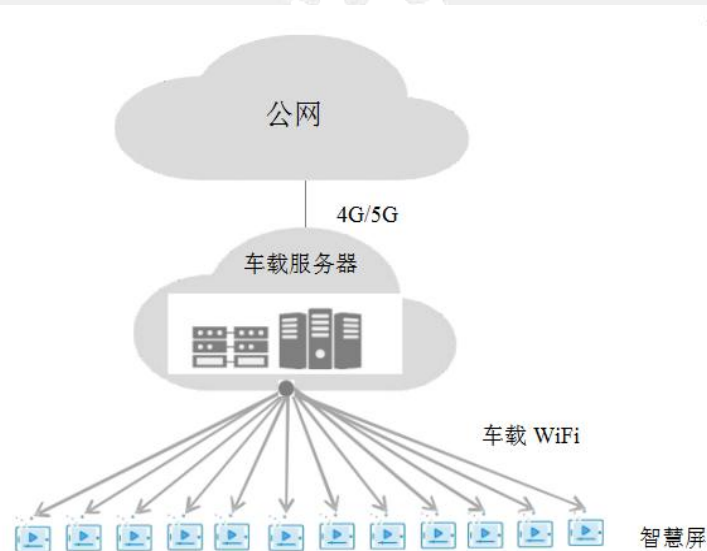
PRODUCT INTRODUCTION — SMART SCREEN SERIES

Smart Screen Series

Building a High-Speed Railway Service Ecosystem



实施路径及规划：用户通过座椅智慧屏形成联动，智慧屏通过车载服务器与外界进行云端交互。



SMART SCREEN SERIES

Implementation Path & Planning

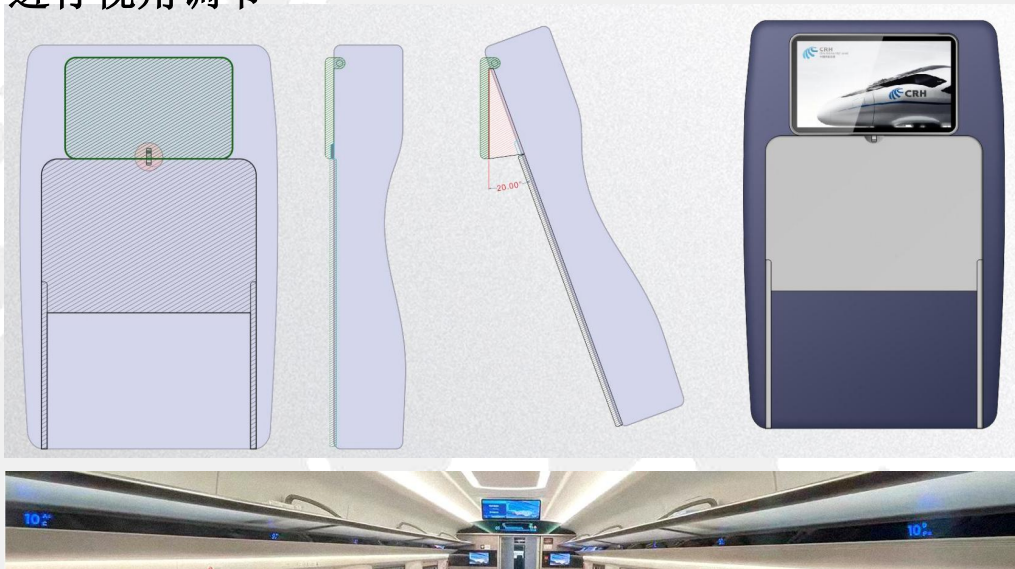
Passengers interact through the seat smart screen; the smart screen communicates with external cloud services via the on-board server.



产品介绍

智慧屏系列

载体呈现：现车改装，采用内嵌式智慧屏，随着靠背的调整进行视角调节



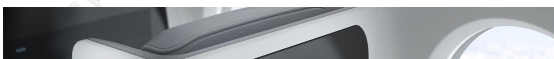
SMART SCREEN SERIES

In-Service Retrofit

Embedded smart screen with viewing angle adjusted together with the seat-back recline.



新一代产品策划



SMART SCREEN SERIES

Next-Generation Product Planning



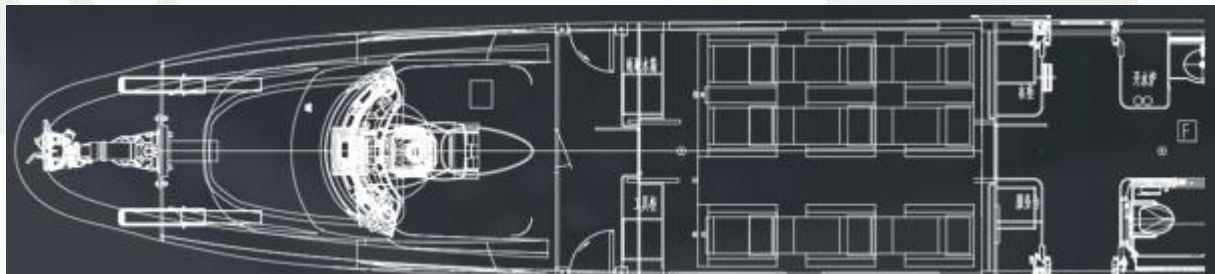
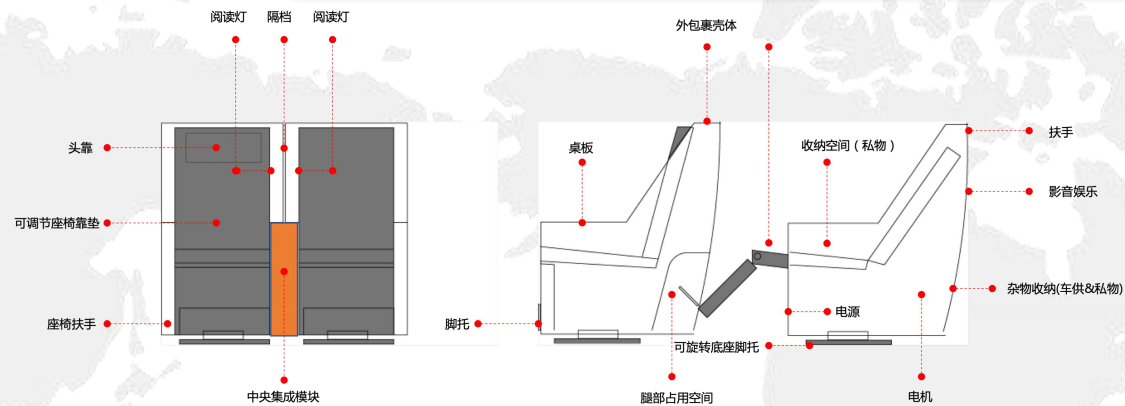
产品介绍

新一代产品策划



CONCEPT A 星际旅行CONCEPT

未来感
包裹感
智能化

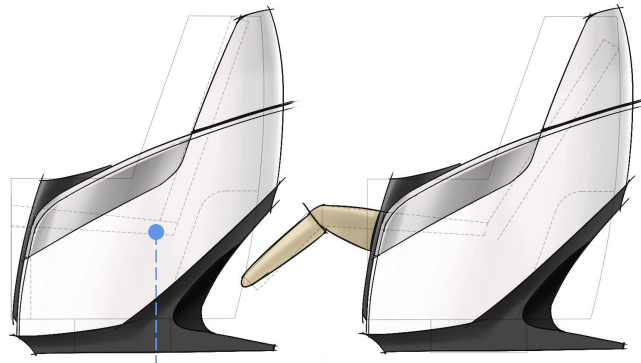


NEXT-GENERATION PRODUCT CONCEPTS

CONCEPT A — SPACE TRAVEL
Futuristic · Enveloping · Intelligent



CONCEPT B 沉浸私享

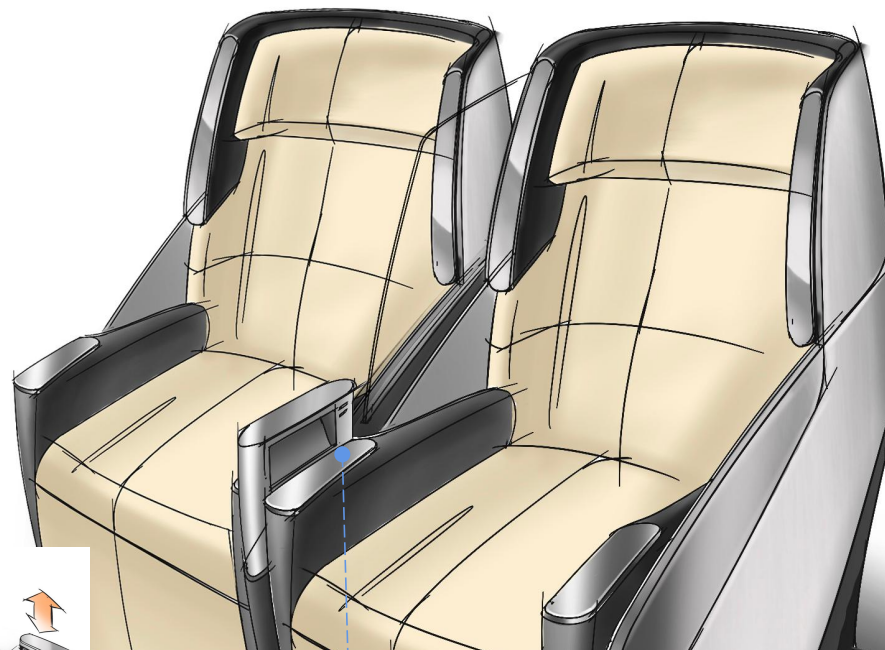
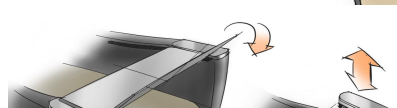


大围合
给乘客更加私密的感觉，即使是单座也能独享个人空间

电子屏



后背翻板



CONCEPT B — IMMERSIVE PRIVACY

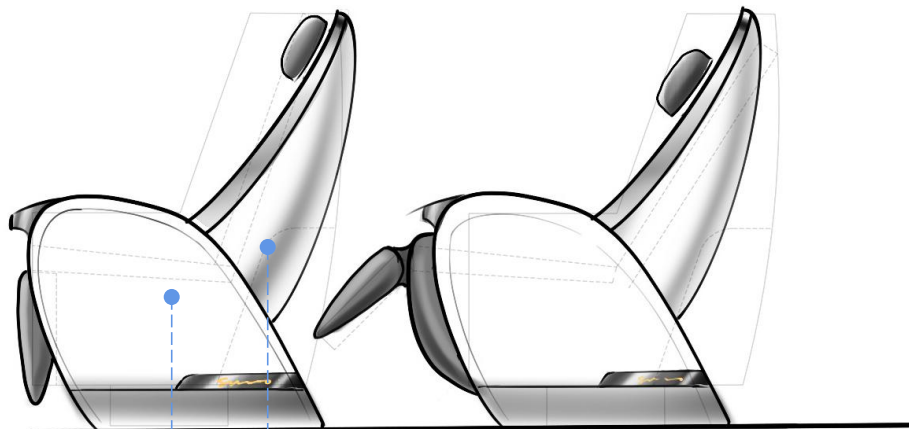
Large Enclosed Space · Private Experience
Independent functional modules for intuitive passenger use.
Rear folding panel: supports mobile phones/tablets.
Rear central module: storage for small bags.
Lower rear storage: small luggage or shoes.



ONCEPT C 失重空间

CONCEPT C — WEIGHTLESS SPACE

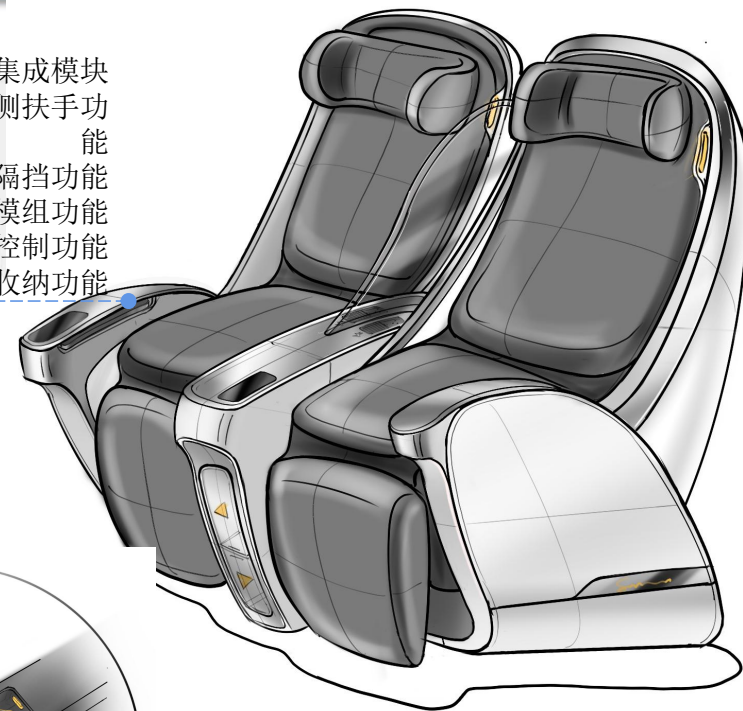
Ultra-Wide Integrated Central Module
Armrest functions · Height-adjustable divider · Charging module · Seat adjustment controls · Front/rear storage
Central integrated area · Rear storage · Charging module · Reading light
Lightweight · Artistic · Comfortable



支撑与悬浮
固定罩壳底座与靠背形成穿插造型，乘客坐于座椅内有似被托起，形成失重悬浮感。

超宽中央集成模块
补足双座椅一侧扶手功能
升降隔挡功能
充电模组功能
座椅调节控制功能
前后物品收纳功能

充电模组区域
集成于中央模块





CONCEPT D 方·域

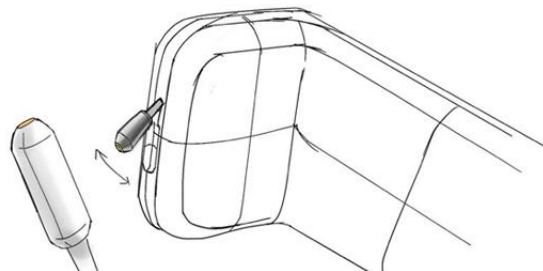
科技威

CONCEPT D — SQUARE DOMAIN

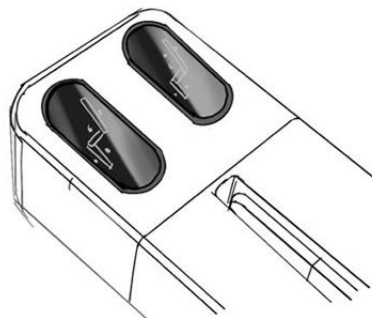
Technology · Geometry · Integration

Armrest inner charging area · Reading light · Electric adjustment area · Central integrated area · Rear storage space

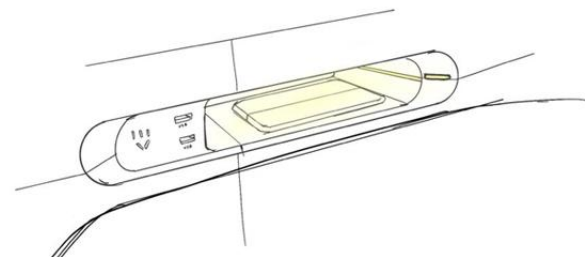
Two-level storage for shoes or small luggage



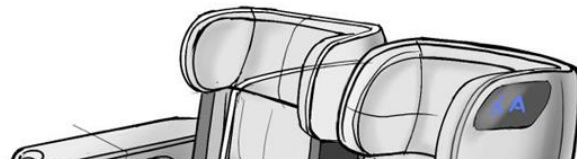
阅读灯



电控调节区域

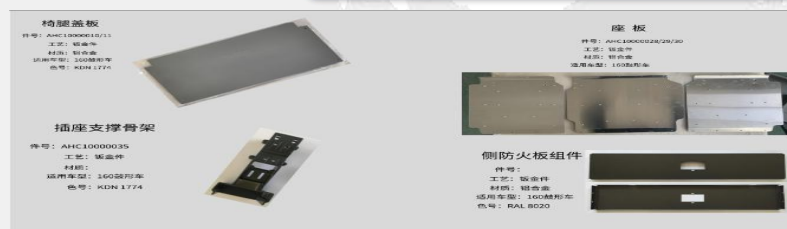


扶手内侧充电区域





配件制造



配件业务分布

镇江星翌	其他 2%
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PRODUCT INTRODUCTION – COMPONENT MANUFACTURING

Component Manufacturing



配件制造（二等小桌板生产与维修） 青岛基地



喷涂热熔胶



面板粘贴



粘贴压合



缝边



COMPONENT MANUFACTURING

Hot-Melt Adhesive Application · Panel Bonding · Press Bonding · Edge Stitching
Packaging & Warehousing · Marking · Labeling · Small-Component Assembly
Qingdao Base — Second-Class Seat Table Manufacturing & Repair



二 座椅技术及保障

Heritage · Professionalism · Efficiency · Innovation



开发
2021
年客
户需
求开
发完
成实
例



SEAT TECHNOLOGY & TECHNICAL SUPPORT

Development Leadership

Customer-Oriented Development · Customer Requirement Development



嘉泰技术发展史

座椅技术源泉

技术主要特点

航空商务



姿态调节：平躺及电动姿态调节转换

设有私密空间，提高私密性

多功能(影视、充电、照明、储物等)

表面软质包覆，较舒适

座椅背部采用航空级铝材，强度高

座椅技术源泉

技术主要特点

靠背后仰手动调节，调节角度大

大扶手及翻转脚踏设计，舒适性高

可180°旋转，脚踏复位

日式客室



SEAT TECHNOLOGY SOURCES

Aviation Business-Class Seat — Key Features

Powered posture adjustment: reclining and electric position adjustment

Multifunctional: entertainment, charging, lighting, storage

Soft surface covering for comfort

Private space for enhanced privacy

European Passenger Cabin — Key Features

Fixed, non-rotating design · Synchronized backrest/cushion adjustment · Hard rear shell, simple appearance, easy cleaning and maintenance · Modular design, simple structure

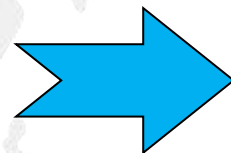
Japanese Passenger Cabin — Key Features



嘉泰技术发展思路

基于对各种风格座椅技术的学习消化应用，嘉泰吸收并创新开发了具有嘉泰自主知识产权的座椅系列设计平台

嘉泰座椅技术



功能模块化，易于维护，构建

结构积木化，易于制造，变化

平台标准化，易于设计，响应

JIATAI SEAT TECHNOLOGY DEVELOPMENT

European Seat Technology + Japanese Seat Technology + Aviation Seat Technology

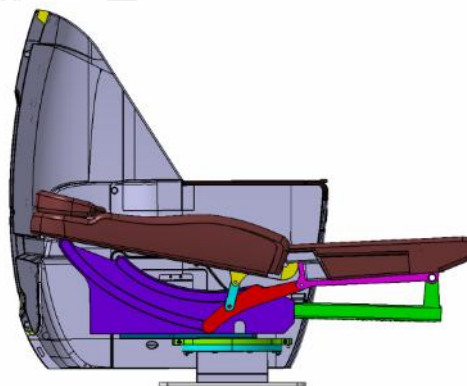
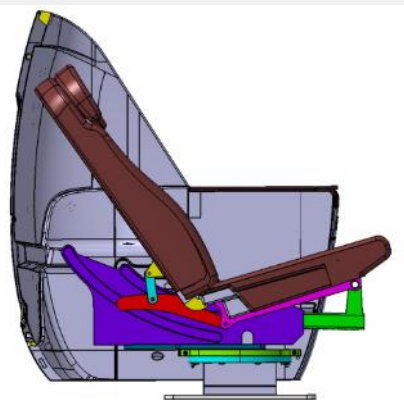
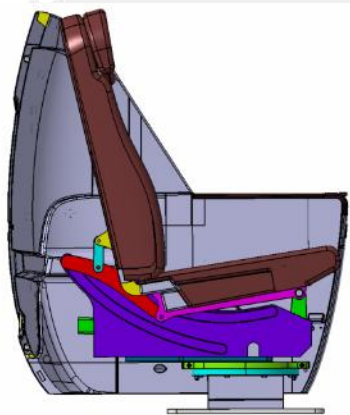
Jiatai Seat Technology

By studying, integrating and innovating various seat technologies, Jiatai has developed a series of seat design platforms with independent intellectual property rights.

High reliability · Standardized platform · Modular structure · Modular functions · Passenger comfort



◆舒适性提升：噪音更低，运行轨迹由直线变为曲线，更符合人机曲线。



SEAT TECHNOLOGY OPTIMIZATION

Optimized design for comfort, maintainability and cost compliance

Sitting · Semi-Reclined · Fully Reclined

Comfort: lower noise, curved movement path, better ergonomic conformity

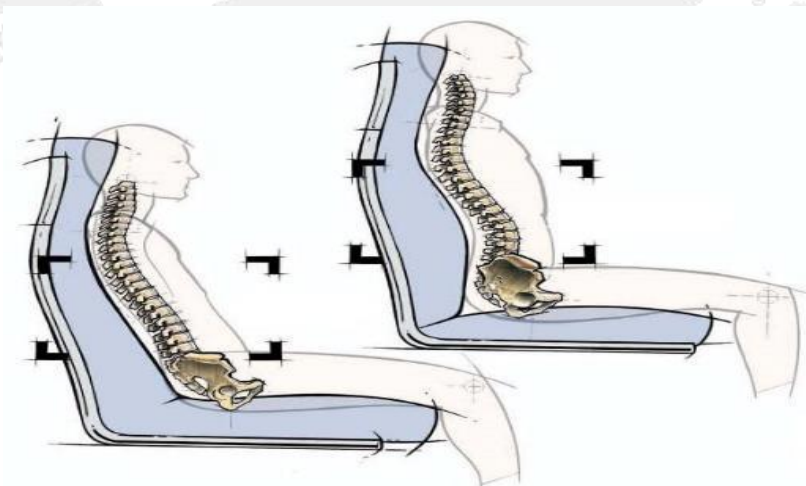
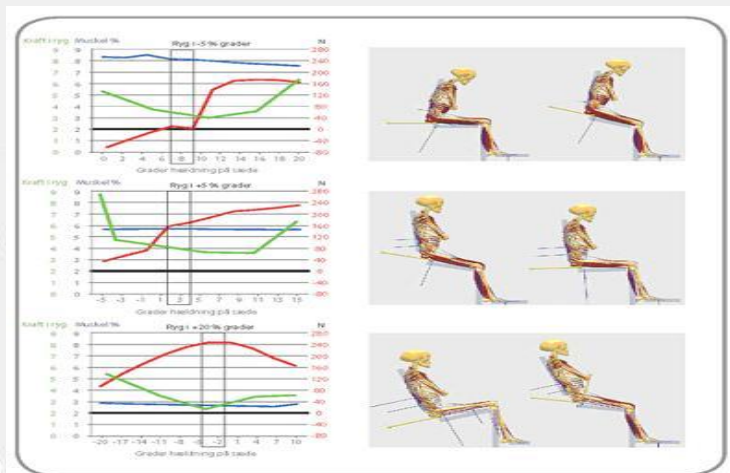
Maintainability: optimized design for faster disassembly/installation and easier maintenance

Common interfaces: compatible interfaces for competing seat components to support the aftermarket maintenance market

Localization: independently developed domestic electrical control systems for cost and maintenance advantages



人体工学模拟分析:



人体工学模拟分析

ERGONOMICS & COMFORT ANALYSIS

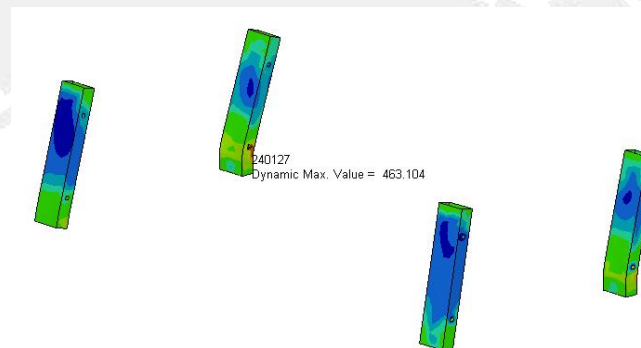
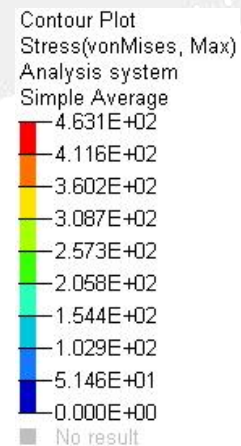
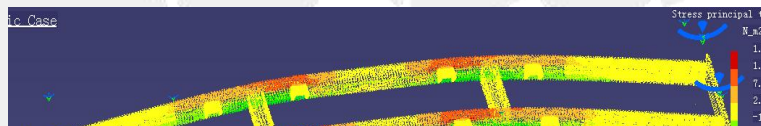
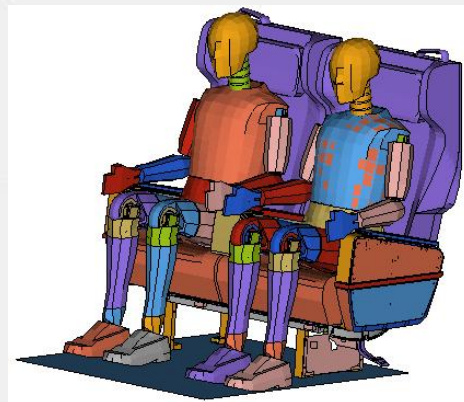
Ergonomic Simulation Analysis · Human Body Pressure Distribution Analysis



强度分析

CAE分析:

- ◆ 仿真强度计算
- ◆ 指导优化结构
- ◆ 缩短设计周期



最大应力471.2Mpa



STRENGTH ANALYSIS

Maximum Stress: 471.2 MPa

CAE Analysis: simulation strength calculation · structural optimization guidance · shorter design cycle



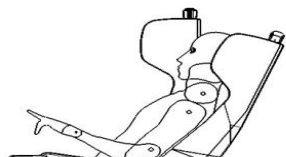
重心偏移理论指导

人体重心偏移理论为我司重点研究方向

► 靠背调节舒适度提升

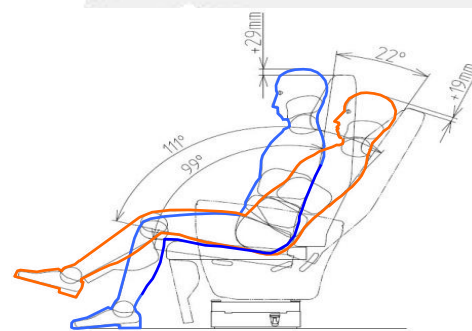


► 身体受力舒适



乘客在座椅从垂直状态到倾斜状态切换时，背部会产生极大的位移差（部位：头部、腰椎、肩胛骨），由于这种位移差，就坐的乘客为保持稳定，需重新就坐以调整坐姿。头枕的位置也需重新调整。
位移量：44mm + 21mm = 65mm

传统座椅靠背倾斜后，乘客身体重心后移，由臀部移至腰部下方位置，此时臀部与腰



座椅从垂直状态向倾斜状态切换时，背部的位移差极小，所以就坐的乘客可保持稳定的坐姿，当座椅从垂直状态切换到倾斜状态时，乘客无须再次就坐以调整坐姿。
位移量：29mm - 19mm = 10mm

座椅靠背倾斜时坐垫角度同时变化，乘客身体的重心在变化过程中始终在座椅坐垫与靠背结合区域。且加上腿托和坐垫角度变化而形成的支

CENTER-OF-GRAVITY SHIFT THEORY

When the seat changes from upright to inclined, large displacement differences can occur at the head, lumbar spine and shoulder blades, requiring passengers to readjust their posture.

Displacement: 44 mm + 21 mm = 65 mm

Optimized design minimizes back displacement difference and allows passengers to maintain a stable posture.

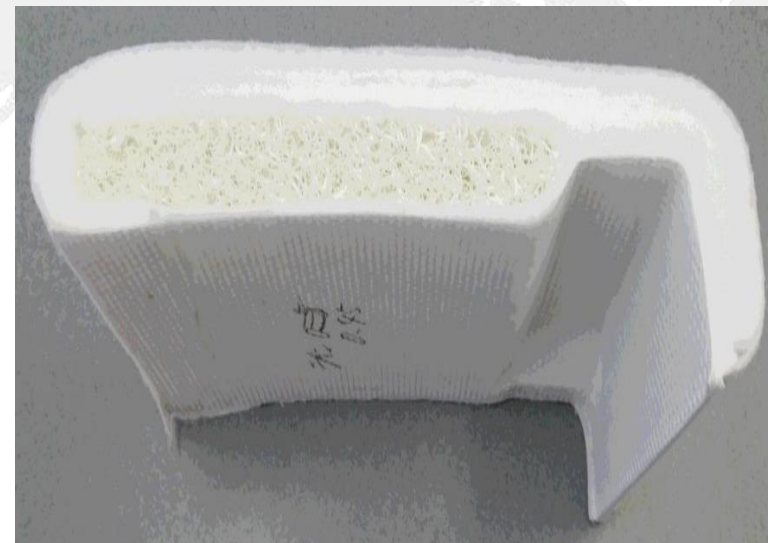
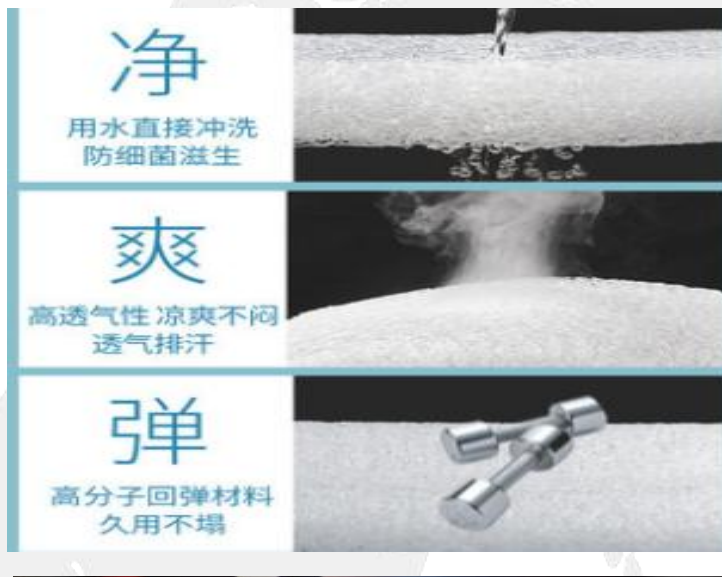
Displacement: 29 mm - 19 mm = 10 mm

Improved backrest adjustment comfort · Improved body support comfort · Increased rear-passenger space



新材料技术运用（3D织物）

3D织物研究与使用-铁路推广方向是座椅发泡升级替换及卧铺床垫（高回弹，变形少，体压分布自适应，透气性）



NEW MATERIAL APPLICATION — 3D FABRIC

Railway application direction: replacement of conventional seat foam and sleeper mattresses.
High resilience · Low deformation · Adaptive pressure distribution · Breathability





新材料技术运用（3D织物性能比较）

序号	性能	PU（聚氨酯）	TPEE（聚酯弹性体）
1	物理性能	目前行业通用材料	压陷硬度、回弹率、体压分布压力等优于PU材料
2	耐老化性	对紫外线敏感，大气环境下易老化	不易老化，化学性能相对稳定；透气性好，可水洗
			环保热塑性材料，可反复回收利用

3D FABRIC PERFORMANCE COMPARISON

PU (Polyurethane) vs. TPEE (Thermoplastic Polyester Elastomer)
Physical properties · Aging resistance · Environmental performance · Durability · Flammability
TPEE offers higher resilience, better pressure distribution, better aging resistance, recyclability, high tear/abrasion resistance and improved smoke/toxicity characteristics.



零重力座椅理论验证

采用零重力设计，让人体全身最放松、负荷最小，即使长时间处于一个姿势也不易疲劳，犹如漂浮在云端。
零重力座椅，独有的软泡层和支撑是关键，结合现有汽车座椅形式，做优化改进。



- 外套表层
- 零重力填充层
- 高回弹发泡层

基于3D织物在日本新干线N700的应用，将软泡层和3D织物组合合，可



ZERO-GRAVITY SEAT — THEORY VALIDATION

Zero-gravity design minimizes whole-body load and fatigue during prolonged sitting.
The combination of optimized foam and 3D fabric significantly improves the zero-gravity experience.
Upper layer: slow-rebound foam for improved pressure distribution
Lower layer: 3D fabric for primary support, rebound and breathability
Outer cover · Zero-gravity filling layer · High-resilience foam layer



外形设计专业化

外形设计专业化

产品系列化, 客户选择性更高, 形成客户依赖

开拓思维,
了解目前
座椅设计
潮流趋势

Design Analysis > Background

1st /2nd class

复杂
Complex

感性
Emotional

简单
Simple

理性
Rational

2021年开发系列化新
VIP座椅

Concept 1

Concept 2

Concept 3

Concept 4

Concept 5

PROFESSIONALIZED EXTERIOR DESIGN

Past · Current Stage · 2021 Plan

Product series development · Greater customer choice · Customer dependence

Understanding current seat design trends



外形设计过程

创意构思

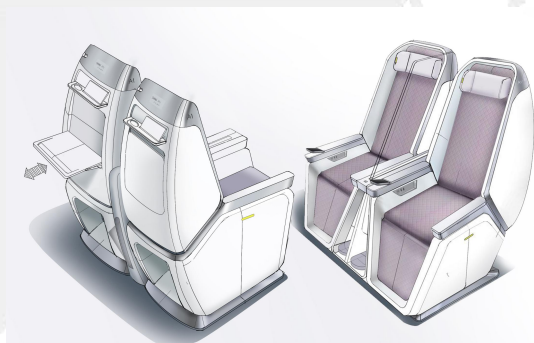
效果图阶段

CAS面阶段

3D设计阶段



星际旅行CONCEPT



- 1、创意构思：**确定概念主题，围绕此概念完成初版效果图
- 2、效果图阶段：**依据产品定义、尺寸及功能要求校核效果图，完成最终效果图（此过程需经过几轮修正后生成效果图）。

EXTERIOR DESIGN PROCESS

Concept Design → Rendering → CAS Surface → 3D Design

1. Creative concept: define the theme and create initial renderings.
2. Rendering stage: verify against product definition, dimensions and functions; finalize after several revisions.
3. CAS stage: develop and validate the CAS surface based on finalized rendering and dimensions.
4. 3D design stage: complete detailed seat structural design based on the finalized CAS surface.



开发案例（新智能商务）

智慧高铁商务座椅



DEVELOPMENT CASE — NEW SMART BUSINESS-CLASS SEAT

Smart High-Speed Railway Business-Class Seat



开发案例（嘉泰自研商务座椅）

半躺式商务座椅（空间利用率、舒适性最大化）



商务车厢 2+1 (9座)

一等车厢 2+2 (28座)

DEVELOPMENT CASE — JIATAI SELF-DEVELOPED BUSINESS-CLASS SEAT

Semi-Reclined Business-Class Seat

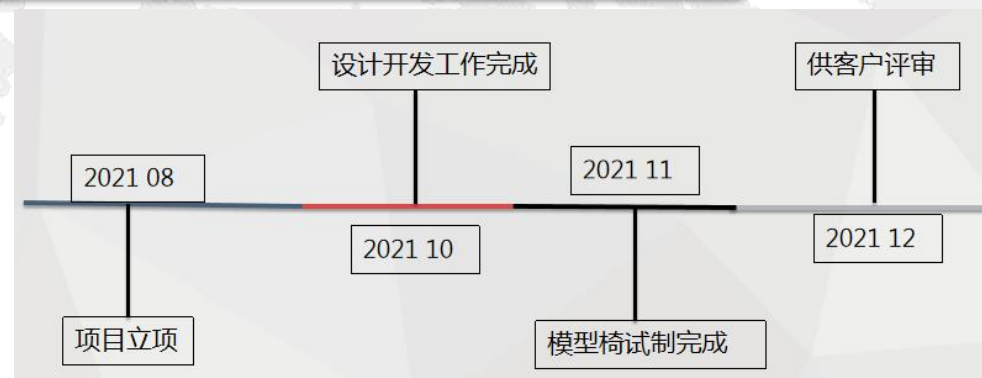
Maximizing space utilization and passenger comfort

Business-Class Car: 2+1 (9 seats) · First-Class Car: 2+2 (28 seats)



开发案例（摇篮座椅）

一等摇篮式座椅（低成本：电动腿托、靠背座垫机械联动）



DEVELOPMENT CASE — CRADLE SEAT

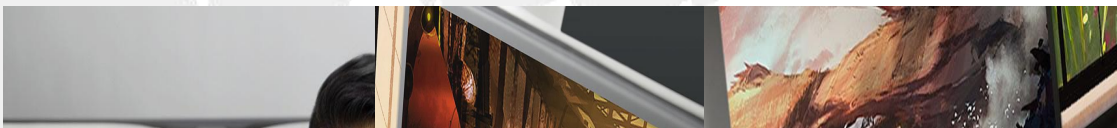
First-Class Cradle-Type Seat

Low-cost design: powered legrest + mechanical linkage between backrest and cushion



用户体验

「享」多人互动场景
娱乐



DEVELOPMENT CASE — SMART CONNECTED SCREEN

Passenger Experience
Entertainment · Multi-Passenger Interaction Scenarios



开发案例（城际座椅）

城际座椅引领者

可180°旋转

背部罩壳

高度模块化

重量轻

长白山
座椅特点



铺镇鼓形车
座椅特点

固定式

蒙面软包

较舒适

适合长途旅行

重量轻



DEVELOPMENT CASE — INTERCITY SEATS

Leader in Intercity Seat Development

Changchun Changbaishan Seat · Puzhen Drum-Shaped Car Seat

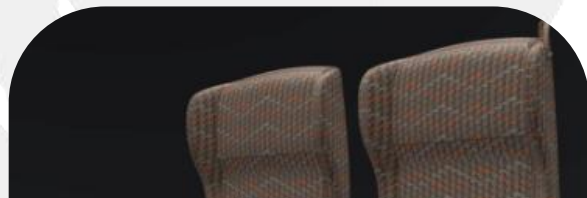
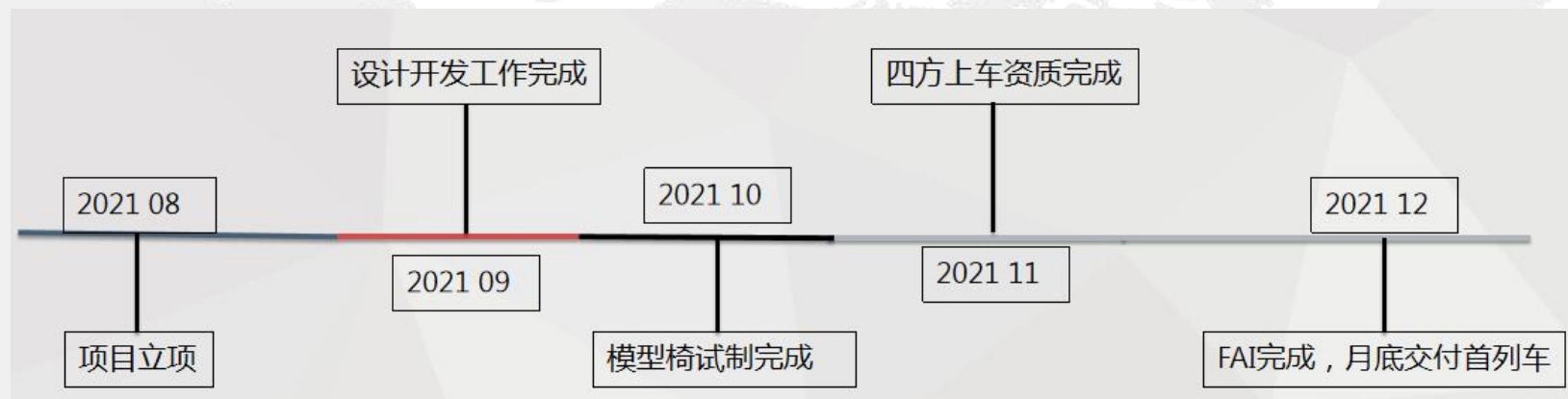
Changbaishan: lightweight · highly modular · rear shell · 180° rotation · suitable for long-distance travel · comfortable

Puzhen: soft upholstery · fixed design · lightweight



开发案例（海外智利项目）

海外座椅



DEVELOPMENT CASE — CHILE OVERSEAS PROJECT

Overseas Railway Seats
Chile Project Seat



知识产权

专利、专有技术所有权共29项，截至评估基准日，全部专利、专有技术都在使用。目前另有11项专利（8项实用新型专利，2项发明专利，1项外观专利）正在申请中。专利的技术具体清单如下：

实用新型专利				发明专利	
序号	名称	序号	名称	序号	名称
1	一种可绕轴旋转的镁合金座椅	11	一种商务座椅用脚踏装置及具有该脚踏装置的商务座椅	1	一种计算机存储介质及使用该存储介质的电动座椅
2	一种用于高速列车的座椅餐桌及含有该餐桌的镁合金座椅	12	一种商务座椅用旋转机构及具有该旋转机构的商务座椅	2	一种列车座椅周转架
3	一种高速列车座椅用镁合金边支板及其座椅	13	一种座椅用旋转限位机构及具有该机构的列车座椅	外观专利	
4	一种高速列车座椅的扶手及其镁合金座椅	14	一种列车座椅用带桌扶手及具有该扶手的列车座椅	1	商务座椅

INTELLECTUAL PROPERTY

29 patents and proprietary technologies in total; all were in use as of the evaluation date. 11 additional patents are under application: 8 utility models, 2 invention patents and 1 design patent.
Utility Model Patents · Invention Patents · Design Patents
Examples include magnesium-alloy seats, seat tables, armrests, footrests, rotating mechanisms, folding tables, headrests and adjustable business-class seats.
Pending patents include adjustable Business-Class seats, privacy hoods, height-adjustable armrests and wireless-charging Business-Class seats.



质量体系

体系及产品认证情况：

已通过并遵循的体系：

IRIS 22163

ISO9001

DIN6701

QUALITY MANAGEMENT SYSTEM

IRIS 22163 · ISO 9001 · DIN 6701 · EN 15085
Systems Passed / Followed
Laboratory Accreditation in Progress: ISO 17025



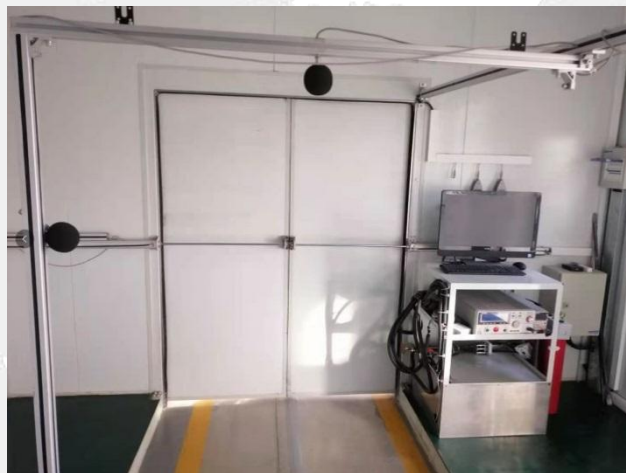
试验能力

单品动静性能测试
国家强制如EMC等测试
静载及负载运动测试
极限负载寿命测试



**整椅负载性能测试疲
劳，寿命**

VERIFICATION APPROACH



噪声测量仪及现场测试室



TVOC检测仪/测试室



TEST EQUIPMENT — COMPLETE SEAT TESTING

Comprehensive Seat Performance Test Bench
Static and dynamic load testing (including UIC 566)
Actual-load fatigue and service-life testing of seats and components
Noise measurement and on-site test room · TVOC testing · Body-pressure distribution testing for comfort design



实验设备（部件材料测试）

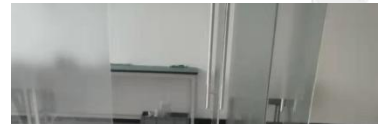
零部件燃烧性试验设备



氧指数测定仪



水平垂直燃烧实验箱



TEST EQUIPMENT — COMPONENT & MATERIAL TESTING

Foam testing equipment

Horizontal/vertical flammability chamber · Foam tear/tensile tester · Indentation hardness tester · Ball rebound tester · Electronic densimeter · Oven

Component flammability testing equipment · Oxygen index tester



实验设备（部件材料测试）

漆膜类试验



附着力测试



漆膜划痕试验仪



耐磨耗试验机



摆杆硬度计



TEST EQUIPMENT — COATING TESTING

Coating scratch tester · Abrasion tester · Color difference meter · Gloss meter · Coating impact tester · Coating thickness gauge · Adhesion tester · Pendulum hardness tester



实验设备（部件材料测试）

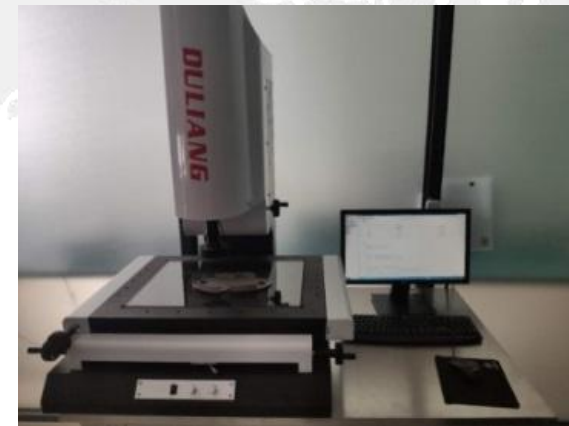
物理性能测试



压力测定仪



硬度测定仪



影像仪

TEST EQUIPMENT — PHYSICAL PROPERTY TESTING

Pressure tester · Salt spray chamber · Hardness tester

Shore hardness tester · Illuminance meter · Noise meter · Torque tester · Imaging instrument



实验设备（部件材料测试）

电
性
能
检
测



可编程直流电源



数字万用表



示波器

TEST EQUIPMENT — ELECTRICAL PERFORMANCE TESTING

Dielectric withstand tester · Insulation resistance tester · Button life tester
Programmable DC power supply · Digital multimeter · Oscilloscope



实验设备 (DIN5510整椅燃烧模拟)

我公司能够测试座椅所需阻燃测试项目摸底实验，且产品通过第三方实验认证——DIN5510-2、FAR25.853、BSS7238、BSS7239, EN45545等各种单品及整椅燃烧标准。



FULL-SEAT FLAMMABILITY SIMULATION — DIN 5510

Jiatai can perform preliminary flammability testing required for railway seats. Products have passed third-party certification/testing to DIN 5510-2, FAR 25.853, BSS 7238, BSS 7239 and EN 45545, covering individual components and complete seats.



三 生产控制

Heritage · Professionalism · Efficiency · Innovation



山东嘉泰交通设备有限公司拥有自动的装配流水线模式，模块化的部装工台，集成式一体的总装生产线，VIP商务座椅年产量4000座，客室座椅年产量100000座，最高日产出座椅可达500座以上。确保实现3.2天一列长编座椅，1天一列短编座椅的生产节拍。为持续可靠的生产制造提供了有力保证。



PRODUCTION CONTROL — ASSEMBLY LINE

Automated assembly-line production with modular sub-assembly workstations and integrated final assembly lines.

Annual capacity: 4,000 VIP Business-Class seats and 100,000 passenger cabin seats.

Maximum daily output: over 500 seats.

Production takt: one long formation per 3.2 days; one short formation per day.

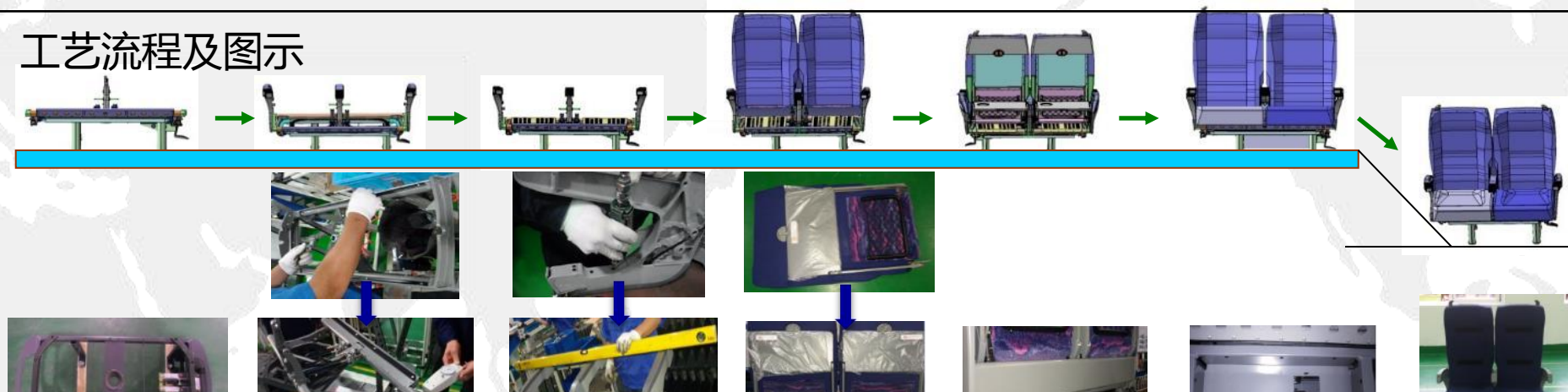
Business-Class Seat Assembly Line · Passenger Seat Assembly Line · Passenger Seat Maintenance Line



节拍控制

实行“一个流”的生产方式，根据单个座椅的加工工序进行工位布置，对每一个工位做相应IE分析，实现流水线节拍作业。

工艺流程及图示



PRODUCTION CONTROL — TAKT TIME

One-piece-flow production based on individual seat processes and IE analysis for each workstation.

Process Flow: Bogie/Frame Assembly · Armrest Assembly · Backrest Assembly · Base Assembly · Rotation Mechanism Assembly · Armrest Installation · Backrest Installation · Rear Shell Installation · Fire Barrier Installation · Cushion Installation & Finishing



配件制造

为目前国内所有座椅供应商中唯一实现零部件自制的座椅工厂



COMPONENT MANUFACTURING

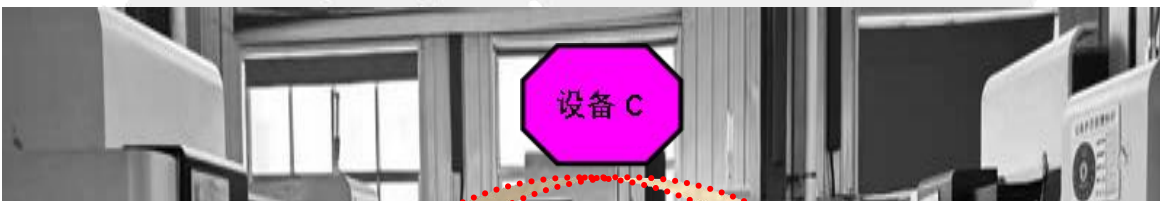
Jiatai is the only domestic seat manufacturer currently capable of in-house manufacturing of seat components.

Rapid processing capability: laser cutting · robotic welding · injection molding · CNC machining center · multifunction machining · U-shaped finishing line · 3D fabric processing center



生产控制

生产部件及配件快速加工能力



COMPONENT MANUFACTURING CAPABILITY



四 售服和检修

COMPONENT MANUFACTURING CAPABILITY



售服和检修



售后检修网络



AFTER-SALES SERVICE & MAINTENANCE — NETWORK

After-Sales Service Network

National network: 45 after-sales service sites and 10 maintenance service stations.

Total after-sales and maintenance personnel: 105.

Regional teams cover Zhengxi, Nanjing, Shanghai, Shandong, Beijing-Tianjin, Shanxi-Mongolia, Lanzhou-Xinjiang, Northeast, Nanchang, Guizhou-Guangzhou, Chongqing, Guangzhou, Wuhan, Lhasa and OEM regions.



检修事业部发展框架

嘉泰检修事业部发展框架



MAINTENANCE BUSINESS DEVELOPMENT FRAMEWORK

Jiatai Maintenance Business Development Framework



检修事业部三年经营计划



THREE-YEAR MAINTENANCE BUSINESS PLAN

2021 · 2022 · 2023

Reserve & Consolidation Year · Market Share Control Year · Market Expansion Year



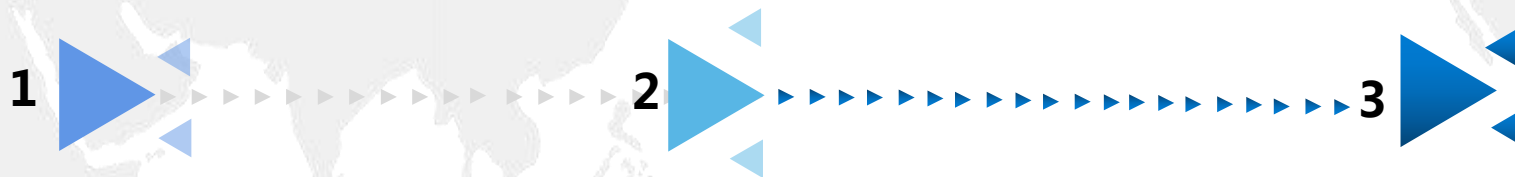
市场销售及渠道



MARKET SALES & CHANNELS



与主机厂下属企业和配件销售
公司及路局或其多金公司合作



MAINTENANCE & COMPONENT SALES COOPERATION

1. Cooperate with OEM subsidiaries, component sales companies and railway bureaus / their affiliated companies.
2. Participate independently in OEM and railway bureau tenders; plan and establish localized maintenance bases and component centers.
3. Cooperate with maintenance and component distributors.



检修工程中心



检修工程中心

MAINTENANCE ENGINEERING CENTER



检修标准、流程

嘉泰座椅检修标准流程及
物料编码建立
非嘉泰座椅检修标准流程
及物料编码建立

座椅产品演
变履历表梳
理制定

技术优化

嘉泰座椅产品结构可维修
性长寿命、低成本结构优
化

专利申请

MAINTENANCE PROCESS, WORKMANSHIP & QUALITY

Standard maintenance procedures and material coding for Jiatai seats

Standard procedures and material coding for non-Jiatai seats

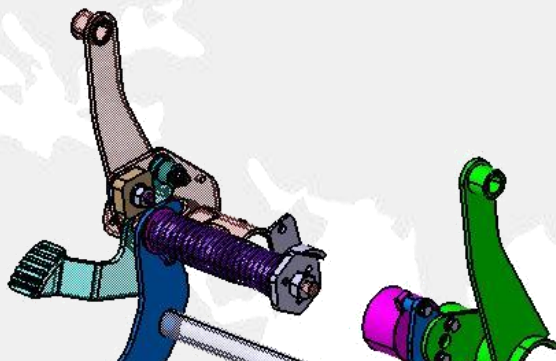
Seat product lifecycle history management · Serviceable long-life, low-cost structural optimization · Technical optimization · Patent applications

Maintenance process · Fault codes · Work instructions · QC process charts · Test equipment · Maintenance quality standards · Relevant certifications · After-sales personnel assessment & training



配件修理及自制过程举例

以一等座后脚踏为例，生产过程包括落料、折弯、焊接、表面处理等工序。



钣金件激光落料折弯+拉升成型+精加工+锌合金铸造

按照焊接工艺及工装，保证焊接要求及精度

COMPONENT REPAIR & IN-HOUSE MANUFACTURING — EXAMPLE

Example: First-Class seat rear footrest.

Processes include blanking, bending, welding and surface treatment.

Footrest precision adjustment · Assembly and commissioning according to work instructions · Zinc plating + coating for corrosion and appearance requirements · Welding process and tooling for required accuracy · Laser blanking/bending + forming + precision machining + zinc-alloy casting



信息管理中心



INFORMATION MANAGEMENT CENTER



信息管理中心

01

故障统计

02

合作方管理

03

资质订单

INFORMATION MANAGEMENT CENTER

Fault Statistics · Personnel Evaluation · Partner Management · Cost Accounting · Qualification & Order Management · APP Management



01

电控系统等主要部件质保期根据故障率重新确认及质保期内期外维修服务梳理

02

对座椅寿命周期内使用时场外故障进行对应收集统计汇报并制定改进方案申报同时协调处理

03

对应技术合同和故障率LCC管理及供应商

INFORMATION MANAGEMENT CENTER

Reconfirm warranty periods for major components such as electrical control systems based on failure rates; define maintenance services during and after warranty.

Collect and analyze out-of-service failures throughout the seat lifecycle and formulate improvement plans.

LCC management of lifecycle failure rates and annual supplier quality targets.

Analyze after-sales labor hours and use annual cost settlement for abnormal maintenance to promote continuous improvement.



售后及检修APP平台使用

售后工程师 配件出入库 个人中心

山东嘉泰交通设备有限公司
SHANDONG JATAI TRANSPORTATION EQUIPMENT CO.,LTD

故障信息统计

故障件入库

站点与站点配件

公司向站点配件

故障信息统计

故障来源 ☒ 售后 ☐ 检修 ☐ 整改

车号 请输入车号

座椅编号 请输入座椅编号

座椅批次号 请输入座椅批次号

部件类别 请选择部件类别

故障部位 请选择故障部位

故障代码 请输入

个人中心 退出登录

李龙飞
16653069902
售后工程师

审核故障件入库信息

查看公司向站点发配件信息

管理站点库 添加

配件名称	件号	安全库存	挑拨数量	库存数量	
边扶手前罩	6232-4004-0	0	0	5	编辑
钢索控制器	6132-4008-0	0	0	1	编辑
三联脚踏控	6232-0600-0	0	0	5	编辑
制钢索	01				
中扶手控制	6232-0600-0	0	0	5	编辑
钢索组	01B				
边扶手控制	6232-0600-0	0	0	5	编辑
钢索组	01A				
插销	6010-1133-0	0	0	3	编辑
餐桌板组件	6132-0510-1	0	0	20	编辑
上滑条	6132-3103-0	0	0	2	编辑
二等三人座	6132-3103-0				
椅上滑	01D	0	0	1	编辑
插座支撑骨	6132-3031-0	0	0	15	编辑
架	01D				
扶手上盖装	6220-4008-0	0	0	2	编辑
饰条	01				
中间扶手后	6132-4002-0	0	0	22	编辑
盖	01B				
皮质拉手	6010-4007-0	0	0	1	编辑

AFTER-SALES & MAINTENANCE APP PLATFORM

Use of After-Sales & Maintenance APP Platform



2020主要检修业绩概述

2020年检修主要业绩：

- 承接长客客室及商务三四级修特别五级修检修（商务-元通、嘉泰；客室-坦达）
- 承接唐车商务座椅三四级修的检修（元通、嘉泰）
- 承接四方CRH380A商务座椅的三四五级修及申金商务座椅的检修（元通、嘉泰）
- 承接四方庞巴迪CRH380D元通商务座椅的三、四级修（元通、嘉泰）

2020 KEY MAINTENANCE PERFORMANCE OVERVIEW



检修业绩举例

2020年检修业绩

序号	客户名称	修程	检修业务	列数（标准列）
1	中车长春轨道客车股份有限公司	三级修	CRH400BF商务座椅	2
2	青岛四方庞巴迪铁路运输设备有限公司	四级修	380D商务座椅（元通）	42
3	中车青岛四方机车车辆有限公司	五级修	山东嘉泰商务座椅	20

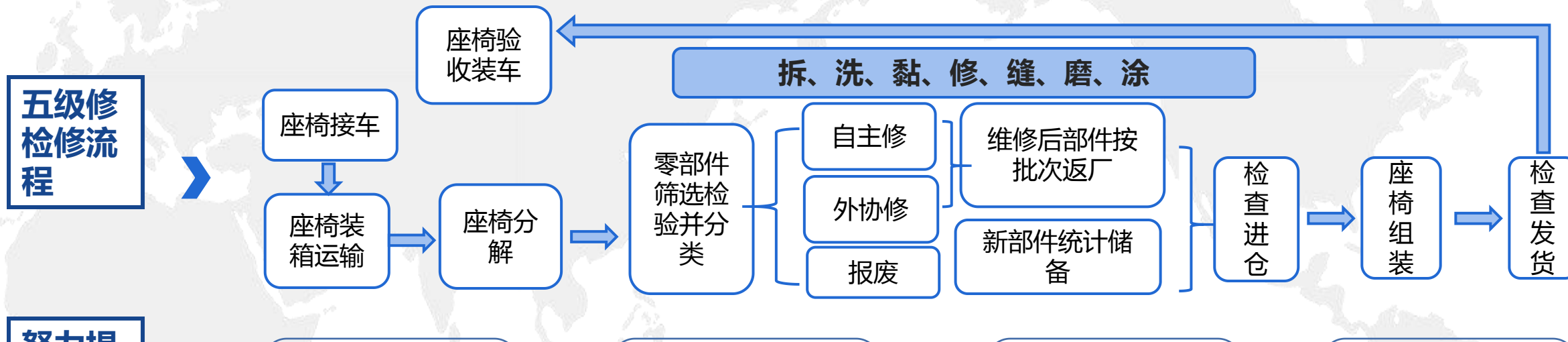
MAINTENANCE PERFORMANCE — EXAMPLES

CRRCChangchun Railway Vehicles Co., Ltd. · Level-3 overhaul · CRH400BF Business-Class seats · 2 standard trainsets
Qingdao Sifang Bombardier Transportation Equipment Co., Ltd. · Level-4 overhaul · 380D Business-Class seats · 42 standard trainsets
CRRCCqingdao Sifang Co., Ltd. · Level-5 overhaul · Shandong Jiatai Business-Class seats · 20 standard trainsets
Guangzhou Railway Bureau · Level-3 overhaul · High-speed EMU Business-Class seats · 33 standard trainsets
Shanghai Railway Bureau · Level-3 overhaul · High-speed EMU Business-Class seats · 46 standard trainsets
CRRCChangchun Railway Vehicles Co., Ltd. · Level-5 overhaul · Passenger cabin seat overhaul · 4 standard trainsets



五级修检修组织及竞争力体现

五级修座椅检修：流程繁，时间紧，状态杂



LEVEL-5 SEAT OVERHAUL — ORGANIZATION & COMPETITIVENESS

Seat receiving → Disassembly → Packing & transportation

Post-maintenance components: batch return to factory → screening, inspection & classification → in-house repair / outsourced repair / scrapping

Cleaning · washing · bonding · repair · stitching · grinding · coating

New component inventory preparation · Incoming inspection · Warehousing · Shipping · Seat assembly · Acceptance & installation

Level-5 overhaul: complex process, tight schedule and diverse conditions

Adaptive standards and process confirmation · In-house repair and secondary reuse of replaced components · Timely analysis of cost, cycle and efficiency · Preparation of suitable, adequate and timely turnover components

Short lead time · Low cost · Competitive · Quality compliance



五 市场情况

Heritage · Professionalism · Efficiency · Innovation



铁路规划

“八纵八横”高速铁路主通道



八纵（主要线路）				八横（主要线路）			
序	线路	总里程数	预测12列/百	序	线路	总里程数	预测12列/百
1	京港通道	2400	289	1	广昆通道	1010	121
2	京昆通道	2300	276	2	厦渝通道	2461	295
3	呼南通道	3100	373	3	沪昆通道	2653	318
4	包海通道	3011	361	4	沿江通道	1900	228
5	兰广通道	3261	391	5	绥满通道	1527	183
6	京哈通道	2344	281	6	青银通道	1610	193
7	沿海通道	4019	482	7	京兰通道	3943	473
8	京沪通道	1463	176	8	陆桥通道	11100	1332
			2630				3144

按2016年7月国家发改委公布的《中长期铁路网规划》，截止2015年底高铁开通里程数为1.9万公里，2020年为3万公里，2025年3.8万公里，2030年将达到4.5万公里。截止2015年12月底场外列车数为2143列，按目前规划到2020年最少还需要1500列动车组，按百公里配置12列车，需求数量如下：

表一

表二

MARKET CONDITIONS — RAILWAY DEVELOPMENT

National railway planning — Eight Vertical Corridors
Major corridors include Beijing-Hong Kong, Beijing-Kunming, Hohhot-Nanning, Baotou-Haikou, Lanzhou-Guangzhou, Beijing-Harbin, Coastal and Beijing-Shanghai.
Eight Horizontal Corridors
Major corridors include Guangzhou-Kunming, Xiamen-Chongqing, Shanghai-Kunming, Along-the-Yangtze, Suifenhe-Manzhouli, Qingdao-Yinchuan, Beijing-Lanzhou and Land Bridge.

舒适旅途 伴您出行



THANK YOU!

Comfortable Journeys, Better Travel