Material Lean Management Solutions

Spanish National Railway, Chengdu Railway Bureau,

Guangzhou Railway Group, Beijing Metro, Shanghai Shentong Metro and other cooperative

brands

CILICO Microelectronics Ltd. was established in 2006. Headquarter is located in Xi'an High-tech Zone, and the Supply Chain Management and Manufacturing Center is located in Shenzhen.

Company relying on xi'an universities and scientific research background, focus on industry digital upgrade, insight into industry application scenarios, IoT technology, continuous change, innovation, is an enterprise intelligent data acquisition terminal and cloud platform integrated solution provider, has more than hundred technology patents and independent intellectual property rights, is a national high-tech enterprise, double soft certification enterprise etc.

The company always adheres to the business philosophy of design-driven, research and development innovation, quality- oriented, customer-first. The products support 1D/2D barcode scanning, RFID reading and writing, NFC, printing, fingerprint recognition, temperature, cloud platform development and other different functions and provide system-level rail transit industry comprehensive solutions. Deep serving warehousing, retail, medical and health, smart city, smart manufacturing, rail transit and other vertical industries.

Intelligent hardware

PART 1

Intelligent general cabinet

Smart key cabinet

Smart toolbox

Intelligent charging cabinet

Intelligent PDA

CILICO Mobile Device Management system

CILICO IoT OS

Intelligent General Cabinet >>>

The size and quantity of the cabinet storage compartments are customized according to the size requirements of the storage tool kit. It mainly completes the management of tools and equipment in the workshop, realizes unattended and remote material delivery, and the operator completes the identity verification through configurable modules such as face recognition, RFID, code scanning, IC card, etc. The tool collection and return are completed on the touch screen, and the intelligent general cabinet will save the entire record of the whole collection and return process, which is convenient for data analysis, traceability and other work.

💬 Main Functions of Intelligent General Cabinet

Remote management: Device status information and location information can be synchronized with the management system PC and mobile APPs.

Free combination: Can be customized according to different scenarios, the specifications of the materials under management, and the cabinets can be combined at will.

Multidimensional data analysis: Can provide multi-dimensional data analysis.

Multiple login methods: Log in by scanning code, RFID, face recognition, fingerprint, password and other methods to complete the configuration.

1) High security, level-by-level authority management, multiple security protection

2) No consumables, no wearing parts

3) Access millions of records

4) Voice prompt function (can be turned on or off)

5) Support card and fingerprint as access credentials

6) Support barcode scanning and reading

7) Support touch screen operation and camera function

8) Fingerprint comparison speed 1:1 < 4ms 1:N < 1s

9) Response time: fingerprint preprocessing <0.5s

10) Service life: 1 million times

Specification	Overall size (W*D*H)	Big compartment size (W*D*H)	Middle compartment size (W*D*H)
16 Door	1450 * 450 * 1750 mm	430*450*340 mm	300*450*340 mm

1) High security, credentials cannot be easily copied

2) No consumables, no wearing parts

3) Access millions of records

4) Voice prompt function (can be turned on or off)

5) Support swiping ID card permission recognition

6) Support barcode scanning and reading

7) Support touch screen operation

8) Support real-time inventory

Specification	Overall size (W*D*H)	Big compartment size (W*D*H)	Middle compartment size (W*D*H)	Small compartment size (W*D*H)
15 Door	1450 * 450 * 1750 mm	430*450*340 mm	300*450*340 mm	250*450*300 mm

Smart Key Cabinet >>>

💬 Main Functions of Smart Key Cabinet

Key withdrawal and deposit management: After the on-site operator identifies his identity through various authentication methods such as user ID, password, face recognition, etc., he logs in and enters the smart cabinet. The user uses the key within his authority. The system automatically records the operator's information and corresponding usage information, the system records the key return operation at the same time.

On-site key storage management: Comes with a dedicated location for management.

Each key is bound to a tag: When the key is returned to the smart key cabinet, the key is effectively locked on the key smart cabinet hole through the lock structure, and the key can only be taken out when the system unlocks the lock structure.

Key return: Next to the return location, there is a returned/unreturned status indicator.

Intelligent cabinet body customized management

The function of the administrator to manually unlock the lock and take the key
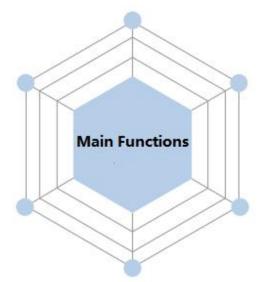
💬 Smart key cabinet features

1. A variety of login methods: log in by scanning code, RFID, face recognition, fingerprint, password and other methods to complete the configuration;

2. Remote control, which can remotely perform fault diagnosis, upgrade and other functions;

3. Collect and return records, conduct statistics and query on the operator's return and return records;

4. Centralized management, breaking the traditional management method, realizing centralized management, and

no one issuing;

5. RFID real-time in-situ detection, optimized structure inclination for easy use, independent binding of tags, to be unique.

Specification	Overall size (W*D*H)
16 Door	1450 * 450 * 1750 mm

Smart Toolbox >>>

The Smart toolbox is an intelligent terminal device developed by us based on our in-depth knowledge of railway tool management. With this smart toolbox, users will have the ability to quickly inventory core tools. The internal core components are all industrial-grade embedded products. The smart toolbox is highly integrated, large in size, excellent in performance, stable and reliable, and can fully meet the placement requirements of various products. The smart toolbox provides an API interface developed in JAVA language, which can be connected to the customer's background, and can also be compatible with the intelligent tool management software system.

💬 Smart toolbox features

① Using UHF RFID technology to realize quick inventory of tools and automatic identification of entry and exit;

② Equipped with the world's strongest RF chip, combined with the most classic Android operating system;

③ APP real-time display tool inventory, with RFID tool intelligent management system, realize lean management of tool application, procurement, and replenishment;

④ The data of workers' pick-up and return can be connected to the tool management system to truly realize electronic bookkeeping and reconciliation;

⑤ The APP software can quickly inventory, with all 25 tools, only two seconds;

⑥ Nylon cloth baffle and hanging plate, tools can be quickly pulled out when in use, which is convenient for taking tools;

⑦ The whole body is made of metal plate and aluminum profile oxidation, which replaces the traditional sheet metal cabinet. It is durable, beautiful in appearance and can prevent signal misreading caused by leakage;
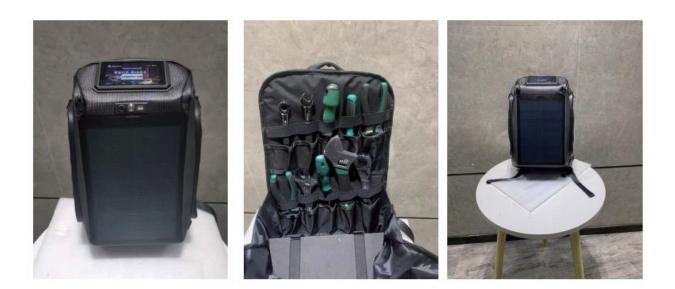
⑧ The device is equipped with a card swiping system, which is convenient for reading the identity information and verifying the door;

⑨ With online upgrade, online synchronization and other usage modes, the name of the smart toolbox is worthy of the name.

Intelligent Charging Cabinet >>>

The Intelligent charging Cabinet is a customized smart stationary charging compartment, and the size and quantity of the grids can be customized according to the size requirements of the device. The charging bin is mainly used to complete the centralized charging management, distribution and recycling management of charging equipment such as walkie-talkies, handhelds, power tools, and tablet computers. Its main features are:

- Intelligent charging, automatically enter the use sequence after charging;
- The charging information of each handheld device is displayed separately;
- High and low stored value warning function.

💬 Intelligent charging cabinet features

Centralized management: Decentralized charging ports, centralized management, and refined charging equipment management;

Return records: Automatically record statistics on charging equipment and personnel;

Warranty reminder: The background can remind the administrator to carry out maintenance;

Multiple login methods: Account IC card, password, face recognition, fingerprint or RFID to log in;

Remote transfer: When the received equipment is insufficient, the spare parts can be adjusted remotely;

Data Sharing: Related departments can share and view the entire distribution;

Multiple network support: wired and wireless data transmission;

Automatic power failure compensation and error prevention: Automatic power-off and compensation for charging equipment, the cabinet door cannot be closed due to poor port contact;

💬 Intelligent charging cabinet functions

① Charging management of charging equipment

② Monitor the equipment battery and charging device

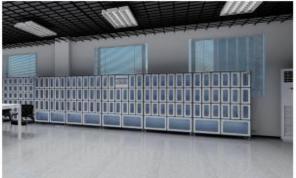③ Identity authentication and access information management of field operators

④ Manage the received and returned charging equipment

⑤ Statistical management of the application of charging equipment and batteries

⑥ Technical means to ensure that the borrowed equipment is not replaced

⑦ Realize monitoring the whole charging process

⑧ Surveillance camera, you can view the surveillance screen remotely through the network

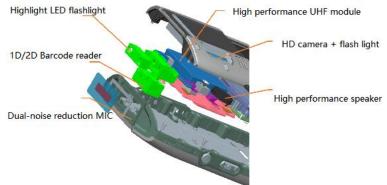⑨ The face recognition system meets the 24-hour work requirements

Intelligent PDA >>>

Integrate RFID reader, 1D or 2D barcode reader, temperature reader, infrared thermal imaging, vibration sensor, face recognition, positioning module, walkie talkie, wireless communication and other modules to realize data collection, processing and storage , real-time upload.

It can meet the spot inspection operations of RFID tags, 1D or 2D barcodes, temperature, vibration, sound, location and other characteristics, and can also use Bluetooth, WiFi and other wireless short-distance communication modules to quickly collect the content recorded in the smart sensor, powerful wireless communication function can realize real-time upload and download of data.

CILICO Rugged Handheld Terminal F880
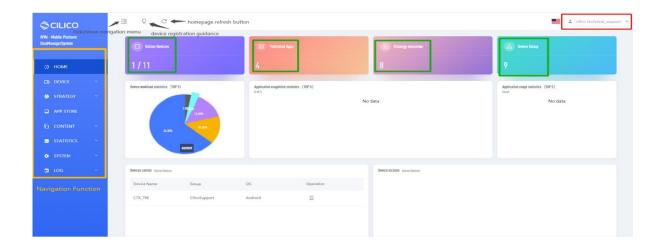

CILICO Hardware Products Family

CILICO Mobile Device Management System >>>

💬 Mobile Device Management System (MDM)

Based on its own advantages, Fourier has developed a unique mobile device application system and management platform in the industry to solve the problems of security management, application management and asset management encountered by enterprises in the implementation of mobile terminal application systems. Users can manage devices across the country or even around the world without leaving their homes.

MDM (mobile device management)

Provide enterprises with a simple and effective unified terminal centralized management solution

MAM (mobile application management)

Provide enterprise application stores, application updates, help enterprises to achieve rapid distribution of business software, silent upgrades in the background, etc.

MCM (mobile content management)

Help enterprise managers realize file push, consulting management, notification delivery, etc. according to business needs.

CILICO IoT OS >>>

IoT OS is a customized IoT operating system that CILICO deeply understands the application requirements of user business scenarios. The built-in WiFi whitelist and program networking control can prevent data leakage; the application blacklist and application freezer can create a secure application desktop to ensure that the device is dedicated to the specific usage; the device remote locking, data erasure and other functions ensure that it can still be realized effective management of equipment in unexpected situations, safeguarding user data security, and standardizing user operation behavior.

IoT OS functions

IoT Applications	**System Application**	**System Security**	**System Service**
Wireless Connection	**System Interface**	**Artificial Intelligence**	**Software Customization**

Intelligent Operation System

PART 2

Material lean management platform

Full life cycle management of tools and materials

Unattended warehouse

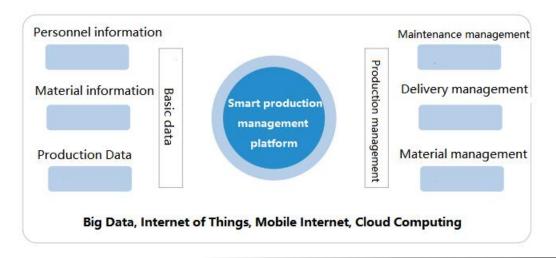## Material Lean Management Platform >>>

💬 Construction ideas

The material management system applies the IoT technology, combined with the idea of material lean management, and integrates the data resources originally distributed in each application system with the material unique identification code, so as to realize the full life cycle management and full trajectory management of materials. It has functions such as automatic generation of purchase lists, automatic calculation of existing values, inventory early warning, and online management of scrapping processes. It uses mobile terminals and computers to maximize the processing of real-time information of materials, give full play to the interaction of human-computer cooperation, and improve material management performance. Improve the lean management level of enterprise materials.

System advantages and features:

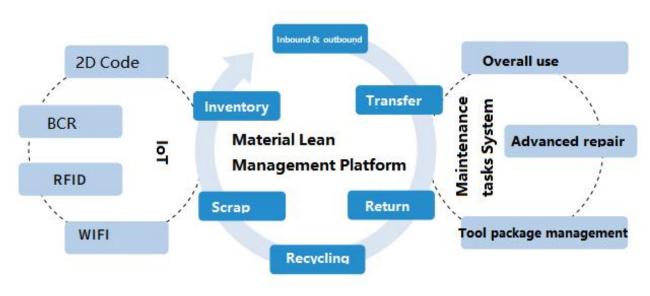1. Realize the full life cycle and full trajectory management of materials;

2. Realize the specialization, standardization, processization, digitization and refinement of enterprise material management;

3. Realize intelligent early warning of material information, track material history information, and automatically generate purchase list;

4. Improve inventory management accuracy and reduce inventory management costs;

5. Reduce the proportion of errors in human material management;

6. Reduce capital occupation and inventory management investment.
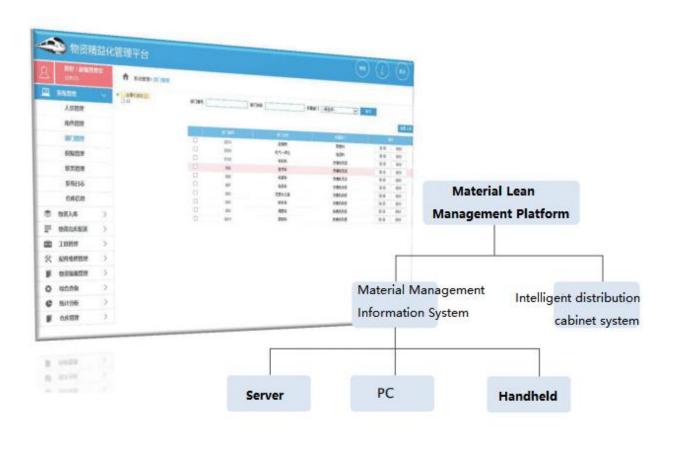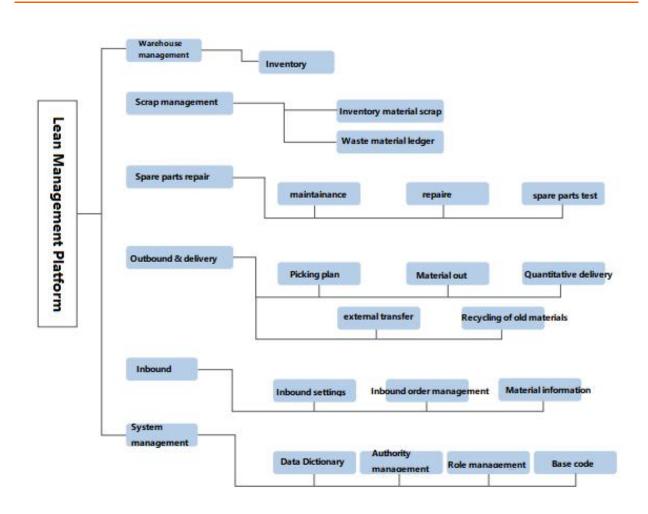
💬 System flow

💬 Platform framework

💬 Feature technology

Using "face recognition technology and 2D code + RFID identification", the data resources originally distributed in various application systems are integrated with the unique code of materials, so as to realize the full life cycle and full trajectory tracking management of materials. Realize the collection, association and tracking of personnel, tools, materials (assets, high-priced interchangeable parts, low-value consumables) and other information.

Face Recognition

RFID

QR Code

Full life cycle management of tools and materials >>>

The tool management system can realize the functions of tool basic information management, inbound, outbound, verification, configuration and so on. The entire tool management system is not only practical for operation alone, but also combined with the intelligent tool cabinet, guided by the idea of unattended management, and uses various means to identify people and individual tools. Combined with the existing management system of the enterprise, the management of tools is improved. The system can meet the long-term use in harsh industrial environments, and complete the intelligent management of tools and materials distribution, recycling and maintenance.

- Unique code
- Track tracking management
- Full life cycle management
- Based on big data – financial comprehensive budget
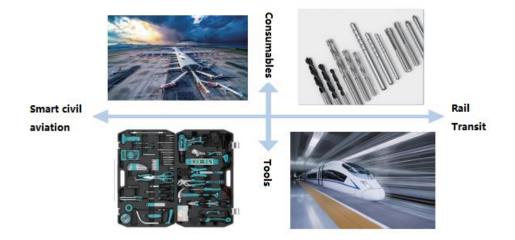- Intelligent material management
- Intelligent production process

💬 Quantitative

Provide consumables and tools packages qualitatively, quantitatively and regularly according to maintenance tasks to reduce waste;

Refined maintenance and improvement of the repair system;

Damaged replacement parts must be returned to force the improvement of maintenance quality;

💬 Quantitative delivery

- Extend the traditional material management field to the production guarantee link;

- Distribute consumables and tools qualitatively, quantitatively and regularly according to maintenance tasks;

- Object-oriented borrowing and repayment, and ins and outs, simplifying the approval process;

- There are specializations in the real technical industry - maintenance workers, distribution workers, with a clear division of labor;

- Maintenance workers concentrate on maintenance work and formulate the best maintenance plan;

- Distributors focus on providing the most sophisticated maintenance equipment, maintenance tools in the best condition and consumables distributed on demand;

- The maintenance worker can give a star rating to the service of the delivery worker;
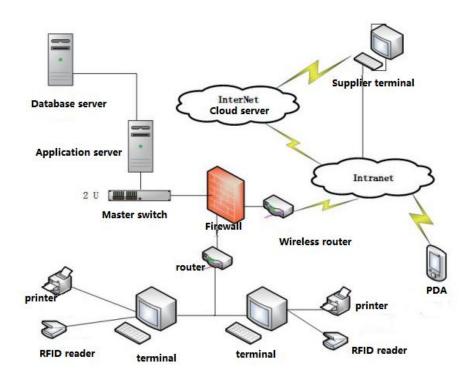
💬 Smart distribution warehouse

1) The intelligent distribution warehouse is combined with the material system to realize the functions of unattended general tools and remote material delivery;

2) Realize the whole-process control of materials and equipment, and the material distribution process is efficient and accurate;

3) The general smart warehouse solves the problem of frequent use and return of general tools and uncertain return time;

4) Prevent replacements and ensure effective working hours of operators;

💬 Handheld terminal and APP

💬 Tool maintenance

Automatic prompts for tools and appliances that need repair, maintenance, and testing through system messages, text messages, and emails.

Give full play to the best working condition of tools and appliances, and avoid negligence, omission or lack of regular maintenance of materials, which will affect the service life of materials and affect safe production.

💬 Locomotive maintenance cost accounting and individualized repairs

Using the unique code of materials and statistical analysis, the problem of maintenance cost accounting is efficiently solved; through the analysis of locomotive big data, planned maintenance is transformed into condition maintenance;

Locomotive maintenance cost accounting

Cycle Overhaul Cost Control - Budget
Replacement Parts and Hours - Accounting

Locomotive individualized repairs

Avoid "over-repair" and "under-repair"
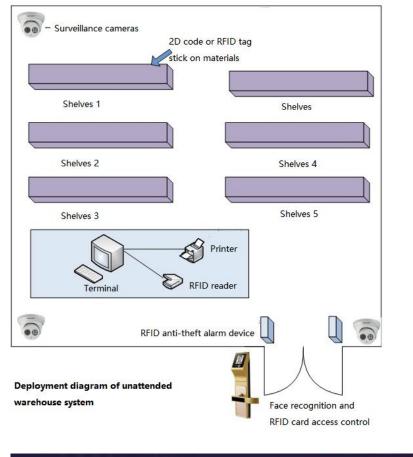Planned overhaul transitions to condition-based maintenance

Unattended warehouse >>>

💬 Unattended warehouse solution

The unattended warehouse management system can complete the information management of physical spare parts information search, statistics, application, warehousing, inventory, and delivery, and realize paperless warehousing, consistent information flow and logistics, and warehouse management information throughout the process. It is intelligent and intelligent, and the warehouse is unattended.

Use RFID, QR code and other technologies to establish an unattended warehouse management system platform to realize electronic inbound of spare parts, mobile/PC application and approval, face recognition and other identity authentication, visual spare parts receipt, and self-service terminal delivery. Smart inventory, problem tracing and other functions.

Deployment diagram of unattended warehouse system

Customer Service

PART 3

Advantages of using the platform

Customer service

Material Lean Management Platform >>>

💬 **Advantages of using the platform**

	Before use	After use
Idle refactoring	There are many departments, many types, large quantities, time-consuming manual inventory, data is inaccurate.	Mobile terminal batch inventory operations, real-time upload of inventory data, fast, efficient, and accurate data.
Asset inventory	Accounts do not match, assets do not exist 100%; personnel lead to the loss of offline assets and data; managers manually modify accounts, and there is no way to trace the loss of assets.	Use barcode or RFID technology to give each asset an "asset ID"; RFID traceability management throughout the entire life cycle of assets from purchase to disposal, ensures the consistency and prevents asset loss.
Asset silent loss	Asset maintenance is not timely, asset depreciation is fast, and equipment maintenance lags also affects production efficiency.	Establish a maintenance plan for each equipment that needs maintenance, push messages to mobile terminal operators, maintain timely, reduce equipment depreciation, and increase service life.
Maintenance delay	Idle and waste of assets cannot be traced, and assets are repeatedly purchased, which invisibly increases operating costs.	Report statistics on idle assets, and the status of each asset is clear at a glance, eliminating repeated purchases and limiting waste.
Decision data	There is no statistical data on the distribution of assets, the proportion of departments, and the increase or decrease in quantity.	Asset distribution, quantity increase and decrease, department proportion, etc. provide rich statistical analysis data to provide a basis for decision-making.

💬 Customer-centric whole life cycle, Expert advisory service

A working group composed of account managers, solution experts, and delivery experts provides comprehensive services to customers from the three dimensions of business negotiation, technical support, and delivery guarantee, forming a customer-centric "iron triangle" service model.

Online support:

Instant online technical support, zero delay for problem solving.

Fast delivery:

Stable and reliable supply chain resources, fastest sample delivery within 24hours.

Operation training:

Provide equipment use training for users, to ensure that every on-site operator can quickly and efficiently master equipment operation skills.