粒料全自动
配混输送系统

集中供料系统定义和原理

■ 采用全智能化设备,集中动力源将物料输送到指定位置,其中包括一系列处理工作（如粉碎、投料、称重配比、混料、除湿、干燥、输送、真空分离、除尘过滤等）

■ 原料集中输送：采用真空吸送式气力输送，它是用低于大气压力的空气作为输送介质，靠高压真空风机的吸气作用，在管系统中形成一定的真空度，利用具有必要流速的空气运动，将原料从某地通过管道输送到一定距离的目的地的一种悬浮式气力输送装置，负压真空一般在负10-50kPa。

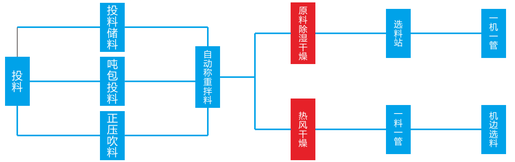
■ 当某个点需要加原料的时，真空料斗料位开关侦测到缺料,输入信号给PLC控制站， PLC输出信号启动风泵开始吸风，真空料斗产生负压, 原料通过管道输送到真空料斗中，料斗盖上的过滤网挡住原料，使气料分离，原料落入下方桶内。

联塑集中供料系统的优点

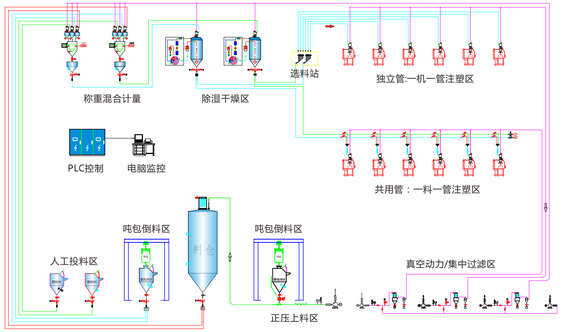
- 安全生产，自动化程度高：采用PLC控制，扩充性好，人性化操作介面简单易懂，实现连续无人化作业,具有多重保护功能，安全性高。
- 直观精确管理：采用工业以太网远程监控，能够不断的监测原料的余量和消耗情况。
- 功能强大灵活性强，根据不同原料配方，自动实现称重配比混色干燥输送等工艺；
- 控制质量提高效率：自动无人化连续的物料密闭式输送，确保原料无二次污染和浪费，提高生产效率，稳定产品质量；
- 集中动力系统，优化能源的消耗，有效节能，占地面积小，维护频率低；

专业的方案设计，通过结合物料特性，风速风压，工程结构等设计方案，有效解决原料在输送过程中产生粉尘，降解，静电问题。

集中供料系统的主要类型



集中供料系统流程图



集中供料的主要设备介绍

储料仓：不锈钢储料桶/正压料仓上料　　混料：自动称重式拌料机（选配）　　干燥：热风/除湿干燥机（选配）

选料：原料分配站（选配）　　动力：中央罗茨风泵　　一级除尘：旋风集尘过滤器

二级除尘：中央精密过滤器　　气料分离：中央式真空吸料斗　　控制：PLC中央控制站（计算机监控系统 选配）

其它部件的介绍及应用

储料仓

- 不锈钢料仓用于存放大批量单一的物料包括颗粒料，粉体料，配件储存；
- 联塑可提供：室外露天式料仓、室内料仓、人工加料桶，吨袋加料桶。
- 料仓配备料位计，可定点监控模料量。或安装计重传感器，时时精确监测料量。
- 联塑可为客户提供正压输送和负压吸料两种供选择；
- 颗粒料正压输送料仓配备标准空气过滤器（粉体料仓配备高精密脉冲过滤器），确保环境不被污染。



配色混料系统

联塑称重式拌料机集称重、配比、拌料于一体的全自动拌料机，可以节省人力，提高效率，持续精准配料，是自动化生产不可缺少的设备；

可为用户提供称重式和失重式两种混色机供选择:

1.主要用于多种原料按比例精确混合，我司称重机可以满足2~20种原料一起称重配比混料，配比精度最高可达±0.1~0.3%，

2.PLC控制功能更强大、运算速度更快、抗干扰能力强，具有自动补偿功能，可存储配方500组以上。

3.可实现以太网远程监控，运行状态，用料用量配方统计。



真空动力系统

真空泵用于正压或负压稀相送输送物料提供动力源的主机。

联塑可为用户提供：罗茨真空泵，侧流高压风泵，工作压力10-80Kpa。

我司为罗茨泵标配备双重消音器，噪音控制在80分贝以下，有集中排风收集降噪和制做消音隔音房可选择，噪音控制在72分贝以下；

为了系统能长期稳定运行，联塑风泵采用多用一备模式，当其中一台风泵出现异常，可通过自动阀门或手动阀门来控制切换备用风泵。


除尘器系统

中央除尘器起保护风机和净化空气的作用，用于负压真空吸料时，气料分离产生的粉尘在经过除尘器后清除。

我司配置双重过滤分别为旋风式除尘和脉动过滤除尘：

旋风式除尘器，利用独特的旋风结构，能有效除去80%以上的粗尘，更好保护脉动除尘过滤寿命和透风量；

脉动除尘器 采用高精密覆膜聚酯无纺布滤芯，过滤精度7微米，定时自动除尘，具有良好耐酸碱性能，使用寿命1-2年。



真空吸料料斗

真空吸料料斗：用于料桶和成型机台入口，吸料过程中起气料分离的作用；

联塑吸料斗规格齐全，每个料斗配置光感式低料位平衡感应装置，反应灵敏，抗干扰能力强，不惧高度环境。

结实的空气过滤网，实用于颗粒料，片材料，粉碎回收料；

联塑可供全粉体吸料斗供选择，吸粉料斗过滤器采用高精密过滤芯；

采用全304不锈钢材质料制做，坚实耐用。



集中控制系统

联塑的集成控制系统对整个供料系统各站点的工作状况进行监控，直观了解系统工作工作情况；

显示料仓物料存储和余量，机台物料来源，混料配方的应用，及用料总量的累计；

可设定每台风机，称重混色机，吸料斗，料仓料位等参数；

具有显示缺料及声音报警等功能，且显示报警内容，更好的帮助诊断故障的原因。

控制系统连接PC主机，实现以太网远程监控，数据集成管理。



Plastic Granular-full-automatic Dosing And Conveying System

General Features

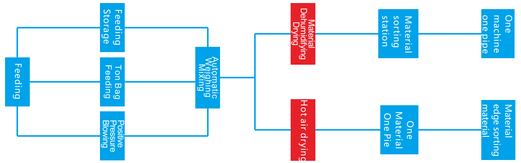
■ The Central Feeding Conveying System Adopts A Fully Intelligent Equipment To Centralize Power Source To Convey Material To A Specified Position. Meantime A Series Of Material Treatments Are Applied Including Crushing,feeding,dosing,mixing,dehumidifying,conveying,vacuum Separating And Filtering. Overall, It Is A Process By Information Collecting And Intelligent Monitoring Management.

■ Material central conveying: By adoption of high pressure vacuum air suction device, with air as the conveying medium whose pressure is lower than atmospheric pressure, to form a certain degree of vacuum in the pipe system. Simply, by air movement with a certain flow rate, the system is able to transport the material to destination from somewhere by pipeline. The vacuum pressure is usually between -10kPa to 50kPa.

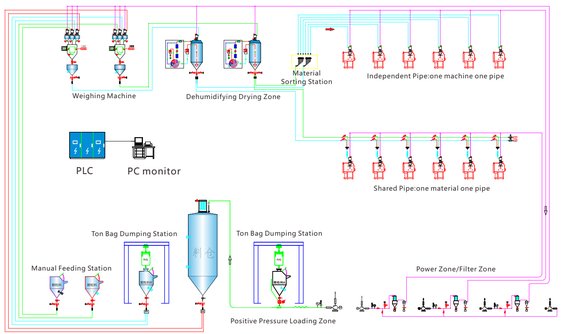
Advantage Of Liansu Central Feeding System

- Safe Production,high Automation adopt Plc Control, High Expandability, Simple Humanized Operation Interface,continuous Unmanned Operation,high Reliability.
- Visualized And Precise Management adopt Industry Ethernet Remote Monitoring System,can Constantly Monitor The Material Allowance And Consumption.
- High Flexibility And Powerful Funtion: According To Different Material Formula,automatically Finish Dosing, Mixing, Drying Conveying And Etc.
- Quality Control & Efficiency Improvement automatic Unmanned Continous Material Conveying In A Closed-loop, To Ensure No Secondary Pollution And Waste Of Material,to Improve The Production Efficiency And Stablize The Product Quality;
- Power Centralized System: Optimize The Power Consumption, Increase The Energy Efficiency, Small Floor Space ,low Frequency Of Maintenance;
- Professional Solutions by Combining The Designed Program Of Material Specialty,air Speed, Air Pressure,engineering Structure, And Etc, We Can Effectively Solve The Problem Of Dust Production,degration,static Electricity During The Material Conveying Process.

Main Type Of Central Feeding System



Flow Chart Of Central Feeding System



Instruction Of Major Equipment For Centralized Feeding

Storage Silo : stainless Steel Storage Tank	Mixing material : Automatic weighing blender	Drying : Hot Wind/Dehumidifying Dryer
Material Sorting : material Distributing Station	Power : Cantral Roots Air Pump	Primary Dust Catching : Cyclone Dust Collecting Filter
Secondary Dust Catching : Central Precise Filter	Air-material Separation : Central Vacuum Suction Hopper	Control : PLC Central Control Station

Storage Silo

- Stainless steel silo is used for large amount of single material including particle,powder and fittings storage;
- Liansu can offer:outdoor open material silo,indoor material silo,manual feeding bucket and ton bag feeding bucket.material silo equip with level indicator,can fixed-point monitor the material capacity,or mount the weiging sensor,frequently and precisely monitor the material capacity.
- Liansu can offer the positive pressure conveying or negative pressure material sucking for customer to choose; Positive pressure conveying material silo of particle equip with standard air filter(powder material silo equips with

Matching Color Mixing System

liansu weiging mixer is a fully automatic mixer integrated with weighing,dosing and mixing,can save the manpower,improve the efficiency,continuously and precisely distribute material according to the proportion,it is the necessary device of automatic production;
can offer the weighing type or weight-loss type color mixer for the user's option:
1.mainly used for multiple material mixing precisely according to proportion,the weighing machine of our company can realize 2~20 kinds of material weiging,matching and mixing,matching precision up to ±0.1~0.3%.
2.stronger plc control function,faster operating rate,strong anti-interference,has automatic compensating function,can store over 500 groups of formula.

Vacuum Power Sytem

- Vacuum pump is used for positive pressure or negative pressure dilute-phase conveying material to provide power source.
- Liansu can offer:roots vacuum pump,sidestream high-pressure air pump,working pressure 10-80kpa.
- Roots pump equips with double silencers,noise controlled under 80dbs,optional central air exhausting noise reduction and soundproof room,noise controlled under 72dbs;
- For long-term and stable running of the system,liansu air pump adopts the mode of 'multiple uses and one spare',when there is exception to one of the air pumps,it is able to switch to spare air pump via automatic valve or

Filter system

- Central filter can protect fan and clean the air,it is used to clean dust produced during air-material separation while in negative pressure vacuum suction.
- Equip with double filters for cyclone filter and pulse filter respectively : Cyclone filter uses independent cyclone structure,can effectively remove above 80% of dust,better prolong the pulse filter life and protect the ventilation capacity;
- Pulse dust collector adopts high-precision coated polyester non-woven fabrics filter core,7μm precision,regular

Vacuum Suction Hopper

- Vacuum suction hopper : it is used at the entrance of material bucket and forming machine table,has air-material sepration function during suction process;
- Complete specification of liansu suction hopper,and each hopper equips with light sensing low material level balanced sensor,sensitive,strong anti-jamming ability,it has no fear of high temperature.
- Firm air filter sieve,suitable for particle,sheet,powder recycled material;
- Liansu can offer full-powder suction hopper to choose,filter of powder sucking hopper adopts high-precision filter core; Adopt full stainless steel 304,firm and durable.

Central control system

- Liansu integrated control system monitors the working condition of entire feeding system,can intuitively know the working situation of system;
- Display material storage and allowance in silo,material source of machine table,application of mixing formula,and accumulated total amount of material consumption;
- Can set parameter of each fan,weiging color mixer,suction hopper,material level of silo,etc;
- Has the function of displaying lacking material and audible alarm,and it displays the alarm content to better
- diagnose the reason of the problem.
- Control system connects with pc host,to realize ethernet remote monitor and data integrated management.

粉体全自动配混输送系统

PVC粉体全自动配送系统
针对各种PVC的配料、混合、输送，我们为您量身定制整套的解决方案

特点介绍

- 采用中央控制系统，实现从储料、送料、配混，到各机台全程的全自动可视化操作及监控；
- 定制化方案为用户提供整套最有效益的解决方案；
- 提高产品质量、提高生产效率、减少劳动成本、提供更好的工作环境

解决方案

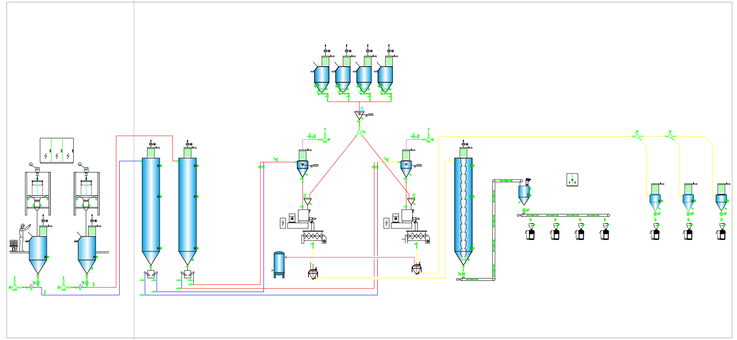
仓储系统
我们根据客户材料的包装提供
- 吨袋拆包系统
- 标袋拆包投料系统
- 槽车加料系统
- 配方小料定时投放系统

输送系统
无论是稀相输送或是浓相输送，还是机械方式的螺杆输送、管链输送等，我们会根据客户实际的工艺要求及厂房布局，为客户提供最佳的输送解决方案。
管链输送的投入使用，可以大幅度降低用工成本，繁忙的人工拉料加料工作可以省去。同时车间的生产环境大幅改良。

计量与称重系统
采用进口知名品牌弯曲梁式压力传感器，合理的设计，使物料称量精确
对于精度要求高的物料，可以采用二次秤量配置，即第二次秤量值可利用第一次的秤量结果进行微调补偿，确保秤量的准确精度；

混配系统
热混采用四桨叶结构，物料混合快速均匀；冷混采用螺旋搅拌结构，整缸壁通水冷却，物料降温快，排料干净。

除尘系统
我们根据设备使用工况，合理设计除尘系统，采用唐纳森优质滤芯，配以脉冲反吹，确保从除尘器排出的气体符合环保要求。



投料站

投料站，用于对袋装物料，如PVC，CaCO3粉料，各种助剂进行拆袋卸料作业，配有除尘风机及过滤器，消除投料过程中产生的粉尘，有效改良工作环境。我们提供25KG标袋投料站，吨袋投料站，自动拆包站，可根据客户要求订作。


标袋投料站


吨袋投料站


自动拆包站

仓储系统

储料仓，用于储存PVC，CaCO3粉料及各种助剂。仓体装料料位开关，可显示仓内物料的位置与多少，对于流动性差的物料，仓底安装破拱装置，解除物料沉积面造成的结块及架桥现象。料仓尺寸，形式，均根据客户实标要求订作。



除尘系统

除尘系统由过滤滤芯、风机、脉冲反吹自清洁系统组成，安装于料仓，投料站，秤仓等上部，有效地分离物料，气体通过滤芯排至大气，改良工作环境。除尘系统通过严密的设计，具有高效的过滤及清洗效率，出厂前都经过各种测试。




精密秤重系统

精密电子秤，用于主料或助剂的计量，严格控制生产所需的物料各成份含量的准确性，保证生产的质量。电子秤采用高精度弯曲梁式压力传感器，确保了秤量的精确。



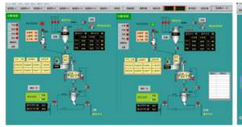
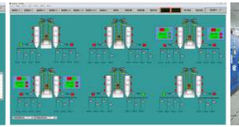

管链输送系统

管链输送机，用于系统下游混合物料分配于各挤出机组。工作时，物料在密闭的管道中运动，防止了外界对物料的二次污染，也防止了物料产生的粉尘对环境的影响。输送机具有结构紧凑，占地空间小的特点，输送能力大，能耗低，进出料口随意布置，满足工艺要求，易于集中控制，提高了自动化程度。



中央集成控制系统

采用工控PC机与PLC结合的全电脑控制系统，实现了全程的自动控制与监控，储存生产所需配方，生产数据统计，实时动态监控，故障报警，多级密码保护，实现与ERP系统无缝连接。


PVC Full-automatic Compound And Conveying System

Aim at all kinds of PVC compounding ,mixing,conveying color blennding,conveying and PVC granules distribution,we offer a customized turn-key proposal

Features

- Adopt centralized control system, realized automatic visual operation and monitoring from material storage, material conveying, compounding and conveying to every machine
- The customized scheme provides user with a turn-key of effective solution .
- Improve product quality、production efficiency, reduce labor cost and provide a better working environment.

Solution

Storage System

According to customers' material packing ,we provide

- Ton-bag unpacking system
- Unpacking feeding system
- Wagon /trolley feeding system
- Small proportion formula material timing feeding system

Conveying System

No matter dilute phase conveying or dense phase conveying, or mechanical screw conveying, tubular chain conveying, etc, we will provide the customers with the best conveying solution according to the actual technological requirements and plant layout.the benifits of the tubular chain conveying can greatly reduce the labor cost. meanwhile, it improve the working environment of the workshop.

Dosing And Weighing System

Adopt reliable bending beam pressure sensor, reasonable design, guarantee the accuracy of material weighing .for high accuracy weighing requirement , can adopt secondary weighing configuration, that is to say the second weighing value can be micro-adjusted with the first weighing, ensuring the accuracy of the material weighing.

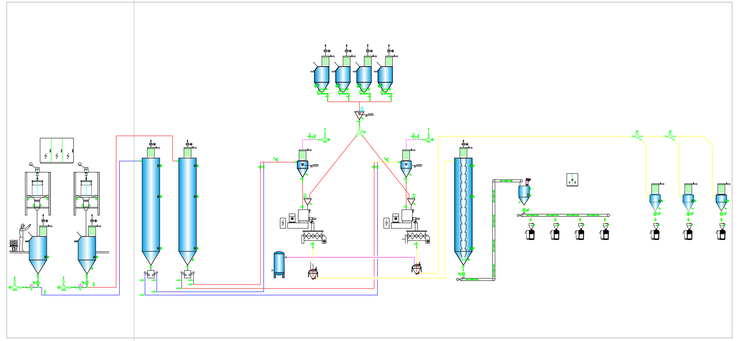
Mixing System

High speed compound unit adopts four blades structure, fast and even mixing; cold compound unit adopts spiral mixing structure, tank cooling by water, efficiency and clean discharge.

Dust Removing System

According to equipment using status, we design the dust removing system reasonably, adopt donaldson high-quality filter core, with impulse counter blowing system, ensuring the gas outlet from the dust remover complies with the environmental requirement.



Feeding station

Feeding Station Is Used For Unloading Bag And Discharging Bagged Material Such As Pvc,caco3 Powder And Various Kinds Of Additives.it Equips With Dust Collecting Fan And Filter,to Eliminate Dust Produced During Feeding Process,can Improve The Working Condition.we Offer Standard Bag Feeding Station,ton Bag Feeding Station And Automatic Unpacking Station,or It Can Be Manufactured According To Customers Requirement.


Standard Bag Feeding Station


Ton Bag Feeding Station


Automatic Unpacking Station

Storage system

Material Storage Silo Is Used For Storing Pvc,caco3 Powder And Various Kinds Of Additives.material Loading Level Indicator Of Silo Body Can Display The Position And Quantity Of Material Inside The Silo.for Those Material With Bad Fluidity,arch-breaking Device Is Mounted At The Bottom Of Silo,to The Caking And Bridging Created On Material Deposit



Dust catching system

Dust Catching System Consists Of Filter Core,fan,pulse Back Flushing Self-clean System,is Mounted Above The Material Silo,feeding Station And Scale Silo,etc.it Can Effectively Separate Material,and The Gas Is Exhausted To Air Via Filter Core To Improve The Working Environment.dust Catching System Has High Efficiency Of Filtering And Cleaning Because Of Its Strict Design,it Has Been Passed Various Of Testing Before Delivery.




Precise Electronic Scale

The Electronic Scale Is Used For Calculation Of Major Material And Additive,it Strictly Control The Precision Of Each Component Content To Ensure The Production Quality. The Electronic Scale Adopts High-precision Bent Beam Type Pressure Sensor To Ensure The Precision Of Weighing;



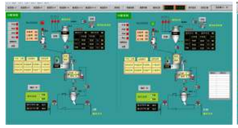

Pipe Chain Conveyor

Pipe Chain Conveyor Is Used For Mixed Material Of System Downstream Distributing To Every Extruder Unit.during Operation,material Moves In The Sealed Pipeline,to Prevent The Second Pollution To Material And Also Prevent Dust Produced By Material From Affecting Environment.conveyor Has The Feature Of Impact Structure,less Occupied Space,strong Conveying Capacity,low Energy Consumption,optional Layout Of Material Inlet And Outlet To Meet The Technical Requirement.easy For Centralized Control And Improving The Automation.



Central Integration Controlling System

Adopt Full Computer Control Of Industry Control Pc Combining With Plc,it Realizes Full Automatic Control And Monitoring,storing Formulas That Production Need,statistics Of Production Data, Real-time Dynamic Control,fault Alarm,multilevel Password Protection,and The Seamless Connection With Erp System.



LIANSU

数字化车间管理系统

一站式的智能管理系统，全方位体现

智能化的数据采集更实时更准确、避免人工数据统计出错

实时监控机器状态提高计划的灵活性

生产过程透明化，实时的生产进度，提高工作效率

广东联塑机器制造有限公司

GUANGDONG LIANSU MACHINERY MANUFACTURING CO.,LTD

系统简介

数字化车间管理系统是以设备联网通讯和数据采集为基础、面向制造企业生产现场、针对企业生产制造过程执行管理的信息化软件平台，可实现上层信息化系统与底层生产现场设备的无缝对接,帮助企业推动信息化与工业化深度融合。

系统能帮助您实现制造生产现场实时监控，直接从设备和现场操作员处采集实时数据，尽可能减少不准确的人工采集和人工录入，实时、自动化的生产数据采集和设备监控将能确保您的业务正常运营，帮助您更加主动地预测问题并有助于在问题出现之前解决它们，协助您做出正确的决策。

企业希望能在最短的时间，以合适的成本交付客户需要的产品，我们的系统能帮助您改进质量、减少成本、按时交付，利用有限的资源创造更多的收益，及时发现并消除停机时间，制造更多的产品，帮助您提高产能、提升盈利和柔性制造能力，为您打造数字化的生产车间，提升企业核心竞争力。

系统特点

智能化的数据采集更实时更准确、避免人工数据统计出错

实时监控机器状态提高计划的灵活性

准确生产、高效工作、降低成本

改善全局设备效率（OEE），工厂生产力，机器停机时间

机器负载最大化，停工时间最小化

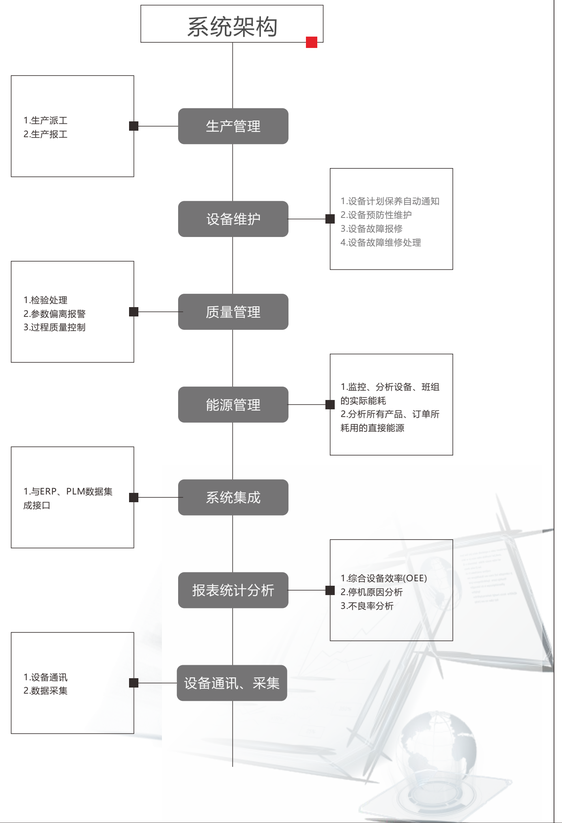
发现并确定节能环节，降低能耗和整体电力需求

生产过程透明化，实时的生产进度，提高工作效率

短信自动通知，提高工作效率

功能模块

系统架构



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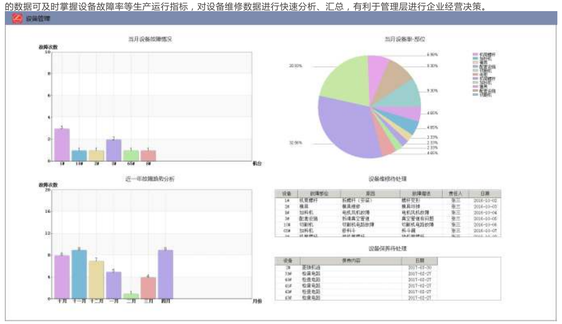
生产管理

生产管理包含生产派工、派工单激活、生产报工等，派工管理用于接收生产计划下达的排产任务，直接将生产指令下发到生产车间现场的触摸屏终端上，系统根据设备加工情况自动采集加工数量、检验结果等实时数据，使繁杂的报工工作由现场操作员工在设备终端的操作屏快速、准确、及时地完成，系统可以反馈实时生产进度、产能统计分析、设备效率等。

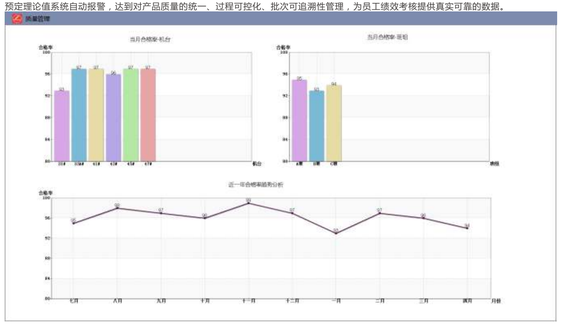
设备维护

设备维护包含设备计划性保养自动通知、设备故障维修派工单方便快捷制定、维修保养及时的执行等功能，各环节执行与处理有短消息在线实时发送，确保设备维修保养工作高效执行，减少停机时间，提高生产效益，保障设备的利用率。支持数据分析及决策功能，系统提供的数据可及时掌握设备故障率等生产运行指标，对设备维修数据进行快速分析、汇总，有利于管理层进行企业经营决策。



质量管理

质量管理不只是员工自检、首检、巡检等检验相关的流程管理，并且对于影响产品质量的因素，如温度、压力、生产环境等各个环节的管理，系统支持对产品生产全过程质量相关数据自动化采集、统计、分析，实现生产过程自动化的质量监控，如“米重”、“不圆度”超出预定理论值系统自动报警，达到对产品质量的统一、过程可控化、批次可追溯性管理，为员工绩效考核提供真实可靠的数据。



能源管理

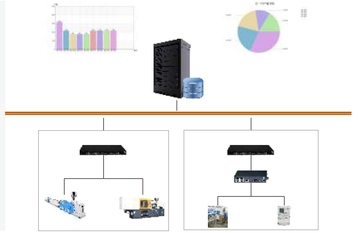
智能化的能源数据采集、处理分析、实时监控设备能源耗用情况，清楚地了解生产订单、设备、产品、班组所耗用的能源和产品产出情况，进一步挖掘能源数据，通过设备能耗数据、产出数据以及运行数据等进行关键用能设备的在线能效分析，对生产工艺和设备进行改造，降低单位产品能源消耗，提高经济效益实现节能。

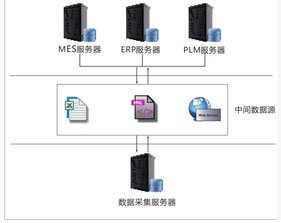
设备通讯

设备通讯模块管理的主要对象是制造企业的各类自动化设备，如自动化产线、注塑设备、中央供料系统、自动包装设备、数控设备等，系统能够对这类设备进行联网、通讯、数据采集以及控制。系统主要承担与底层设备之间的网络通讯与数据自动采集的功能。通讯模块一方面接收来自上层信息化系统的计划指令，并将生产指令、数控程序等信息传递给设备，另一方面将实时采集到的设备状态、生产进度等相关信息经过分析、计算反馈给信息化系统。

数据采集

企业从传统制造向智能制造转型过程中，非常重要的是如何实现企业资源的数字化，而数字化最核心的问题是数据来源，设备数据采集模块主要是将企业的自动化产线或数控设备运行的工艺参数、能耗、温度、设备状态、生产进度、检验结果等数据通过软硬件结合的方式自动采集保存到数据库，通过分析后传到企业信息化系统，保证数据真实性、完整性、及时性。



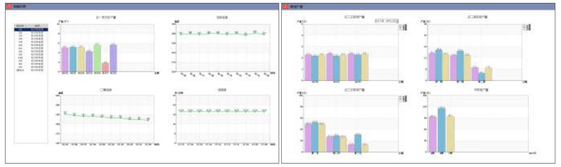


系统集成

系统具备强大数据集成能力，通过标准化接口实现与企业上层信息化管理系统如ERP、PLM、企业自行开发的信息系统等无缝对接，为企业打造从生产执行现场到企业上层管理的全方位信息化解决方案。

统计分析

统计分析模块通过统一的数据信息平台，对生产过程中采集的历史数据进行分析并生成多层次多维度的管理报表，如计划达成率、产出率、不良分析报告、设备稼动率(OEE)、设备故障原因分析等，为企业管理层决策提供实时、准确、完整的数据支持。



温度

产能分析

数据采集拓扑图