Shanghai STEP M.&E.Automation Techniques Co.,Ltd

Shanghai STEP M.&E.Automation technology Co.,Ltd
Sales & Service Center: East 4th floor, No.88 Qinjiang Road, Caohejing Development Zone, Shanghai
Factory Address: No.289 Xinqin Road, Jiading District, Shanghai
Tel：86-21-54262641，54262642，54262513
Fax：86-21-54262647，54262643
www.stepautomation.com

STEP AUTOMATION

Rubber Tyre

Special Issue

Electric Automation for Rubber Tyre Industry

- Complete Sets of System Design
- Equipped with Machine & Refurbishment
- Technical Service & Training
- High/Low Voltage Inverter & DC Drive
- Customized Development for Control Systems

www.stepautomation.com

COMPANY INTRODUCTION

STEP Group mainly specializes in R&D, manufacture and sales of industrial control systems and drive products. R&D and manufacturing bases have covered an area of nearly 50,000 square meters, equipped with, first class test instruments and production facilities in the world. Up to now, there are more than 600 employees and the teams of the management and R&D are mainly composed of Ph.D., Masters, and Bachelor degrees. And advanced management systems and strict quality controls are implemented to make sure of providing clients with products and services of high quality.

STEP AUTOMATION is a high-tech enterprise which specializes in design, integration and application of industrial automation and control systems. The company has more than 10-year service experience and technical accumulation in the field of rubber tyre with a mass of senior engineers and technicians. As the member of National Rubber & Plastic Machine Information Center, ***STEP AUTOMATION*** always devoted itself to providing customers for the industry with a full range of services from single control and drive products to complete sets of design and commissioning for the control systems of equipments, including a solution to automation for the whole factory.

STEP
AUTOMATION
Rubber Tyre
Special Issue

STEP insists in the enterprise spirit: Face the world; pursue the best, stay always ahead of the line. It strives to provide clients for rubber tyre industry with the most excellent product, the most reasonable solution and the most perfect services, aiming to become the best strategical partner for the customers in rubber tyre industry!

STEP AUTOMATION Rubber Tyre Special Issue

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Range of Business

Target Customer & Project Type

- Application in rubber tyre machinery factory: Electrical control system design, integration, and service on the customer's location.
- Application in Rubber Tyre Manufacturing Enterprise: Electrical control system upgrade, modification and technical services for the facility
- Application in Rubber Tyre Factory: Providing a full range of solution to automation and controls

Related Equipments

Equipments involved with Tyre Processing Flow

Mixing Calendering Cutting Molding Curing Testing

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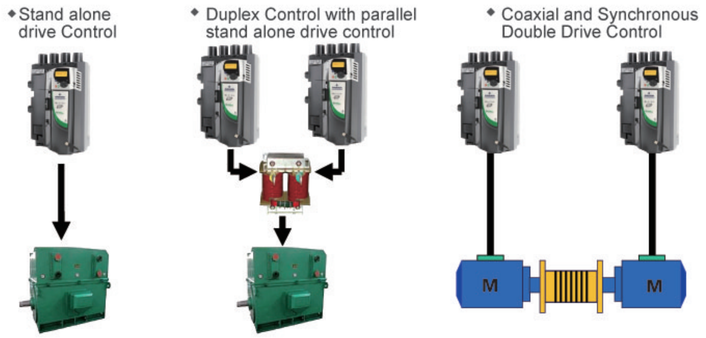
Typical Cases

- MICHELIN Tyre 270,370 Internal Mixer equipped with driving system of main machine and integral electrical control system
- Double Coin Tyre Inner Liner Calender equipped with the electrical control system for the whole machine
- BRIDGESTONE Tyre Calender equipped with the electrical control system for the whole machine
- Giti Tyre First Stage, Second Stage, Fri-drum Tyre Building Machine equipped with the electrical control system
- Control system upgrade and modification for RODOLFO、COMERIO Calender
- Control system upgrade and modification for Troester 、KRUPP tread extrusion line machine
- Control system upgrade and modification for Troester Inner liner machine
- Integral upgrade and modification for IFIX of Fischer、VMI cutting machine, PLC and servo control system
- Integral upgrade and modification for IFIX of KRUPP Tyre building machine, PLC and servo drive system

TYPICAL SYSTEM SOLUTION

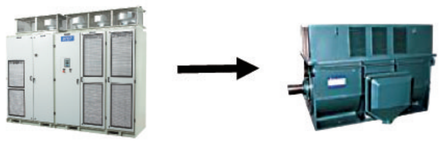
Electrical Control System for Main Machine of Internal Mixer

- DC Drive Solution

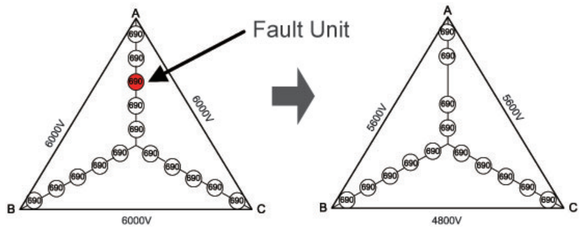


- Maximum rated current for driver: 7400A
- Overload Ability: 200% per minute Max 250% 20 second
- Applicable for 270,370,420 Model Internal Mixer
- Provide an integral control system for Internal Mixer

- Solution to High Voltage Inverter



- Applicable for 270,370,420 Model Internal Mixer
- Overload ability: 200% per minute, 250% 20 second
- Vector-closed-loop control for high voltage variable frequency system
- Current specifies some certain functions, which can realize double drive coaxial control
- Internal Mixer can work normally, non-stop when arbitrary unit occurs fault
- Quick and convenient to change fault unit; short downtime
- Old equipment modification is not required to change high voltage cables and motor
- High Energy-saving efficiency for modification on old equipment
- THDi<5%； Power Factor>95%； System Efficiency>97%

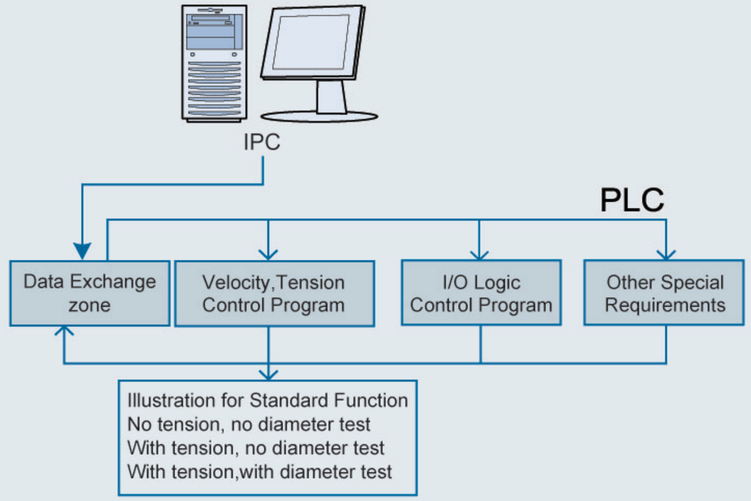


Unit Bypass, Spontaneous Focus Bias

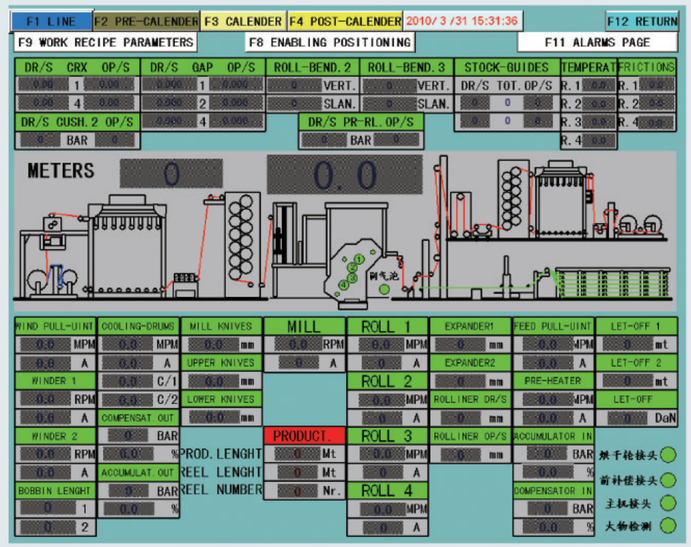
Typical System Solution

Electrical Control System for Calender and Extruder

- Standardized Program Structured Flowchart



- Operating and Commissioning Interface for Calender



Electrical Control System for Calender and Extruder

◆ Commissioning and Monitoring Interface for Tread and Tyre Sidewall linkage lines

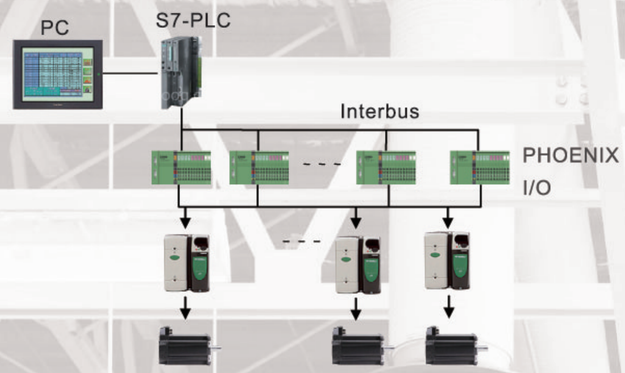
◆ Characteristics with Control System

- ◆ Standardization: Control Interface Software for IFIX
- ◆ Formalization: Independent data exchange storage
- ◆ Modularization: Control programs like velocity, tension, rolling, temperature etc.
- ◆ Customerization: PLC logic control programming
- ◆ High Efficiency: Short design cycle for the whole machine
- ◆ Convenience: Commissioning on the job site

Certificate for Achievement
Commercialization of Control System

Typical System Solution

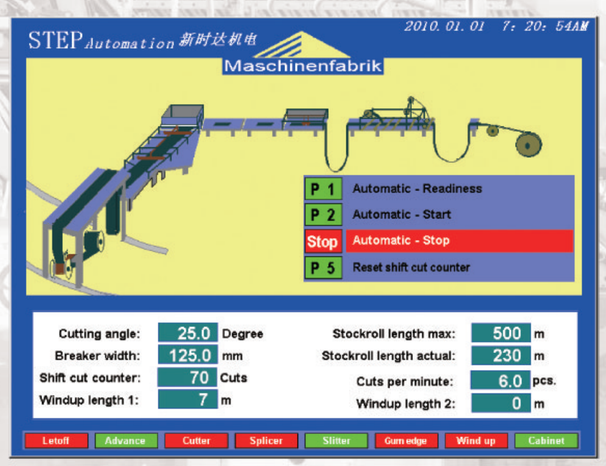
Case of Electrical Control System Modification for Cutting Machine



Control System for Fischer Cutting Machine

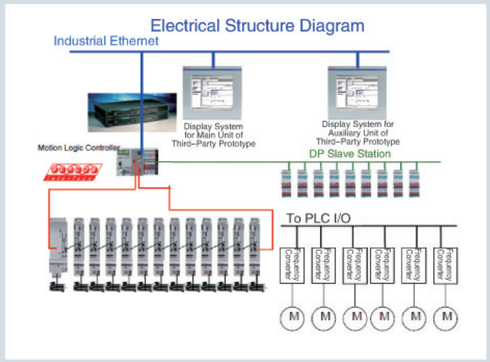
- ◆ Monitoring Software Upgrade for IFIX： IFIX ⟶WinCC
- ◆ Siemens PLC Upgrade： S5⟶S7
- ◆ Phoenix I/O Upgrade： IBS⟶IBL
- ◆ CT Servo Drive Upgrade： Unidrive⟶UnidriveSP
- ◆ Servo motor is not required to be changed; Short modification cycle
- ◆ Provide a control system solution to cutting machine with all varieties of configurations

Cutting Machine IFIX Control, Monitoring Interface

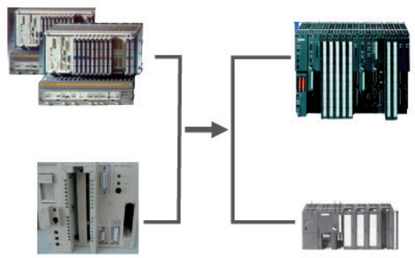


Case of Electrical Control System Modification for Tyre Typing Machine

- Provide a control system solution to tyre typing machine with all varieties of specifications
- Standard IFIX monitoring program
- Servo motor is not required to be changed; Short modification cycle
- Motion control curve model standardization
- Built-in motion control unit for servo driver



Case of Siemens PLC system Upgrade

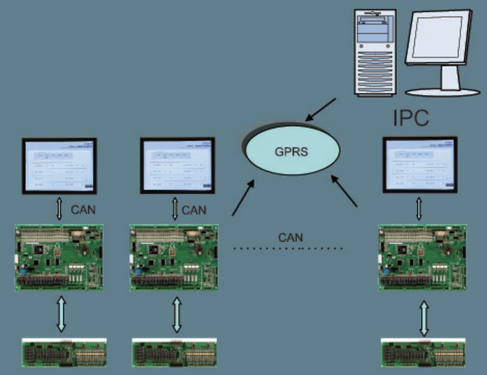


- S7 series PLC hardware upgrade in the round
- Standard Windows operating interface, more straightly and quickly
- Software seamless upgrade, greatly reducing the modification cycle
- Original S5 system can be upgraded step by step; old and new system can be compatible for operation
- Successful case involves all series and brands of tyre manufacturing equipments

Control System Development for the Industry

Control System for Vulcanizer

- Custom-made touch-screen procedure
- Independent R&D of specialized control board
- Customerized and formative hardware/software design
- Specialized wireless monitoring management software



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Typical Function Introduction of STEP Controller Integrated Inverter

Typical control systems with controller integrated inverter

- Touch screen+servo+controller integrated inverter+I/O extension board
- Control system with Multi CPU control systems , no need of PLC
- Professional programming
- Low system cost
- I/O can be extended
- CAN Bus communication

iAStar High/Low Voltage Inverter Exclusive Distribution for Rubber Tyre Industry

High Voltage Inverter

Capacity range: 250kW-4000kW
Overload Ability: 200% per minute, 250% 20 second
Wide Voltage Input: 6600v-15%~10000v+15%
Closed-loop control: 1, vector closed-loop
2, V/F slip closed-loop

Current specifies torque control mode
I/O can be extended and customerized design is offered
Functions involve unit bypass, spontaneous focus Bias
Selectable communication interface
Modbus; Profibus;
DeviceNet; Interbus;
TCP/IP; Optical fibre etc.

Low Voltage Inverter Series

AS320 Inverter for Elevator
Capacity Range: 1.1kW—75kW Voltage Class: 200V-460V

AS380 Controller Integrated Inverter
Capacity Range: 1.1kW—75kW Voltage Class: 200V-460V

AS320 Inverter for Water Pump
Capacity Range: 2.2kW-400kW Voltage Class: 200V-460V

AS320 General Inverter
Capacity Range: 2.2kW-400kW Voltage Class: 200V-460V

AS320 Inverter for Harbor Machinery
Capacity Range: 450kW-3200kW Voltage Class: 380V, 660V, 1140V

Partner

Emerson CT AC/DC Drive Product Agency and System Integration

CONTROL TECHNIQUES 艾默生 CT 中国驱动中心

- Mentor MP Digital DC Driver
  - New Generation High-performance DC Driver
  - Current Range: From 25A to 7400A
  - Voltage Class: 400V/575V/690V
  - Working on 2/4 quadrant can be realized
  - Perfect functions, replacing original Mentor II driver

- UnidriveSP AC inverter
- UnidriveSPM high power AC inverter
- Commander SK AC inverter
- Servo controller, servo motor

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Phoenix Product of Germany Agency and System Integration

PHOENIX CONTACT

- Industrial Ethernet Control: Control product
- Interbus: Bus control module
- Modularized interface product
- Automatic system product

Main Configuration for Rubber Tyre Industry & World-famous Brand of Automation Product System Integration

SIEMENS ExtrIQ
GE 智能平台 Schneider Electric
Rexroth Bosch Group B&R

Technical service

Factory service

- Provide a round-clock on-site service to help clients solve the problem of equipment failure
- Equipment regular inspection

Maintenance service

- Professional to provide a maintenance service to drive products of world famous brand, free helping clients to conduct an equipment failure test and to provide a maintenance solution
- Emergency equipment repair, including automation product maintenance and system debugging

Technical support

- Provide the enterprise with relevant technical advice: select to product model, spare parts plan, solution design, software programming, commissioning on the job site, etc.
- Assist clients to attend relevant technical negotiation (new equipment technical negotiation, project approval for old equipment modification, etc.)

SERVICES AND TRAINING

Training

- Specialized training for end users
  1）A specific training about an overall concept to equipment for on-site maintenance staff
  2）A specific training about a technical solution for technicians
  3）An oriented training for talents in tyre industry
- product introduction for OEM clients
- solution introduction for a dedicated system

DISTRIBUTIION OF RUBBER INDUSTRY CUSTOMERS