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. 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 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!
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

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
- Stand alone drive Control
- Duplex Control with parallel stand alone drive control
- Coaxial and Synchronous Double Drive Control
- 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

**Electrical Control System for Calender and Extruder**
- Standardized Program Structured Flowchart
- IPC
- PLC
- Data Exchange zone
- Velocity, Tension Control Program
- I/O Logic Control Program
- Other Special Requirements
- Illustration for Standard Function
  - No tension, no diameter test
  - With tension, no diameter test
  - With tension, with diameter test

**Operating and Commissioning Interface for Calender**
- Fault Unit
- Unit Bypass, Spontaneous Focus Bias
- THD<5%; Power Factor>95%; System Efficiency>97%
TYPICAL SYSTEM SOLUTION

Electrical Control System for Calendar 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.
- Customization: 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
- Monitoring Software Upgrade for IFIX: IFIX → WinCC
- Siemens PLC Upgrade: 6ES7 → S7
- Phoenix I/O Upgrade: 836 → 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 various 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

Control System Development for the Industry

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

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

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 extended

STEP
Website: www.steptune.com
Service hotline: 86-21-54262641
With Creative Science and Technology You Will Find Such is The World
**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 customized design is offered  
Functions involve unit bypass, spontaneous focus Bias  
Selectable communication interface  
Modbus; Profibus; DeviceNet; Interbus;  
TCP/IP; Optical fibre etc.  

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**Low Voltage Inverter Series**

AS320 Inverter for Elevator  
Capacity Range: 1.1kW - 75kW  Voltage Class: 200V-480V  
AS380 Controller Integrated Inverter  
Capacity Range: 1.1kW - 75kW  Voltage Class: 200V-480V  
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
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.)

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