

SMART

# Seamless digitization of light industry

ROSO Automation Technology Co., Ltd, Chengdu, China

The digital transformation of light industry  
with EcoStruxure™ Machine.

[se.com/machine](https://se.com/machine)

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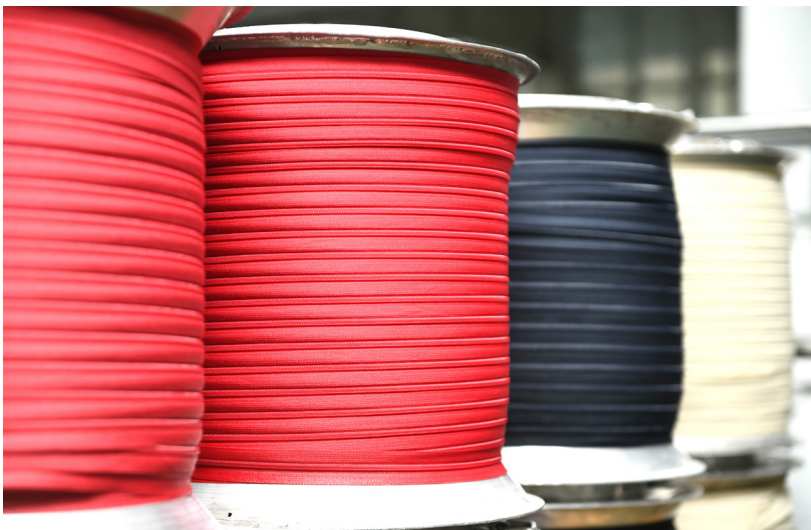
## Introduction

ROSO Automation Technology Co., Ltd. is a high-tech enterprise specializing in the research and development, production, and sales of zipper dyeing production lines, providing the most complete production lines in the industry. For years, its cloth belt shaping technology has been helping domestic zipper enterprises greatly improve product quality and effectively reduce production costs.

ROSO's business model differs from that of traditional OEMs as it is not only a machine builder, but also operates production lines at customers' facilities. Consequently, it faces both manufacturing and operational challenges, and must consider not only the on-time delivery of equipment, but also its long-term operation.

## Standing out in the world's zipper capital

Unsurprisingly, China is the world's largest manufacturer and exporter of zipper products, with an expected total market value of nearly ¥50billion (over €6.5billion) by 2023, about 3,000 domestic zipper manufacturers, and nearly one million employees across the industry.



\*The Schneider Electric industrial software business and AVEVA have merged to trade as AVEVA Group Plc, a UK listed company. The Schneider Electric and Life is On trademarks are owned by Schneider Electric and are being licensed to AVEVA by Schneider Electric.

## Goal

Reduce costs and dependence on manual labor, improve production efficiency, product qualification rates, and formula management.

## Story

Faced with the challenges of being both machine builder & operator, ROSO needed to digitize their machines and transform from simple to smart manufacturing.

## Solution

A full EcoStruxure Machine solution, including EcoStruxure Machine Advisor, AVEVA's\* System Platform, Modicon PLCs (M258, M241, M218, M200), Harmony HMI, Altivar variable speed drives, Lexium servo drives, LV distribution products, and frequency converters.

## Results

- 20% reduction in energy consumption
- 10-20% greater production efficiency
- Optimized raw material inventory
- Improved equipment utilization
- More efficient & sustainable machines
- Reduced labor requirements & human error

Traditional zipper production is typically very labor-intensive, incurring high labor costs with low product added value. However, one high-tech enterprise in Chengdu, specializing in the research, development and production of zipper dyeing production lines, has been working with Schneider Electric to transform production using innovative solutions and bringing digitization to light industry. That enterprise is Chengdu ROSO Automation Technology Co., Ltd.

Once upon a time, the most important requirement for a zipper was its performance: it simply needed to open and close smoothly and reliably, over and over. Nowadays, as zippers feature more prominently in fashion, color – and, therefore, the dyeing process – has become increasingly important.

Competition and imitation are fierce in the industry, limiting growth and expansion opportunities for many companies. In response, ROSO added a new and unique business model by offering their operating services to zipper manufacturers. Now, it not only provides customers with a complete set of production line equipment for zipper

dyeing, but also operates production at a customer's plant, turning over the final dyed zipper products to its customers. Dual business models, however, bring the dual challenges of manufacturing and operation.

### From simply manufacturing to smart manufacturing

In the case of a zipper factory in Fujian province, low levels of automation meant the dyeing production line relied on time-consuming manual feeding and unloading. After the system received an order, operators would use a trolley to carry the raw material from the warehouse to the winder. This was done at least a hundred times a day, requiring a great deal of labor and impacting production efficiency. In addition, to ensure the smooth and timely completion of orders, production lines often operated continuously for 24-hours a day, but the repetitive work and long night shifts made it hard to recruit reliable workers.

Excessive dependence on manual labor is just one example of the lack of digital systems in production and operation at the factory. Data was recorded with pen

10-20%

greater production efficiency





and paper, and raw material consumption committed to memory, all of which invariably led to errors and omissions during material handover. Inconvenient management of onsite logistics and confusion regarding the locations of finished and semi-finished products would also leave management without a clear understanding of the exact status or orders.

In addition, there was no adequate mechanism for managing the dyeing formulas, which are central to the dyeing process. They were simply recorded in a book, a practice which was not conducive to the long-term development of the enterprise or the preservation and transfer of process knowledge.

An urgent digital transformation was needed to address the cost, efficiency, and management challenges at the factory so ROSO implemented a zipper dyeing production line using Schneider Electric's EcoStruxure Machine solution. The hardware system, including Modicon PLCs, frequency converters, Lexium servo drives, Harmony touchscreens, and low-voltage power distribution products, ensures the stability and reliability of the production line equipment.

On the software side, EcoStruxure Machine Advisor and AVEVA's System Platform provide support for the long-term operation of the production line. Together, the solution turned the factory into a smart manufacturing facility.

"We chose to collaborate with Schneider Electric based on their strong and recognized technical capabilities in this field," says Ran Hao, General Manager of ROSO Automation Technology Co., Ltd.



The jointly developed solution is based on AVEVA's System Platform. The software can quickly develop a tailor-made information system on demand to complete order management, scheduling, warehouse management, and quality inspection. EcoStruxure Machine Advisor makes remote equipment maintenance convenient and efficient. Staff can also implement automatic parameter adjustments through Machine Advisor's analysis center function to improve yield.

### A whole new way of working

ROSO's digitized production line has transformed the factory in Fujian. Now, its zipper dyeing process is fully automated from order placement to end-product, dramatically improving production efficiency, product qualification rate, and formula management – and reducing the loss of raw materials, labor requirements, and rate of human error:

- When new orders come in, the scheduling system kicks into action to meticulously calculate order priority, equipment status, and order date. This ensures equipment use is optimized – the machines don't sit idle – and reduces production conflicts and delays.
- A digital verification system also ensures that the correct raw materials are delivered from the warehouse per the automatically generated work orders,

"We have realized the automatic, unmanned production of zipper dyeing, from order to production, and solved the problem of formula management in the production process,"

— Ran Hao,  
General Manager of  
ROSO Automation  
Technology Co., Ltd.

preventing errors and increasing efficiency.

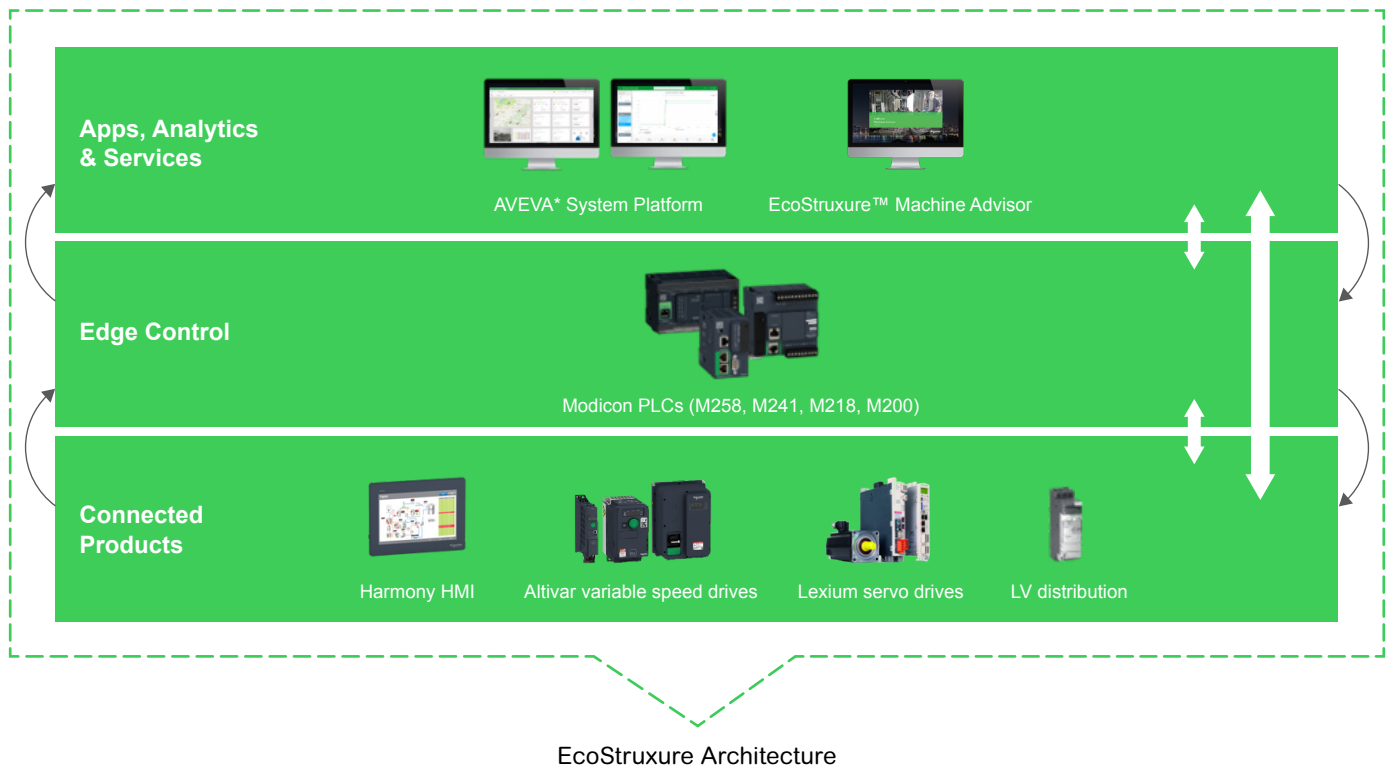
- In the dyeing process, the system automatically collects all the production process data, giving managers clear visibility into production conditions.

“We have realized the automatic, unmanned production of zipper dyeing, from order to production, and solved the problem of formula management in the production process,” says Hao.

Since implementing Schneider Electric's EcoStruxure Machine solution, the overall efficiency of ROSO's production lines has improved by 10%-20%, energy usage has dropped by 20%, and its customers are enjoying all the benefits of digitization.

“We hope to continue working with Schneider Electric in the future to further digitize this national light industry,” Hao concludes.

## EcoStruxure™ for Machine Innovation At Every Level



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# EcoStruxure™

## Innovation At Every Level

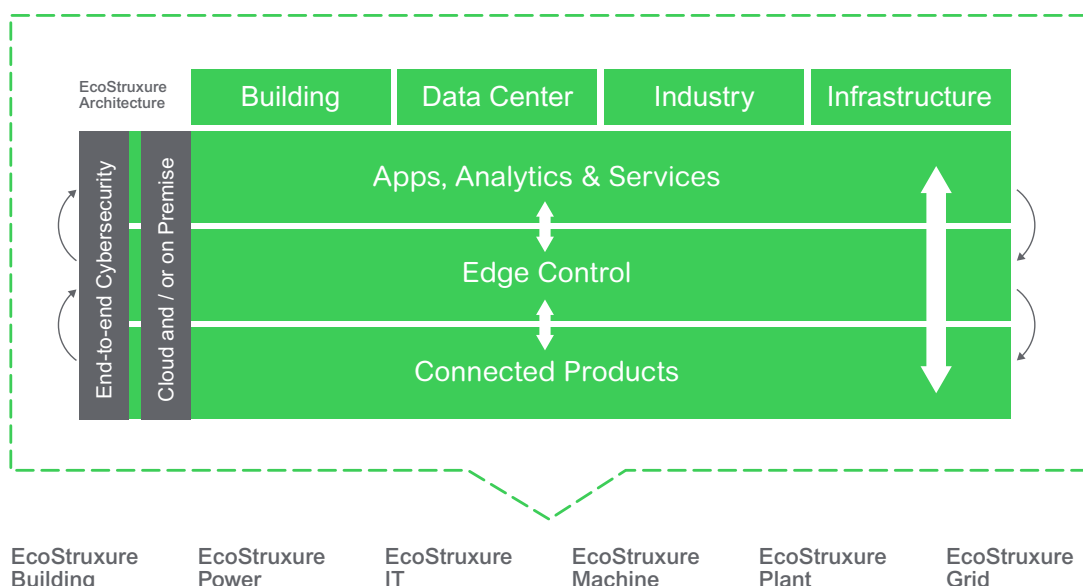
### IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric's open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. EcoStruxure™ has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

### One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise



#### Connected Products

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

#### Edge Control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

#### Apps, Analytics & Services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

Find out more about EcoStruxure

[schneider-electric.com/ecostruxure](https://schneider-electric.com/ecostruxure)

# Learn More



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Intuitive Industries - digitized!



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Browse our Lexium servo drives and motors



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