YASKAWA SOLUTIONS FOR TEXTILE INDUSTRY

0.4 kW to 630 kW
About YASKAWA

Since being founded in 1915, YASKAWA has set “electric motors and their applications” as its business domain and supported the leading-edge industries of the age. Our standard products, as well as our tailored solutions are well known for their outstanding quality and reliability.

YASKAWA is the leading global manufacturer of inverter drives, servo drives, machine controllers, medium voltage inverters and industrial robots. We have always been a pioneer in motion control and drive technology, launching product innovations, which optimise the productivity and efficiency of both Machines and systems.

YASKAWA is probably the biggest inverter manufacturer in the world - we produce more than 1.9 million inverters per year. Furthermore, with a yearly production of more than 1 million servo motors and 25,000 robots we offer a wide range of products for drive automation processes across various industrial applications.

Drives Systems for Textile Industry

Complete power range from 0.1 kW to 630 kW is available with standard and specific functionality to cover the application requirements of the textile machine industry. The A1000 Inverter Series and the Sigma-7 Servo Series from YASKAWA have been developed with a focus on reliable operation, easy handling and overall cost saving aspects. Controllers and I/O-Systems are our portfolio for the textile industry.

Textile machinery demands robustness and reliability of its components. Harsh ambient conditions such as high air humidity, dust and fibres require application specific cooling concepts and solutions – Our products are designed to meet these specific demands.
### Solutions for the Textile Industry

<table>
<thead>
<tr>
<th>Processes</th>
<th>Requirements</th>
<th>YASKAWA Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber Preparation</td>
<td>Resistance to Fibers and Dust</td>
<td>Cold Plate Drives to adapt to Heat Sinks suitable for Textiles</td>
</tr>
<tr>
<td>Combing</td>
<td>Energy Saving Functions</td>
<td>Speed Synchronisation as Standard</td>
</tr>
<tr>
<td>Draw Frame</td>
<td>Deceleration of high inertia Loads</td>
<td>Power Loss Ride Through Function</td>
</tr>
<tr>
<td>Winding</td>
<td>Control Accuracy</td>
<td>Textile Specific Drive Design</td>
</tr>
<tr>
<td>Carding</td>
<td>Synchronisation</td>
<td>24h non-stop Operation</td>
</tr>
<tr>
<td>Spinning</td>
<td>Speed Accuracy</td>
<td>PCB Coating</td>
</tr>
<tr>
<td>Weaving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texturing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sliver Production</td>
<td>High Torque at Zero Speed</td>
<td></td>
</tr>
<tr>
<td>Refining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing</td>
<td>Chemical Agressive Environments</td>
<td></td>
</tr>
<tr>
<td>Smoothing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing, Dyeing, Bleaching</td>
<td>Resistance to Power Supply Outage</td>
<td></td>
</tr>
<tr>
<td>Extruding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weft Knitting</td>
<td>Multi Axis Synchronisation</td>
<td></td>
</tr>
<tr>
<td>Finishing</td>
<td>High Torque</td>
<td></td>
</tr>
</tbody>
</table>

**EXPERTISE AND EXPERIENCE:** Fiber Preparation >> Combing >> Draw Frame >> Winding >> Carding >> Spinning >> Weaving >> Knitting >> Texturing >> Sliver Production >> Refining >> Printing >> Smoothing >> Washing, Dyeing, Bleaching >> Extruding Weft Knitting Finishing.
WHY YASKAWA

WEAVING MACHINE

Yaskawa Drives in weaving process support Fast weaving speed, maximum efficiency, reduced damages in warp and weft motions of threads are interlaced to form a fabric.
- Energy Saving (Sensor less IPM Motor drive)
- Wide range of communication options
- Rapid acceleration / deceleration, Inching Characteristics
- Compact size
- Reduction in production and maintenance cost
- Low mechanical maintenance such as Belts, bearings and yarn breakages

YASKAWA Drives in knitting machine process the fabric into multiple Stitch patterns for various patterns or design
- Cutting edge Torque for High Inertia load start
- Smooth stop to protect the needle bed.
- High Speed regulation
- Energy saving
- Maintenance monitor
- Variety of Braking functions

DRAW FRAME MACHINE

In Draw frame machine YASKAWA drives are best suitable to maintain uniformity without any drafting irregularities and to avoid drop in yarn strength/yarn elongation during brake.
- Varnish coating for Harsh Environment/Oil Environment
- Low harmonic – Low surge, Low noise
- Easy and rapid change of the delivery speed
- Low energy consumption

YASKAWA drives deliver required torque by maintaining uniform tension on all different lengths of fabrics.
- Minimizing mechanical impact on the fabric
- Maintain the dyeing textile material clean and smooth
- Precise process control will certainly improve production
- Safety function is compiled to SIL3
- Easy Maintenance
- Power loss counter measures

DYEING MACHINE

- The material properties of the yarn is perfectly maintained with the maintenance of the Room temperature and Relative humidity of the plant
- Room Temperature and RH is controlled with single drive module.
- Elimination of external PLC
- Internal Drive PIDs provide the smooth variance of the process Control.
- Power Saving

HUMIDIFICATION

- The material properties of the yarn is perfectly maintained with the maintenance of the Room temperature and Relative humidity of the plant
- Room Temperature and RH is controlled with single drive module.
- Elimination of external PLC
- Internal Drive PIDs provide the smooth variance of the process Control.
- Power Saving
HIGH PERFORMANCE AND SMOOTH OPERATION WITH A1000 & V1000

HIGH PERFORMANCE VECTOR CONTROL AC DRIVE A1000 AND COMPACT DRIVE SERIES V1000 HAVE SOFTWARE FEATURES WHICH MAKE DRIVE SUITABLE FOR SPECIFIC NEEDS OF THE TEXTILE INDUSTRY.

FEATURES
- Conformal PCB Coating to withstand harsh environments.
- Power loss ride-through function (KEB) – safe operation status at all times, including for synchronised drives with Common DC Bus
- Pulse Train speed reference and Pulse Train Output – for easy and effective synchronised line speed.
- Traverse function - for optimised yarn winding
- High precision open and closed loop control of induction and permanent magnet motors.
- Temperature - 60° C Ambient with derating.
- Temperature 60° C Ambient with derating.

LOW HARMONIC AND ENERGY SAVING SOLUTION WITH U1000

U1000 IS A MATRIX CONVERTER DESIGNED FOR LOW HARMONICS AND ENERGY SAVINGS SOLUTIONS.

FEATURES
- Low Harmonics (<5% iTHD) – compliant to IEEE519 standards
- High Power Power factor > 0.98
- Enhanced Efficiency and life due to absence of Main capacitor
- Energy Saving by means of Power Regeneration
- Compact size; simple 3-wire input and output
- Low Noise – Low Surge even with longer cable length.
- 3 Level switching output voltage – reduces the motor bearing current.
- Temperature 60° C Ambient.

POSITIONING AND SYNCHRONISATION WITH MP CONTROLLER & SERVO PRODUCT

With the highest stability and best response (1.6 kHz) in its class, YASKAWA’s AC servo drive and MP controller (Motion Pack) enable high-frequency & high-precision positioning. Excellent machine performance even at high speed of 6000 RPM with a combination of motor and drive.

FEATURES
- Up to 256 controlled axes
- Position control, synchronized phase control, speed control, torque control, Electronic CAM/Shaft
- New advanced auto-tuning for maximum machine performance
- Quickeened response for reduced settling time for positioning
- High-resolution encoder for high-precision positioning and micro fabrication (Resolution: 1,048,576 pulses/revolution)
- Enforced functions to suppress influence of vibration and friction

Rating: 2.2 kW to 400kW
YASKAWA DRIVE WITH INBUILT RING FRAME SOFTWARE IS DESIGNED FOR ENHANCED OPERATION OF SPINNING MACHINE

- Built-in software
- Textile terminology
- Smooth speed & length profile
- Centralized monitoring system
- Low cost system - No External PLC
- No Sensors – Reduced Maintenance

Provides the smooth operation of the yarn winding in spinning mills and reduce the yarn breakages.

4% to 10% energysaving depending upon mills process and speed pattern setting.

On-line Controlling and monitoring of parameters & trends of the Textile production parameters

Production data such as Spindle Speed, TPI, Delivery speed, Hank, completed length are displayed

24 steps doff cycles provides smooth speed & length profile improves the productivity.

Smooth start during power failure or maintenance job with less breakages of the yarn.
CUSTOMIZED SOFTWARE’s FEATURES & BENEFITS

- Monitor Machine Run time and down time
- Graphical view of the energy consumption data & production data
- Password protection to prevent unauthorised access
- Machine control and Interlock with Pneumafil Motor control
- Energy saving & production data can be monitored for each shift wise, day wise & weekly.
- Shift time setting and autoshift changing facility

YASKAWA OFFERS WITH IPM (IE4) – SUPER PREMIUM EFFICIENCY MOTOR

Energy Savings with PM Motor - Reduced Carbon Footprint and Running Costs
The SPRiPM package is a plug-and-play combination of an inverter drive teamed up with a permanent magnet motor that exceeds IE4 efficiency requirements and provides premium efficiency even in partial load conditions. Thus SPRiPM opens new potential for saving energy in pump, fan, or other variable torque applications that still commonly use IE1 and IE2 motors.