USTER® SENTINEL

The ring spinning optimization system

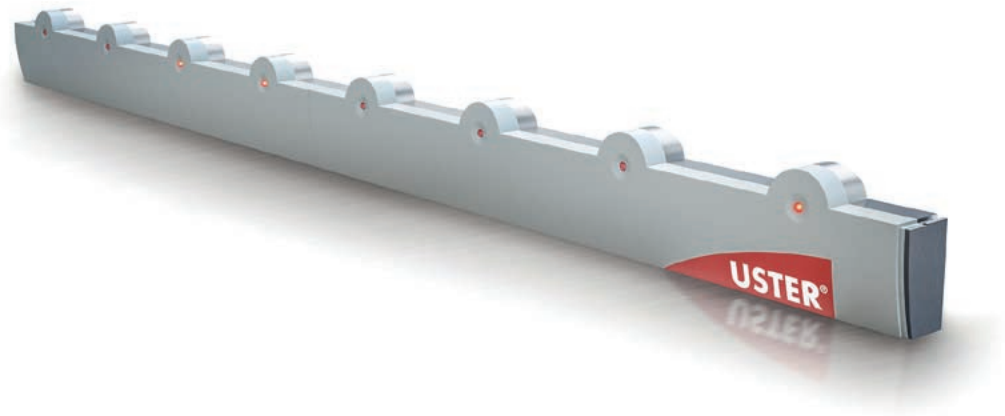
Technical Data

March 2021

USTER®
Think quality

USTER® *SENTINEL*
The ring spinning optimization system

USTER® *SENTINEL* monitors the productivity of all spindles and provides all the links and information that help yarn producers to make optimization decisions at ring spinning based on reliable facts.



Basic installation

Overall installation

Functions

- Real-time diagrams for end-breaks, speed, power consumption, temperature and humidity, for every machine
- Bobbin build-up report includes information on end-breaks, ambient conditions, wear of mechanical parts, machine speed, personnel and energy
- Energy monitoring provides detailed information on the power consumption
- Integrated personnel management
- Off-Standard feature detects hidden quality risks and stop the production
- Reports can switch from mill overview down to sections or even a single spindle
- Detailed production and quality data for every ring spinning machine
- Run/stop diagram with stop reasons, chain break and extensive break alarm indications
- Machine Display device uses the double-sided LED display to show the real-time production information, such as end break, slip, idle, rogue, end-break modification average time, and efficiency

Included in the delivery

- Single spindle monitoring sensor
- 1 main shaft sensor for each ring spinning machine
- 1 front roller sensor for each ring spinning machine
- 1 doff sensor for each ring spinning machine
- 1 energy sensor for each ring spinning machine
- Application software USTER® *SENTINEL*

Subsystem of the USTER® *SENTINEL*:

Standard equipment	**USTER® *SENTINEL* server**	– Industrial computer with Intel i7 processor – 3 internal 500 GB hard drives for data security and system redundancy – 8 GB memory – Microsoft® Windows Embedded 8.1 Industry Pro 64-bit – Microsoft® SQL server 2014 Express – Sentinel server software pre-installed – Sentinel client software pre-installed – TeamViewer 10 pre-installed – 1 dongle key for the Sentinel server – Supports up to 150 machine stations and 100 000 spindles – 1 Sentinel server for a ring spinning mill
	Machine stations	Supports up to 2 048 spindles for each ring spinning machine 1 machine station for each ring spinning machine
	Alarm lamps	2 front alarm lamps and 2 rear alarm lamps for each ring spinning machine

Options

Optional equipment	**Temperature and humidity sensor**	1 temperature and humidity sensor for each ring spinning machine
	Machine Display	1 Machine Display for each ring frame
	Mill Dash board	1 Smart box per TV Monitor
	Roving Stop	Supports 6 or 8 spindles for each bar of Roving Stop Device

Additional equipment

The USTER® *SENTINEL* can be expanded by adding additional equipment.
Uster Technologies AG does not supply the additional equipment.

Client PC for USTER® *SENTINEL*	– Minimum Microsoft® Windows 7 – Microsoft® .NET Framework 4.5
Client Tablet	– Web application – Browser: Safari or Chrome Version 70.XXX and higher
Printer	– No specific requirement – Note that the colors in reports may not be distinguished in the black and white print

Scope of application

Application range

Yarn type	For spun yarns consisting of natural fibers, blended fibers, synthetic fibers, twin spun yarns and slub yarns
Count range	Tested application range from 3.94 tex to 98.4 tex, Ne 6 to Ne 150, Nm 10.2 to Nm 254
Yarn color	For all yarn colors
Ring types	For all flange rings
Traveler types and color	For all traveler types & colors
Machine speed	Successfully operating up to 25 000 Min^{-1}
Machine gauge	70 mm and 75 mm supported

Ring spinning machine supported types

Uster Technologies provides machine-specific variants of USTER® *SENTINEL* installation. A ring-spinning machine from a particular manufacturer can therefore only be equipped and operated with an USTER® *SENTINEL* variant that has been developed and adapted specifically for that machine type. USTER® *SENTINEL* is available for the following ring spinning machine:

Available types

Toyota	RX300, RX240 and similar
Jingwei	JWF1526, JWF1562, JWF1566 and similar
Marzoli	NSF-3, MDS and similar
Lakshmi	LR-6, LR 9 and similar
Rieter	G32, G33, K44, K45 and similar
Tonghei	TH 578J, TH 598J
Zinser	RM350, RM351, Z71, Z72 and similar

Additional ring frame models can be retrofitted upon request.
A separate questionnaire is provided for new retrofit options.

Application Software for USTER® *SENTINEL*

Feature overview	**Real time communication and control**	Live view of the ring spinning machine state
	Setting management	– Central article management – Modify, store and download articles setting
	Advanced analysis	– Run7stop diagram for ring spinning machines – Bobbin build-up report
	Intuitive reporting	– Exceptions handling and reporting – Set of predefined role oriented reports – Production, personnel performance – End breaks, slip spindles, off-quality spindles, stops, maintenance – Alarms for chain breaks and high end breaks – Report editor – Machines monitoring – Team and personnel performance
	Automated data management	– Automatic export of data – Shift calendar – Uploading articles data – Data storage in a database – User management – authorization
Monitoring	**Dashboard**	– Shows an overview about following major production data of all areas: – efficiency – end breaks – total production – alarms – temperature / humidity – operators – articles – energy consumption – machines in maintenance
	Area view	– Shows an overview of all ring spinning machines in the selected area – Predefined graphical shift reports for – end breaks – ambient conditions – energy – Drill down function for the single machine information – Assign operator information to ring frames

Monitoring	**Managers day reports**	– Customized report – Up to four report templates combined in one provide the mill performance per day or week
	Actual exception report	– Shows the status of the spindle state of the shift
Reports	**Machine state**	– Run-Stop-Diagram
	Tables	– Breaks – Highest end break machine – Highest productivity per spindle machine – Highest startup breaks machines – Lowest AEF machines – Production – Alarm analysis trend – Article production – Efficiency trend
	Charts	– Alarm analysis trend – Article production – Efficiency trend – Machine efficiency – Machine yarn breaks – Production share per article – Production trends – Stop trends – Yarn break trend
	Exceptions	– Machine exceptions – Chain break spindles – End break spindles – Idle spindles – Lowest AEF spindles – Rogue spindles – Slip spindles – Startup break spindles
	Special	– Bobbin build-up – Doff reports
	Export	– Export reports are automatically stored as CSV files at the end of the day or the shift – Quality Expert Export (Shift) – Production Export (Day) – Machine Exceptions Export(Shift) – Production Export (Shift)

Configuration	**General settings**	– Setting of mill information, mill plan, areas and machines – Setting of units – Setting of export function
	Users	– Definition of user roles and password definition
	Shift	– Default plan and current plan – Definition shifts and start time – Shift plan in calendar format
	Personal management	– Configuration of personnel and team – Assignment to the shift plan
Reports	**Type of report**	– Predefined table reports and graphical reports for different application – Customized reports
	Display and printout of results	Monitoring and Reports with real time data
	Limit values	– Setting of customized limits according to absolute, relative, kg and 1000 /spdh – Automatic verification of the measured values – Measured values which exceed the limit will marked with red color in the reports
Statistics	**Statistical values**	Overall result protocol with statistical data of the results – SUM – Mean value
System security	**Protection function**	– Remote support capabilities build-in – Diagnostic tools with extensive event logging
Data protection	**Backup**	– Automated data maintenance – Automated backup every 24 hours – Automated and configurable data export
Input data, output of results, languages, units	**Possible units**	– Productivity: m/min, yd/min – Yarn count: Ne, Nm, tex – End breks counter: EB/1000sh, EB/absolute – Length: m, km, yd, ky – Weight: g, kg, lbs – Time: minutes, hours, shift, week, month and year – Power/Energy: kWh, kWh/kg – Temperature: Celsius, Fahrenheit

USTER® *SENTINEL* with connections to other systems

The following Value Modules are available if the required sensor/instrument combinations exist:

Ring Spinning Optimization (RSO)	**Based on the combination of**	– USTER® *SENTINEL* – USTER® *QUANTUM 3/4.0* – USTER® *QUANTUM EXPERT* – USTER® *TESTER 6*
Ring Spinning Optimization 3D (RSO 3D)	**Based on the combination of**	– USTER® *SENTINEL* – USTER® *QUANTUM 3/4.0* – USTER® *QUANTUM EXPERT* – Muratec QPRO EX/FPRO EX

RSO and RSO 3D available for link winders only.

Installation conditions

General ambient conditions	**Operating climate**	– Temperature: 0 – 50° C – Relative humidity: 35 – 95 %
	Water and dust resistance	IP class 60
Installation	**Mains voltage range**	100 – 240 VAC
	Mains frequency	50/60 Hz
	Power consumption	– USTER® *SENTINEL* workstation 240 W – Machine station 600 W
	Connection type	By Ethernet Port via LAN cable. The installation and maintenance of the LAN is entirely in the responsibility of the customer. The network is an important prerequisite for correct and continuous operation of the USTER® *SENTINEL* system.
Gross weights	**USTER® *SENTINEL* workstation**	16 kg
	Machine station	9 kg

Uster Technologies has made all possible efforts to ensure that all information is accurate at the time of publication. Hereby it is declared that alterations to the product may be possible at any time. In these cases the information contained in this technical datasheet is subject to change without notice.

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