**BMSvision**

# SPINMASTER

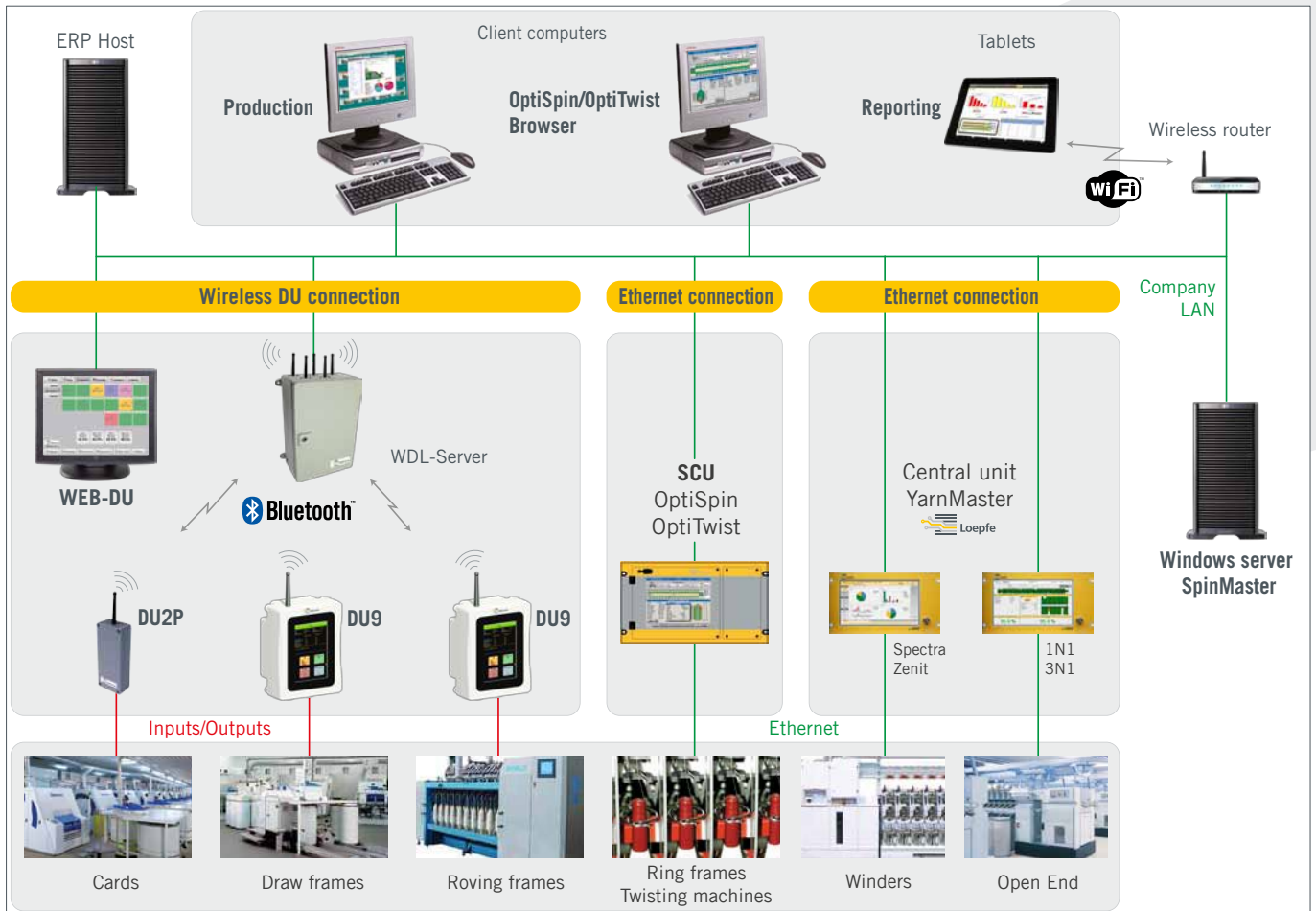## Real time production and quality monitoring from fiber to yarn

To be successful in today's demanding yarn market, modern spinning mills need to be fully focused on performance and quality. Only spinning mills having real time production and quality data for the entire production process can achieve an optimum relationship between quality and efficiency.

With the SPINMASTER system, BMS offers a solution for production and quality monitoring covering the complete spinning mill.

Through a graphical user interface, SPINMASTER users are constantly informed about the actual situation in the spinning mill. Powerful analysis tools allow instant identification of poor performing machines and spindles, resulting in a faster reaction to problems and an increased efficiency and quality level.

## SpinMaster: concept



**ERP Host**

**Client computers**

Production

OptiSpin/OptiTwist Browser

**Tablets**

Reporting

Wireless router

WiFi

**Wireless DU connection**

**Ethernet connection**

**Ethernet connection**

Company LAN

**WEB-DU**

WDL-Server

Bluetooth™

**SCU**
OptiSpin
OptiTwist

**Central unit YarnMaster**
Loepfe

**Windows server SpinMaster**

DU2P

DU9

DU9

Spectra Zenit

1N1 3N1

Inputs/Outputs

Ethernet

Cards

Draw frames

Roving frames

Ring frames Twisting machines

Winders

Open End

SpinMaster supports both cabled (Ethernet) and wireless networks to connect the machines to the central server.

In case only machine based monitoring is required, the machine is equipped with a BMSvision Data Unit for automatic as well as manual data collection.

## Connecting remote sites

SpinMaster supports the connection of multiple plants to one central server. In the remote sites, M-Servers or WDL-Servers, connected to the company's intranet, link the machines to the central computer system. A dedicated "multi-site consolidation module" on the central SpinMaster server allows integrated reporting for all sites into one single reporting environment.

## System requirements

SpinMaster is available for 64-bit Windows servers, both on physical systems and in a virtualized environment. For clients, Windows 7, 8 or 10 is required, or Terminal Services can be used. The database is Oracle driven.

## ERP system integration

SpinMaster is easily integrated with the customer's ERP system. Through a standard interface, order and product data is transferred from the ERP system and imported in the SpinMaster database.

The integrated export functionality allows a straightforward upload of production data, calculated production schedules, work in progress and performance indicators from SpinMaster to the ERP system.

Microsoft Dynamics AX

Microsoft Dynamics NAV

SAP

QAD MFG/PRO

ORACLE

JOMAR

intex

INFOR

update

sage

datatex
we make IT work for you

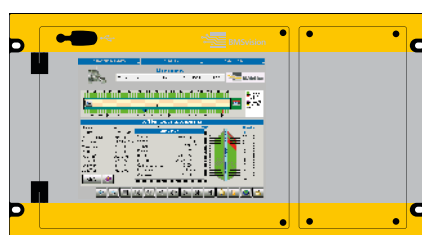# Connecting machines to SpinMaster


DU11


DU9


WEB-DU


DU2P


SCU

## Machine monitoring

In case only machine based monitoring is required, the machines are equipped with one of the BMSvision Data Units: **DU11**, **DU9** or **DU2P**. These units monitor the production speed, production and stop time and automatic stops such as doffing, sliver breakage, ... If stop time recorded as manual stop needs further analysis, the operator can enter the exact stop reason.

The **DU9** and **DU11** are high end members of the BMSvision data collection terminals. The **DU9** features a 5" touch screen. The **DU11** features a 7" touch screen and allows displaying various types of production documents. Both Data Units have a web based graphical intuitive user interface. On screen language selection allows to switch between several western and Asian languages on the spot. Both Data Units come with wired Ethernet as well as the proven BMSvision Bluetooth based wireless network interface.

The **DU2P** has no screen and keyboard and is used in combination with the **WEB-DU** for interaction with the operator. The **WEB-DU** application is used as HMI for a group of machines and can be implemented on any browser enabled touch screen device such as PC's and tablets. The individual machines are equipped with a **DU2P** for automatic data collection (production count and automatic stops) while all manual input and information display is handled via the **WEB-DU** application.

Data Unit specifications:

| | | DU11 | DU9 | DU2P |
|---|---|---|---|---|
| Inputs/outputs | Digital/counter inputs | 16 | 8 | 4 |
| | Relays | 5 | 5 | - |
| | Outputs (open collector) | - | - | 1 |
| | Serial ports | 2 | - | - |
| | USB ports | 2 | 2 | - |
| | Ethernet ports | 3 | 1 | - |
| Networking | Wireless (WDL) | ● | ● | ● |
| | Wireless Ethernet (WLAN) | - | ● | - |
| | Wired Ethernet | ● (PoE) | ● (PoE) | - |
| User interface | Display | color | color | - |
| | Touch screen | ● | ● | - |
| | Keyboard | touch | touch | - |
| Data integrity | Backup & Recovery [1] | ● | ● | - |

[1] This option allows a minimum of 24 hours local data storage in case of server or network breakdown.

## Individual spindle monitoring: SCU

On open end and texturing machines equipped with **BarcoProfile**, ring spinning machines with **OptiSpin** and twisters with **OptiTwist** individual spindle monitoring, a touch panel based industrial PC is used as Data Unit. All sensors on the machine are connected to this **SCU** via a high speed databus.

The standard screen on the **SCU** shows a graphical machine view with color coded spindle status and side by side machine details. Reports are available by shift and yarn lot.


BarcoProfile


OptiSpin


OptiTwist

## Monitoring spinning equipment

## Automatic data collection

Depending on the type of machine, various signals are available for automatic detection of production and machine status information. The table below shows an overview of automatic detections for various types of machines in the spinning process.

| | | Card | Drawframe | Comber | Roving frame | Ring spinning | Twister |
|---|---|:---:|:---:|:---:|:---:|:---:|:---:|
| Machine status (run/stop) | | • | • | • | • | • | • |
| Delivery speed (m/min) | | • | • | • | • | • | • |
| Spindle speed | | | | | | • | |
| Production (kg or m) | | • | • | • | • | • | • |
| Automatic stops | sliver break out | • | • | | | | |
| | sliver break in right | | • | | | | |
| | sliver break in left | | • | | | | |
| | doffing | • | • | • | • | • | |

## Available information

Depending on the type of machines, SPINMASTER offers both tabular and graphical reports about the information as listed in the table below.

| | | Card | Draw-frame | Comber | Roving frame | Ringspin-ning | Twister | Winding Open end spinning |
|---|---|:---:|:---:|:---:|:---:|:---:|:---:|:---:|
| Real time information | Graphical plant overview (PLANTVIEW) | • | • | • | • | • | • | • |
| | Machine status (run/stop) | • | • | • | • | • | • | • |
| | Production (kg or m) | • | • | • | • | • | • | • |
| Stop information (by stop reason) | Number of stops | • | • | • | • | • | • | • |
| | Stop time | • | • | • | • | • | • | • |
| | Time/stop | • | • | • | • | • | • | • |
| Machine efficiency | | • | • | • | • | • | • | • |
| Production efficiency | | • | • | • | • | • | • | • |
| Efficiency alarms and warnings | | • | • | • | • | • | • | • |
| Chronological events (stop cause map) | | • | • | • | • | • | • | • |
| Spindle per spindle information | | | | | | • [1] | | • [2] |
| History reports (shift, day, week, month) (tabular, graphs, trend reports) | | • | • | • | • | • | • | • |

[1] Only with OPTISPIN installed.

[2] Only with BARCOPROFILE clearers (open end) or Loepfe YarnMaster (winding).

## Spinning preparation and ring spinning





Efficiency trend by day ▲
◄ PlantView

## Machine monitoring

The Data Unit on the machine detects delivery speed and automatic stops such as doffing and hand stops. Additional information, such as manual stop declarations, operator log on/off and other administrative data is entered via the Data Unit keyboard.

On the color coded layout of the mill, the frames are pictured in certain colors, each color indicating the current machine status. The user selects the type of information to be displayed: production data, speeds, stop rates, efficiencies, ... User definable "filter sets" allow the user to display only these machines that correspond with a certain condition, for example all machines with an efficiency less than 90%, all machines waiting for an intervention, ...

Every user, even without having any programming knowledge, can define his own calculations and reports both in tabular and graphic format by means of a built in report and formula generator.

▶ Breakages in function of ring rail movement
▼ OptiSpin sensors in action
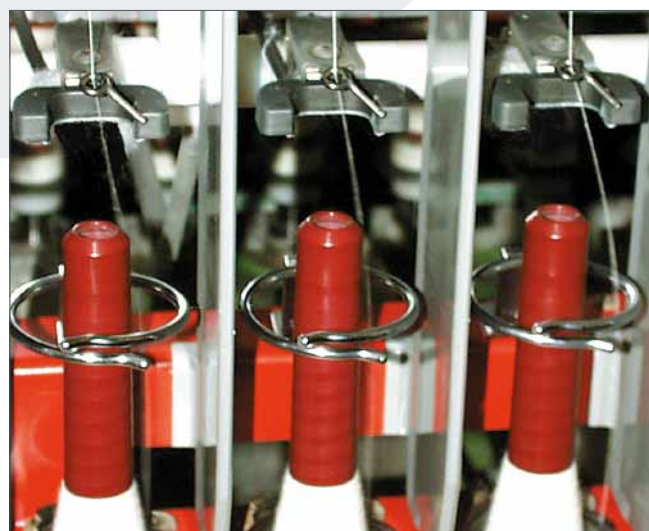


## Individual spindle monitoring

More and more spinning operations want to monitor the individual ring spindle for yarn breaks and spindle speed. OptiSpin, based on an individual optical sensor for each spindle, detects run/stop and speed, monitors the ends down level and reports slipping spindles.

Connected to SpinMaster, a vast amount of additional information is available in the database, which allows technicians to make a detailed ends down analysis and improve efficiencies. One mouse click on a particular ring frame allows the user to select any detailed report, such as spindles with the highest breakage level, slipping spindles per machine, yarn breaks as function of the bobbin build up, during up and down movement of the ring rail, ... Stops are always assigned to the right spindle, regardless the length of the machine.

Ends down levels, slipping spindles, frame and spindle efficiency are reported by doff, as well as by shift, day, week and month. Trend reports highlight recurring problem spindles.
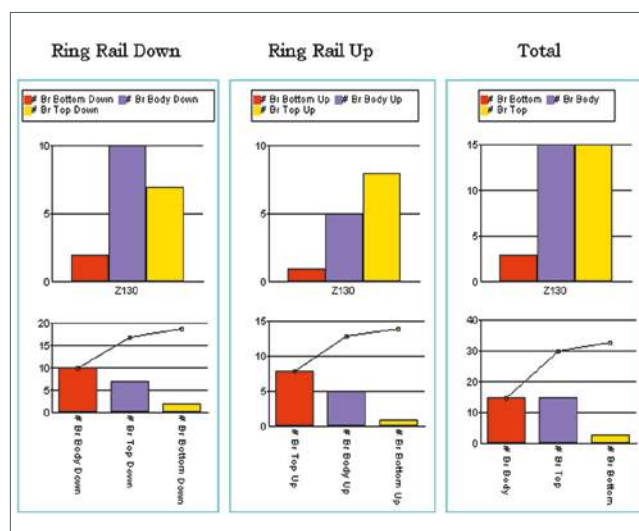
## OE spinning: OEMaster
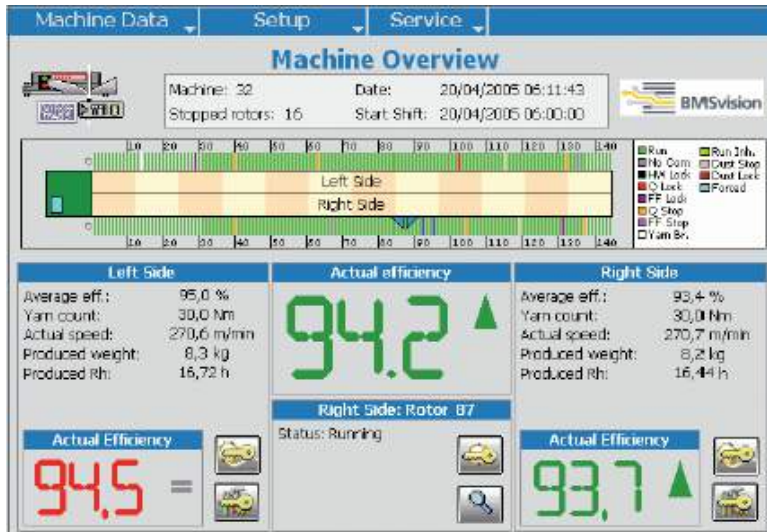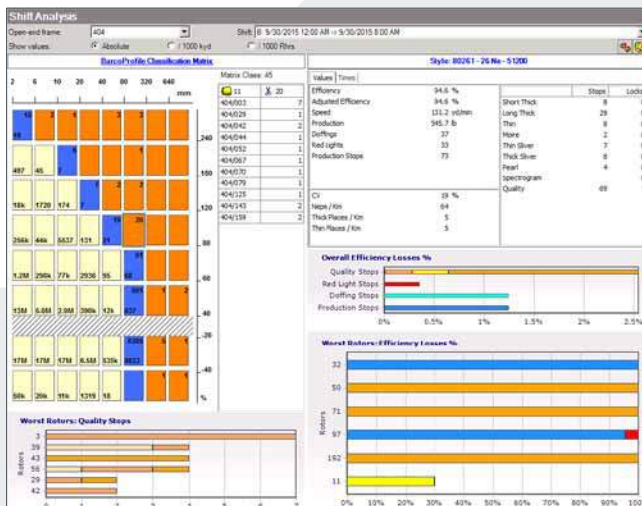


### Production monitoring

OE machines require monitoring of the individual production points. From each rotor, the following information is of importance to the OE plant manager:

• Run time and stop time
• Number of yarn breakages
• Number of yarn clearer cuts
• Number of red lights and red light time
• Number of doffings and doffing time

OE machines equipped with BarcoProfile, Corolab or Loepfe 1N1 and 3N1 yarn clearers can be connected to OEMaster without any hardware cost involved.

For machines with another clearer, OEMaster offers a special interface, called 3x4K, which is installed between the machine information system and the yarn clearer system.

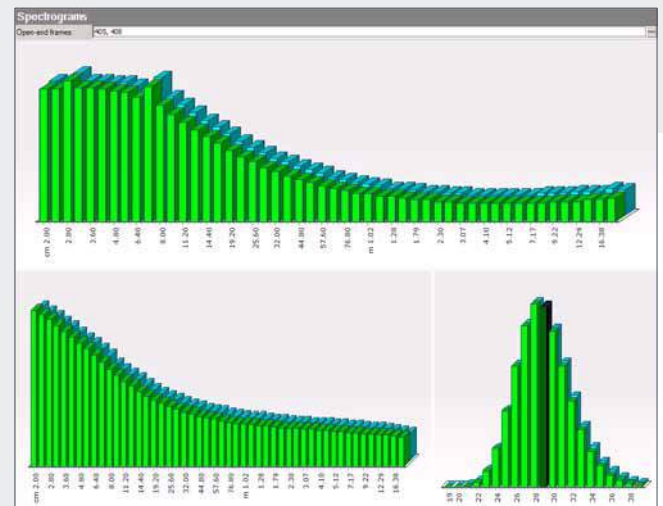▶ Spectrogram, CVL curve and histogram
▼ Shift overview report

▲ Loepfe clearers in action
◀ SCU machine overview screen

### Q Quality monitoring

Beside the production and stop information, OEMaster also provides all quality related information, such as:

• Defect classification
• CV% analysis
• Spectrogram analysis
• Sliver alarms and locks
• IPI values and statistics
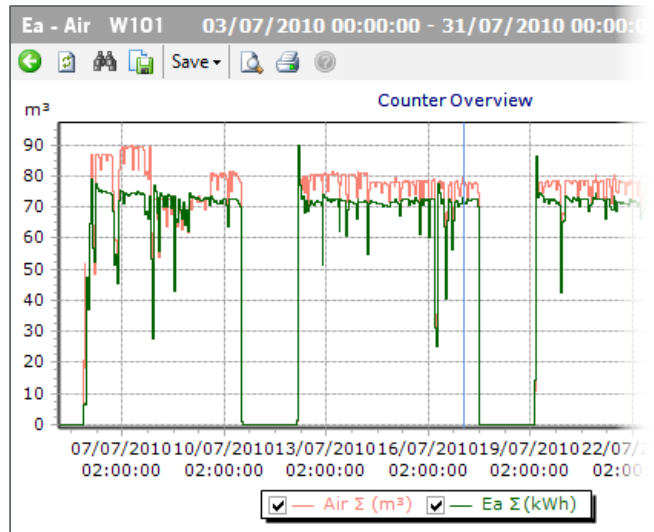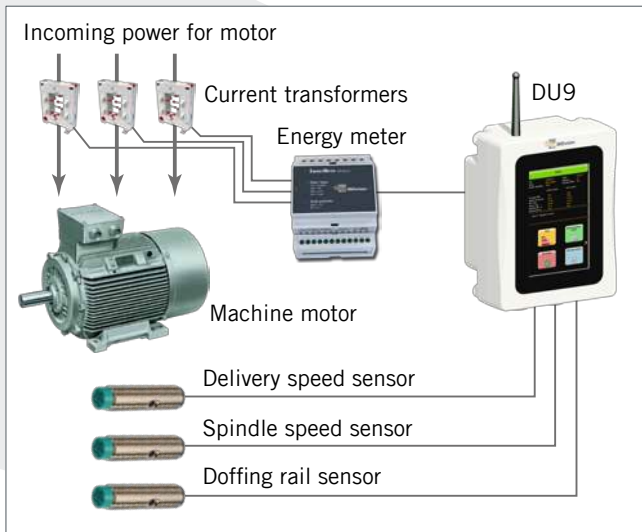• Moiré and pearl defects
• CVL curves

Also the clearer settings can easily be up-and down loaded between the central system and the yarn clearer system on the machine.

For machines equipped with ABS foreign fiber or Loepfe 3N1 clearers, foreign fiber related information such as number of foreign fiber cuts per rotor and foreign fiber classification, are also available in OEMaster.

*For a complete overview of our yarn clearing and quality monitoring solution, please ask for our BarcoProfile brochure A00527.*

## ➕ Options



Incoming power for motor
Current transformers
Energy meter
DU9
Machine motor
Delivery speed sensor
Spindle speed sensor
Doffing rail sensor



▲ Trend of electricity and compressed air consumption for a selected machine
◀ Monitoring power consumption

## 💡 Energy monitoring

With the ENERGYMASTER module, the SPINMASTER system is extended with a powerful tool to optimize the use of energy in the plant. Both power meters and compressed air sensors on the machines can be connected to the Data Units on the machines and consumption data is passed on to the server using the SPINMASTER data collection network. Correlating the production data (Kg of yarn produced) with energy consumption data allows the evaluation of the energy component in the overall production cost of the order or product.
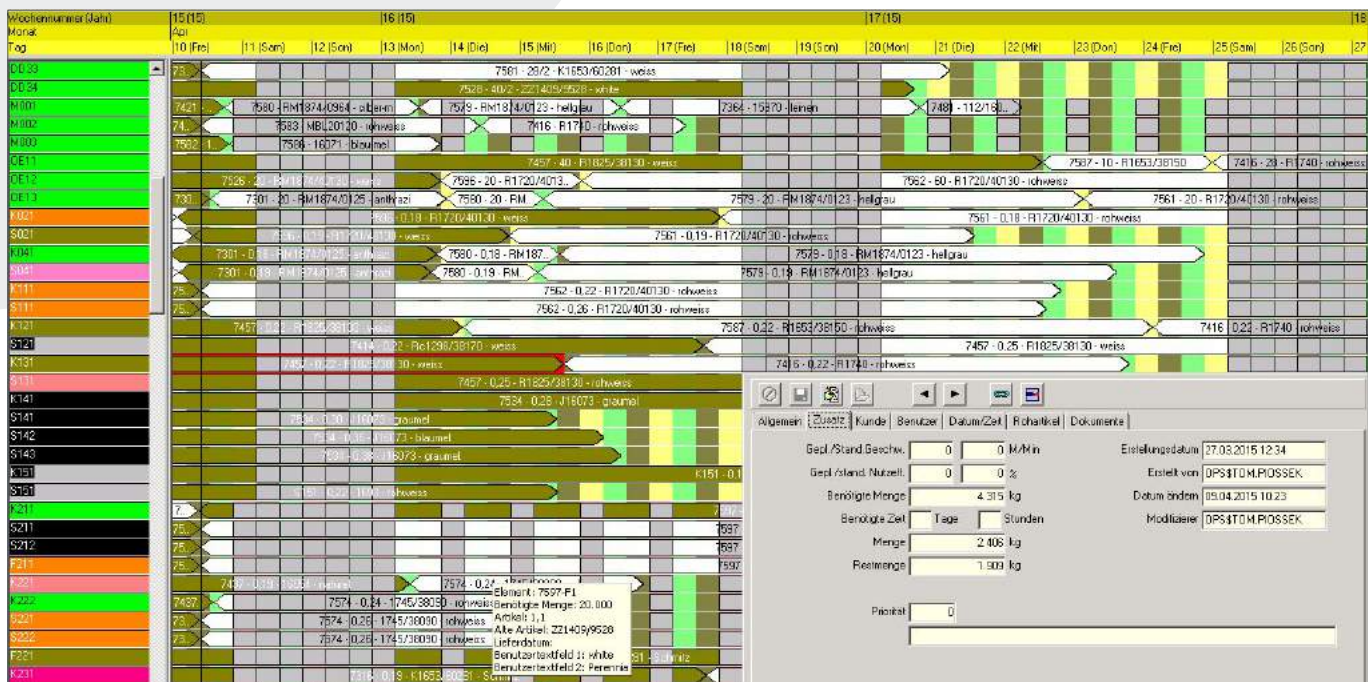
## Production scheduling

The SPINMASTER monitoring and reporting system can be extended with a module for real time production scheduling. Yarn lots to be produced are down loaded from the ERP system into the SPINMASTER database. By means of simple "drag & drop" the planner assigns the production orders to the individual machines, using the electronic planboard.

The PLANBOARD is updated in real time according to the information passed on by the monitoring system. Jobs which are too late are automatically highlighted allowing the planner to take the necessary actions to get the situation back under control.

▼ Real time production scheduling



*For a complete overview of our energy management software, please ask for our ENERGYMASTER brochure A00622.*

# References



PARKDALE
frontier Spinning mills
RSWM Limited
an LNJ Bhilwara Group Company

GILDAN®
PHIFER

BIRLA CENTURY
A DIVISION OF CENTURY TEXTILES AND INDUSTRIES LIMITED

TSI
Textile Secrets International Inc.

Raymond

DIE SPINNEREI NEUHOF
NEUHOF

CONE DENIM
PARRAS

UNIFI®

Milliken™

# SpinMaster modular concept

## QMaster
Statistical quality control (SQC)
Data import from lab equipment
Quality management reporting

## Monitoring and reporting
Real time data collection
Report and formula generator
Key Performance Indicators (OEE)

## Scheduling and order follow up
Real time graphical planboard
Ticket printing
Order status reporting
Yarn requirement calculation

## Energy monitoring
Analyze and optimize consumptions
Energy cost per style and order
Climate monitoring

**MES database**

## ERP interfaces
Download from orders and style data
Upload order progress
Upload production information

## OEMaster
Monitoring Open End machines
Clearer setting management
Connects with Corolab and Loepfe

## OptiSpin
Spindle by spindle monitoring
Real time yarn breakage detection
Yarn breakage classification

203272

## Traceability
From raw material to finished yarn
Trace back and forward
Where used

# BMSvision

www.bmsvision.com

© Belgian Monitoring Systems
Member of the **Savio**Group

In Pursuit of Productivity