Loepfe

YARN*MASTER*® 1N1 / 3N1

Instruction Manual LZE-V

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Document title: Instruction Manual YarnMaster 1N1/3N1
Revision: 2.X / 07.2014
Language: English / Original Instruction Manual

Table of Contents

Abbreviations

BDE	Production data collection
F	Foreign matter
IPI	Imperfections
LZE-V	Loepfe central unit (version V)
N / S / L / T	Neps / shorts / longs / thin places
OEM	Original Equipment Manufacturer
P	Synthetic foreign matter (Polypropylene)
Q	Quality
SE	Section electronics
SH	Sensing head
VCV	Yarn irregularities

1   General

1.1   Information on this Instruction Manual

1.1.1   General

This Instruction Manual allows safe and efficient operation of yarn clearer system YarnMaster 1N1/3N1.

The basic prerequisite for safe working is compliance with all specified safety information and instructions in this Instruction Manual.

Operation as prescribed and thorough maintenance of the yarn clearer system ensure optimum clearer performance, trouble-free operation as well as a high service life of the yarn clearer system.

ⓘ	If anything is not clear, contact the supplier for your own safety.

1.1.2   Duty to Read this Manual

Prior to any work, the personnel must have thoroughly read and understood this Instruction Manual and, in particular, the safety information.

1.1.3   Availability of Instruction Manual

The Instruction Manual is part of yarn clearer system YarnMaster 1N1/3N1 and must be kept in direct vicinity of the equipment and accessible for personnel at all times.

When the equipment is sold, this Instruction Manual must be handed over to the buyer.

1.1.4   Loss of Instruction Manual

If you lose the Instruction Manual, ask for immediate replacement.
For contact data, see page 3.

1.2 Explanation of Symbols

In this Instruction Manual, safety information is marked with symbols and signal words which express the extent of the hazard.

The safety information must be strictly observed to prevent accidents, personal injuries and damage to property.

1.2.1 Symbols

General danger

Voltage (Electrical hazard)

Risk of burns

Highly inflammable

Electrostatically sensitive components and assemblies

Grounding connection

Material damage

1.2.2 Signal Words

DANGER   Indicates an imminently hazardous situation which will result in death or serious injury.

WARNING   Indicates a potentially hazardous situation which may result in death or serious injury.

CAUTION   Indicates a potentially hazardous situation which may result in minor or moderate injury.

ATTENTION   Indicates a potentially hazardous situation which may result in damage to property.

1.2.3 Information

Useful hints and recommendations.

1.3 Liability

1.3.1 Information in this Manual

The information and safety information in this Instruction Manual have been compiled with consideration of the applicable standards, directives and regulations, the state-of-the-art and many years of experience.

ⓘ	The screenshots in this Instruction Manual serve for illustration. They are not to be used as examples for setting.

1.3.2 Delivery

In addition to the contractually agreed obligations, the manufacturer's General Terms and Delivery Conditions are applicable.

1.3.3 Technical Modifications

Loepfe Brothers Ltd. will not be liable for damage and accidents resulting from the following:

- Unauthorized conversion and modification of the yarn clearer system
- The use of spare parts/non-OEM parts/conversion parts not supplied by us

1.3.4 Improper or False Application

Loepfe Brothers Ltd. will not be liable for damage and accidents resulting from the following:

- Improper user of the machine
- Failure to comply with the information and notices in this Instruction Manual

1.3.5 Inadequate Maintenance

Loepfe Brothers Ltd. will not be liable for damage and accidents resulting from the following:

- Neglected or inadequate maintenance
- Failure to comply with the instructions described in the "Maintenance" chapter

1.3.6 Loss of Data

Loepfe Brothers Ltd. will not be liable for damage resulting from the following:

- Loss of data and operating failures caused by possible malfunctions or defects of the machine and / or software

2 Safety

2.1 Responsibility of Operating Company

2.1.1 Basic Information

The operating company of yarn clearer system YarnMaster 1N1/3N1 is subject to the legal requirements for industrial safety.

It is responsible for

- safe and proper operation of the yarn clearer system
- qualification, training and employment of qualified personnel

2.1.2 Responsibilities

The operating company shall define the responsibilities and competences for operation and maintenance of the yarn clearer system and appoint the responsible persons.

2.2 Requirements for Personnel

2.2.1 Inadequate Qualification

⚠️ **WARNING**	**Risk of injuries and damage through inadequate qualification!** Improper handling can result in severe personal injuries or damage to the yarn clearer system.
	▷ *Installation, operation and maintenance must be performed only by qualified specialized personnel.*

2.2.2 Specialized Personnel

The following qualifications for the different areas of activity are specified in this Instruction Manual:

- **User**
  The user is a person qualified and trained for operation and maintenance of the yarn clearer system.
- **Service technician**
  The service technician is a Loepfe employee qualified and trained for servicing the yarn clearer system or a person expressly named by Loepfe for this task.

2.3 Use

2.3.1 Intended Use

Yarn clearer system YarnMaster 1N1/3N1 has been designed and built for online yarn monitoring and clearing of undesired yarn faults on openend spinning machines from various manufacturers.

The yarn clearer system must be installed and operated with observation of the Instruction Manual and the included instructions.

2.3.2 Incorrect Use

Any other or incorrect use of the clearer is considered as incorrect use and can result in dangerous situations.

Claims of any kind resulting from damage because of incorrect use are excluded.

2.4 Special Risks

2.4.1 Electric Current

DANGER

Danger to life due to electric voltage!
Immediate danger to life when touching live parts.

▷ *Work on electrical equipment must be performed by persons with the appropriate qualification.*

▷ *Only perform maintenance work on electric components when these are switched off, disconnected from the mains and potential-free.*

▷ *The yarn clearer system may be connected to the power supply system only when all front panels, plug-in boards and provided covers, especially on the central unit, are installed.*

▷ *The yarn clearer system may be operated only with the standard local line voltage/frequency and with a grounded protective ground contact.*

2.4.2 Unauthorized Modifications

WARNING

Risk of injuries and damage by unauthorized modification of the yarn clearer system!

▷ *Conversions or modifications of the yarn clearer system must be agreed with Loepfe.*

The manufacturer will not be liable for damaged caused by unauthorized modification of the yarn clearer system.

2.4.3 Electrostatic Charging

> ![ATTENTION] **Electronic components and assemblies (printed circuit boards) are endangered by electrostatic charges!**
> Possible damage when touching the components!
>
> ▷ *Hold assemblies only at the edge.*
>
> ▶ *Do NOT touch soldered connectors, pin contacts, printed circuits or electronic components.*

2.5   Safety Devices (Emergency-stop Button)

Yarn clearer system YarnMaster 1N1/3N1 is integrated in a openend spinning machine and has no additional safety devices.

> 🛈 For detailed information on the safety devices, e.g. emergency-stop button: See Instruction Manual of the openend spinning machine.
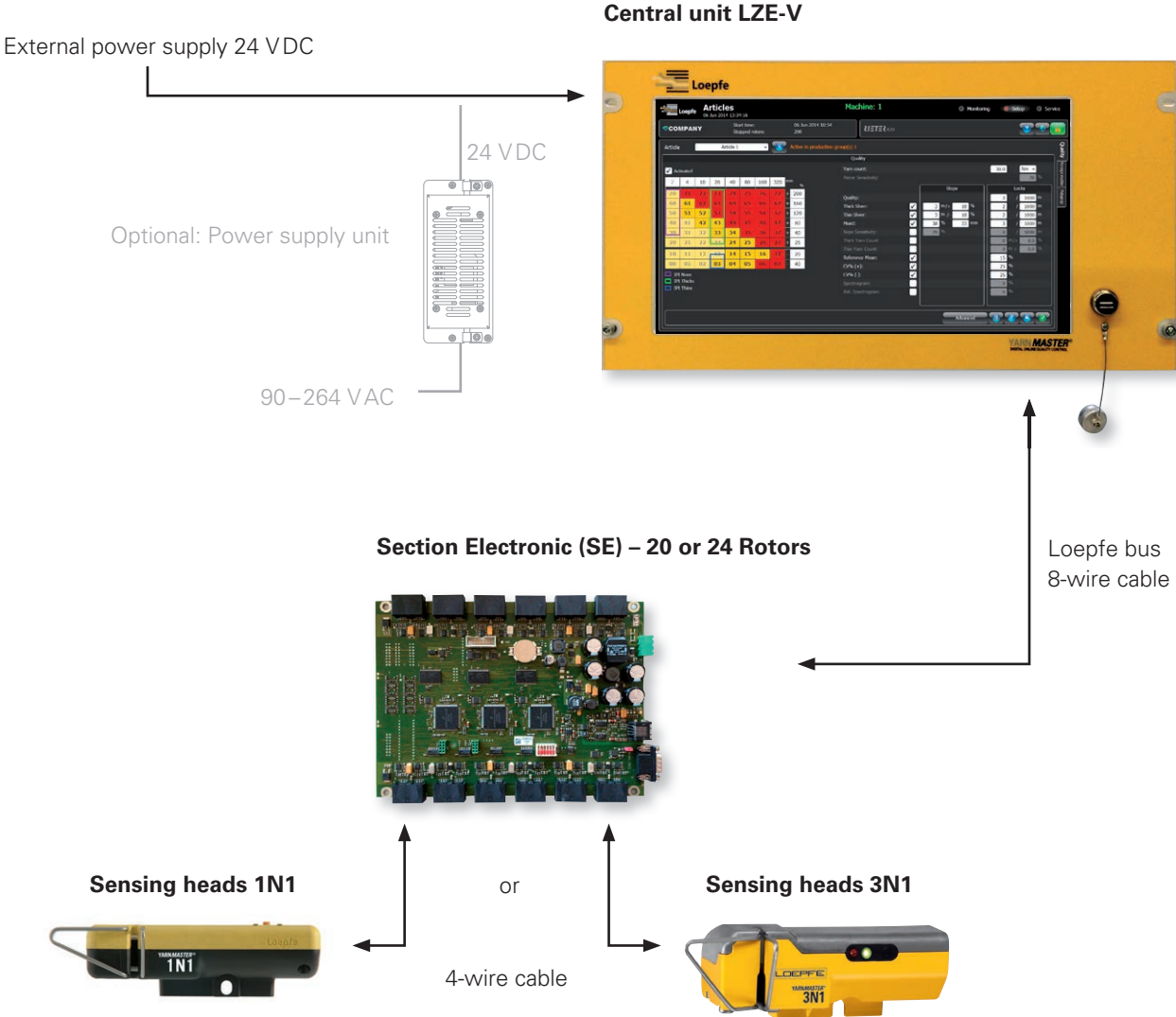
3   Product Description

3.1   General

Yarn clearer system YarnMaster 1N1/3N1 serves to clear yarn faults and foreign matter (only 3N1) as well as quality monitoring in the spinning shop. It is installed in openend spinning machines from various manufacturers.

The collection of the yarn faults is based on the optical measuring principle.

3.2   Equipment Configuration

Yarn clearer system YarnMaster 1N1/3N1 consists of the following components:

- Central unit LZE-V
- Section electronics (SE)
- Sensing head TK YM 1N1/3N1

Central unit LZE-V

External power supply 24 V DC

24 V DC

Optional: Power supply unit

90 – 264 V AC

Loepfe bus
8-wire cable

Section Electronic (SE) – 20 or 24 Rotors

Sensing heads 1N1   or   **Sensing heads 3N1**

4-wire cable

All cable connections are pluggable.

3.2.1 Central Unit LZE-V
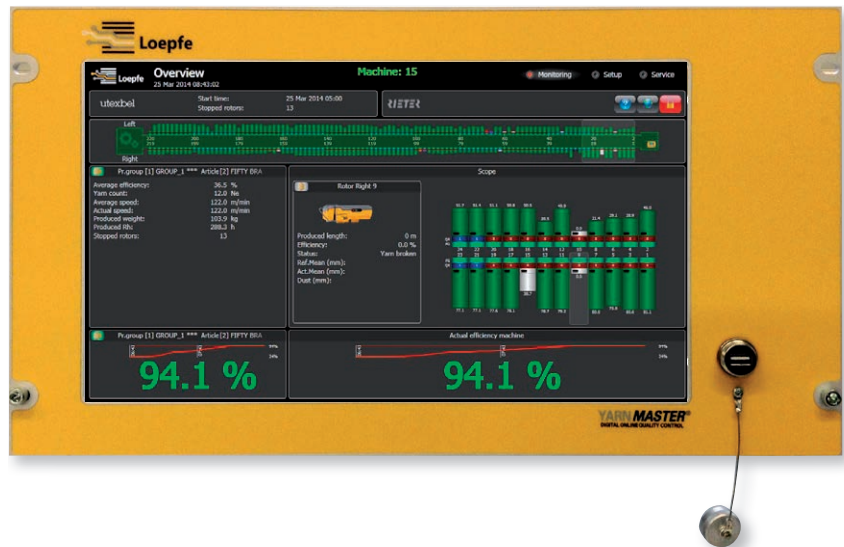
Central unit LZE-V consists of the following components:

- Computer
- User interface (touchscreen 15.6 inches)
- USB port for data transfer
- Central unit software

Functions:

- Control and monitoring of yarn clearing
- Communication with sensing heads (transfer of clearer settings)
- Processing, logging and saving of operating and quality data
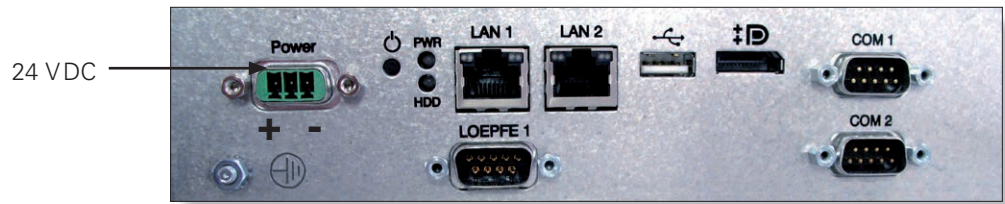
LZE-V Connections

Front

USB interface (USB port) for import / export of settings and data as well as screenshots.

A removable cap protects the USB interface from dust and humidity.

Rear (left)

24 V DC

Marking	Type	Description		
Power	Sub D PSC	Power supply 24 V DC		
		Contact 1 (**+**) 24 V DC		
		Contact 2 not connected		
		Contact 3 (**–**) 0 V DC		
		⚠️ **ATTENTION** Only 24 V DC may be supplied to this connection!		
⏚ (Threaded connection symbol)	Threaded connection	Protective ground		
		⚡ **DANGER** This separate grounding point must be connected with the protective ground!		
PWR	LED green / red	Power supply OK		
HDD	LED red	Compact-flash drive active		
⏻	Microswitch (Power ON/OFF)	LED green	Tap < 1 second	Switch to standby mode controlled by operating system (LED becomes orange)
		LED green	Press > 1 second	Only in emergencies! Forced, uncontrolled switch to standby mode (LED becomes orange)
		ℹ️	Unsaved data are lost!	
		LED orange	Tap < 1 second	Start (LED becomes green)
LAN 1 / LAN 2	RJ45	Port LAN 10/100/1000 MBit/s		
⟜ (USB symbol)	USB 2.0	USB port		
‡D (Display port symbol)	Display port (HDMI)	DP, maximum resolution 1600 x 1200		
COM 1	Sub-D, 9-pole connector	RS 485		
COM 2	Sub-D, 9-pole connector	RS 232		

Rear (right)
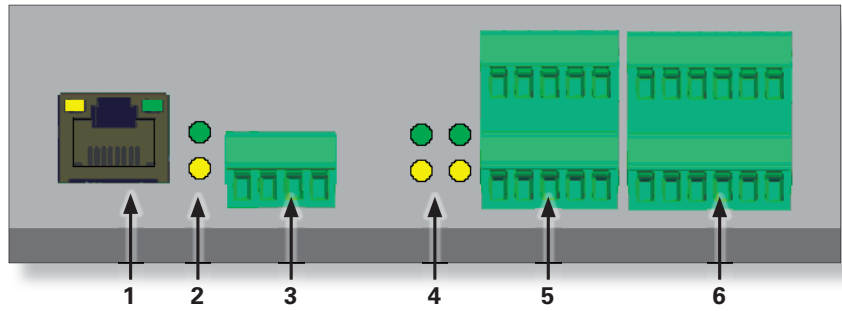
1 Q-bus	**4** Input status LEDs
2 4k status LEDs	**5** Input signals
3 4k connector	**6** Output signals

3.2.2 Section Electronic (SE)

The SE-board is the interface between the control unit and a section of sensing heads. It processes all quality data from the sensing heads.

3.2.3 Sensing Head YM 1N1/3N1

The sensing head consists of the following components:

- Sensors for the collection of yarn faults
- Integrated electronics
- Software
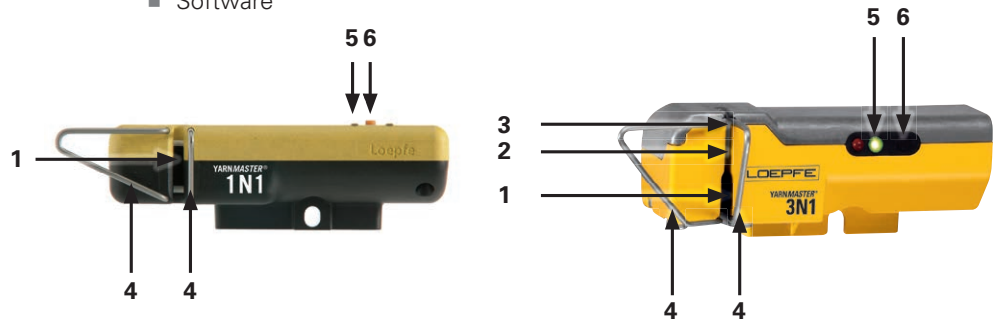
1 Optical element for scanning the yarn diameter
2 Optical element for scanning foreign matter
3 P sensor
4 Yarn guide device
5 TK status LED
6 TK button

Sensing Head Variants	TK YM 1N1	Collections of yarn faults
	TK YM 3N1	Collections of yarn faults, foreign matter and synthetic foreign matter (PP, PE, etc.)

Yarn Count Range	TK YM 1N1 / 3N1	Limit range coarse:	Nm 5.0 / Nec 2.95
		Limit range fine:	Nm 100 / Nec 59.05

3.3 TK Status LED

During normal operation, the red LED is off and the green LED blinks shortly. If there is a quality or other problem, the way the LEDs light up or flash indicates the kind of lock, stop or problem. Check the Machine overview page for details.
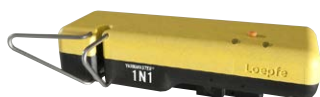
Sensing Head LEDs	Status and Color		Descriptions	Unlock Method	
				On LZE-V or with the TK button	
◄●► Green running light ○ Red off (normal operation)	Run	🟩 Lime green	Yarn running	—	—
	Yarn br.	⬜ White	Yarn broken		
	Run inh.	🟩 Green yellow	Piecing in progress (run inhibit)		
	Q stop	🟧 Orange	Q stop		
	F stop	🟪 Fuchsia	Stop: F_LNG, F_127, F_129		
	P stop	🟦 Blue	Stop: P_LNG, P_127, P_129		
✺ Green slow blink ✺ Red fast blink	Q stop	🟧 Orange	Piecer quality stop	This status disappears on run inhibit.	
● Green on ○ Red off	Q lock	🟥 Red	Ref. mean lock	🔒	Ref. Mean
✺ Green slow blink ○ Red off	Q lock	🟥 Red	Thin/thick yarn count lock	🔒	Ref. Mean
✺ Green fast blink ○ Red off	Q lock	🟥 Red	Thin/thick sliver lock	🔒	Sliver
○ Green off ● Red on	Q lock	🟥 Red	Quality lock & Pearl lock	🔒	Quality
	F lock	🟪 Purple	F cluster lock long: F_130, F_LCK	🔒	F
○ Green off ✺ Red fast blink	Q lock	🟥 Red	Moiré lock	🔒	Moiré
● Green on ✺ Red slow blink	F lock	🟪 Purple	F lock	🔒	F
	P lock	🟦 Teal	P lock	🔒	P
● Green on ✺ Red fast blink	Q lock	🟥 Red	CV% lock	🔒	CV%
	Q lock	🟥 Red	IPI neps/thin/thick lock	🔒	CV%
✺ Green fast blink ● Red on	Q lock	🟥 Red	Spectrogram alarm lock & Remote spectrogram lock	🔒	Spectr.
● Green on ● Red on	Dust lock	🟫 Brown	Dynamic/static dust lock	Clean sensing head	
✺ Green fast blink ✺ Red fast blink	Forced	🟦 Cyan	Forced stop	This status disappears on run inhibit.	
	HW lock	⬛ Black	Can't stop lock, Forced locks & Hardware lock	🔒	Unlock only via LZE-V
○ Green off ○ Red off	No comm.	⬜ Gray	No communication, unlock, new mean	Consult technician.	

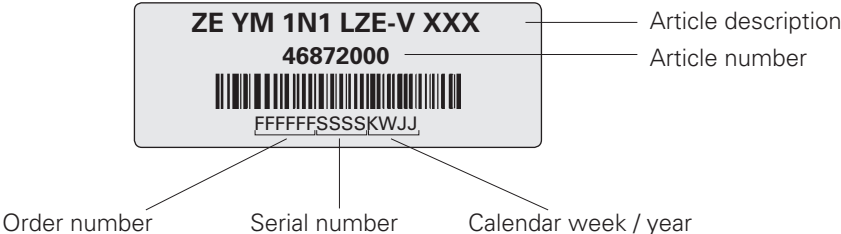## 3.4   Clearer Functions / Clearer Variants

P Clearing

- Clearing of synthetic foreign matter PP PE etc.
- Matrix setting and classification
- P cluster clearing

F Clearing

- Clearing of foreign matter
- Matrix setting and classification
- Foreign matter cluster clearing

Quality

- Clearing
  N Neps
  S Short Faults
  L Long faults
  T Thin places
- Yarn count channel
  Thin and thick count
- Sliver channel
  Thin and thick sliver
- Moiré
- Piecer clearing
  (depends on machine type)
- Yarn irregularities CV%
- Imperfections (IPI)
- Classification of faults
- Online laboratory Graphics (Q-Pack)
  Variation of yarn (CVy)
  Variation of hairiness (CVh)
  Variation of sliver (CVs)

YARN*MASTER* TK YM 1N1	**YARN*MASTER* TK YM 3N1**

3.5 Identification of Components / Article Description

3.5.1 Type Plates

Central unit

ZE YM 1N1 LZE-V XXX	— Article description
46872000	— Article number
‖‖‖‖‖‖‖‖‖‖‖‖‖	
FFFFFF SSSS KW JJ	

Order number   Serial number   Calendar week / year

Sensing head

YM 1N1

Loepfe article number

Order number

46760000
1004153   C E   [barcode] — Barcode
4213 0001

Consecutive serial number

Calendar week / year

YM 3N1

Loepfe article number

[barcode]   **905264000**
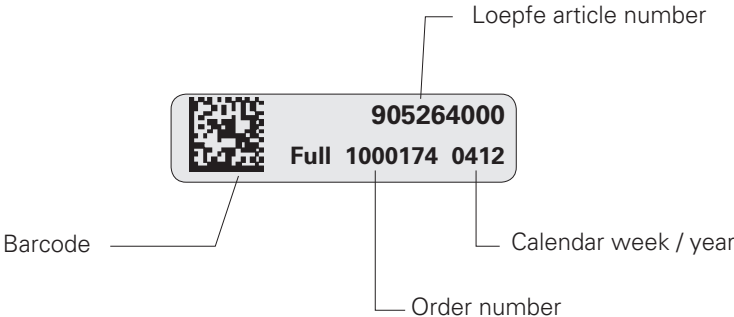**Full 1000174 0412**

Barcode

Calendar week / year

Order number
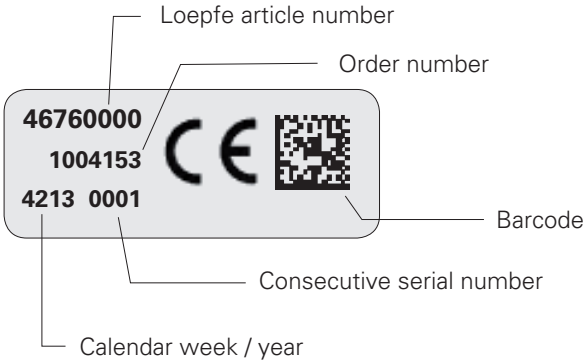
> ℹ️ State the data on the product type plates when ordering spare parts or when you require technical support.

4 Technical Data (Changes reserved)

System

Concept	Modular, integrated in spinning system / components individually replaceable / Power supply depends on machine type
LZE-V	One control station per machine / Date and time indication / Data memory in case of power failure / Bus connection to section electronic / Data connection to machine control station LAN connection to local network
Operating	Setting of the conventional clearing parameters via touch screen
Operating temperature	+5° up to +50° C
Humidity	Up to max. 95% relative humidity not condensing
Section electronic	1 board per section (20/24 rotors)
Sensing head	1 sensor per rotor
Range of application	For staple-spun yarn of natural, synthetic or blends

Central Unit (LZE-V)

LZE-V	Color display with graphics capability, backlit, touch screen 15.6 inches
Connection	All types of machine: 24V DC SELV, +25%/-15% Max. current: 4A / Fuse: 2xT3.15AL
Capacity of OE Spinning machine	Max. 700 rotors
Settings/side	Up to 2 settings, depending on machine type
Dimension	Approx. 483 x 266 x 70 mm (W x H x D)
Max. power consumption	Typically 30 Watt
Weight	Approx. 5.0 kg
Printing	Printout via USB stick

Section Electronic (SE)

SE-Board Schlafhorst	24 rotors
SE-Board Rieter	20 rotors
Spinning speed	Up to 400 m/min
Max. power supply and consumption (incl. SH)	Basic: max. 675 mA at 24V DC SELV, +25%/-15% Full: max. 750 mA at 24V DC SELV, +25%/-15% Max current: 1.1A/fuse: 1xT2AL.

Sensing Head

YM 1N1	1 sensor for diameter measurement integrated
YM 3N1	3 sensor for Q/F/P measurement integrated

Yarn Count Range (Optical scanning principle)

TK Type	Limit Range Coarse	Limit Range Fine
Sensor 1N1/ 3N1	Nm 5 / Nec 2.95	Nm 100 / Nec 59.05

Parameter Settings

Settings for thick and thin places

Default values	Valid values	To disable, set to
Matrix lengths in mm		
4, 10, 20, 40, 80, 160, 320	2 to 8, 6 to 18, 12 to 38, 22 to 78, 42 to 158, 82 to 318, 162 to 840 and between the lower length + 2 mm and the higher length – 2 mm.	—
Matrix diameter deviations in %		
-40, -20, 25, 40, 80, 120, 160, 200	-26 to -50, -20 to -34, 25 to 34, 31 to 74, 46 to 114, 86 to 154, 126 to 194, 166 to 350	—
Activated matrix squares for quality stop		
Default activated matrix squares: 71, 62, 53, 44, 35, 26, 17, 07	All matrix fields can be activated, except 01, 02, 11, 12, 13, 21, 22, 23, 31, 32 and 41.	Deselect/select matrix square
Piecer classification		
Sensitivity: 70 %	50 to 150 %	0 %
Moiré		
Rotor diameter: 33 mm	20 to 70 mm	
Yarn diameter deviation: +38 %	20 to 99 %	0 %
Sliver stops		
Thin place. Length: 3 m. Diameter deviation: -18 %.	1 to 9 m 2 to 30 %	0 m
Thick place. Length: 3 m. Diameter deviation: +18 %.	1 to 9 m 2 to 30 %	0 m
Yarn count lock		
Disabled	Length: 10 to 1000 m Deviation: 0.3 to 20 %	0 m
Neps or pearl channel		
Neps with respect to the reference mean: +50 %	+5 to +170 %	0 %
Spectrogram analysis		
Maximum statistically secured wavelength: 300 m	37 to 300 m	0 m
Spectrogram lock: 0 %	10 to 255 %	0 %
Reference spectrogram lock: 0 %	10 to 255 %	0 %
Lock functions		
Quality lock: 3 stops per 1000 m	1 to 9 stops per 1000 to 16000 m	0 stops
Moiré lock: 3 stops per 1000 m	1 to 9 stops per 1000 to 16000 m	0 stops
Sliver lock: 2 stops per 1000 m (thick, thin)	1 to 9 stops per 1000 to 16000 m	0 stops
Neps lock: 3 stops per 5000 m	1 to 9 stops per 1000 to 16000 m	0 stops
Reference mean value lock: 15 %	4 to 30 %	0 %
CV% lock: 25 % (+ and -)	4 to 50 %	0 %
Unlock switch: 0 (switched off)	0,1,2	0

Settings for foreign matter detection

Default values	Valid values	To disable, set to
Matrix lengths in mm		
10, 14, 20, 24, 30, 34, 40	2 to 12, 12 to 18, 16 to 22, 22 to 28, 26 to 32, 32 to 38, 36 to 198 and between the lower length + 2 mm and the higher length – 2 mm.	—
Matrix intensity values		
4, 16, 17, 19, 21, 25, 31, 45	4 to 15, 5 to 16, 17 to 18, 18 to 20, 20 to 24, 22 to 30, 26 to 44, 32 to 99	—
Activated matrix squares for foreign matter stop		
Default activated matrix squares: 71, 62, 53, 44, 35, 26, 17	All matrix fields can be activated, except 01, 02, 03, 04, 11, 12, 13, 21, 22, 31	Deselect/select matrix square
Stops		
Cluster detection: 1	1 to 9 (1= highest sensitivity)	0
Locks		
Long cluster detection: 2	1 to 9 (1= highest sensitivity)	0
Lock: 5 stops per 5000 m	1 to 9 stops per 1000 to 16000 m	0 m (10.4)

Settings for polypropylene detection

Default values	Valid values	To disable, set to
Matrix lengths in mm		
16, 22, 28, 34, 40, 160, 198	2 to 20, 18 to 26, 24 to 32, 30 to 38, 36 to 44, 42 to 50, 48 to 200 and between the lower length + 2 mm and the higher length – 2 mm.	—
Matrix intensity values		
5, 10, 15, 20, 25, 30, 35, 40	5 to 9, 6 to 14, 11 to 19, 16 to 24, 21 to 29, 26 to 34, 31 to 39, 36 to 99	—
Activated matrix squares for polypropylene stop		
Default activated matrix squares: 71, 62, 53, 44, 35, 26, 17	All matrix fields can be activated, except 01, 02, 03, 04, 11, 12, 13, 21, 22, 31	Deselect/select matrix square
Stops		
Cluster detection: 1	1 to 9 (1= highest sensitivity)	0
Locks		
Long cluster detection: 0	1 to 9 (1= highest sensitivity)	0
Lock: 5 stops per 5000 m	1 to 9 stops per 1000 to 16000 m	0 m

5 Operation of LZE-V

5.1 General

The 1N1 / 3N1 yarn clearer system is controlled for all openend spinning machine types via central unit LZE-V.

Machine-specific differences in operation or in the settings are possible and have been stated accordingly in the instructions.

All clearer functions are described in this Instruction Manual.

Individual functions are not available depending on the clearer components installed and the software options.

> The screenshots in this Manual serve for illustration. They are not to be used as examples for setting.

5.2 Safety

5.2.1 General

Prior to any work, the personnel must have thoroughly read and understood this Instruction Manual and, in particular, the "Safety" chapter.

5.2.2 Personnel

This yarn clearing equipment must only be operated by qualified and authorized personnel.

Authorized persons: see chapter 2.2 "Requirements to Personnel".

> If anything is not clear, contact the supplier for your own safety.

5.2.3 Intended Operation

⚠ **CAUTION**

Risk of injuries and damage if the equipment is not operated as intended!
If the equipment is not operated as intended, this could result in overheating, fire, contamination or electrical noise.

▷ *Only operate the yarn clearer system with the covers installed.*

5.3 Central Unit LZE-V
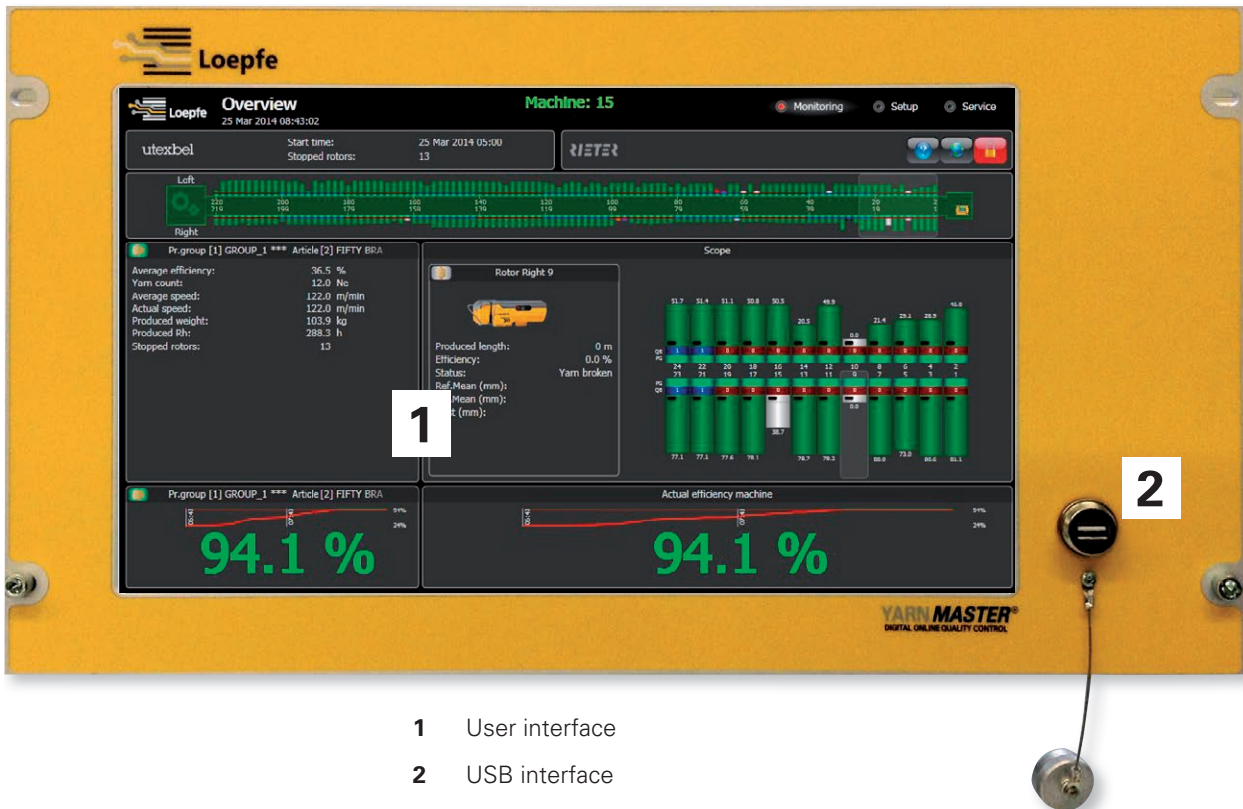
1 User interface

2 USB interface

5.3.1 Monitor

Operation/entry is performed by applying light pressure on the touch-sensitive screen (touch-screen) of the monitor.

> **!**
>
> ***ATTENTION!***
> Risk of damage by incorrect handling of surface!
>
> ▷ *Operation by tapping with the finger or a blunt, non-metal object (e.g. tablet pen)*
>
> ▷ *Clean monitor with a soft cloth*
>
> ▷ *Remove severe contamination with a moist cloth.*
>
> ▶ *Do NOT use a pointed, metallic object as this could damage the monitor surface!*
>
> ▶ *Do NOT clean monitor with aggressive cleaners!*

5.3.2 USB Interface

USB interface for import / export of settings and data; and for screenshots.

A removable cap protects the USB interface from dust and humidity.

5.4   User Interface / Navigation
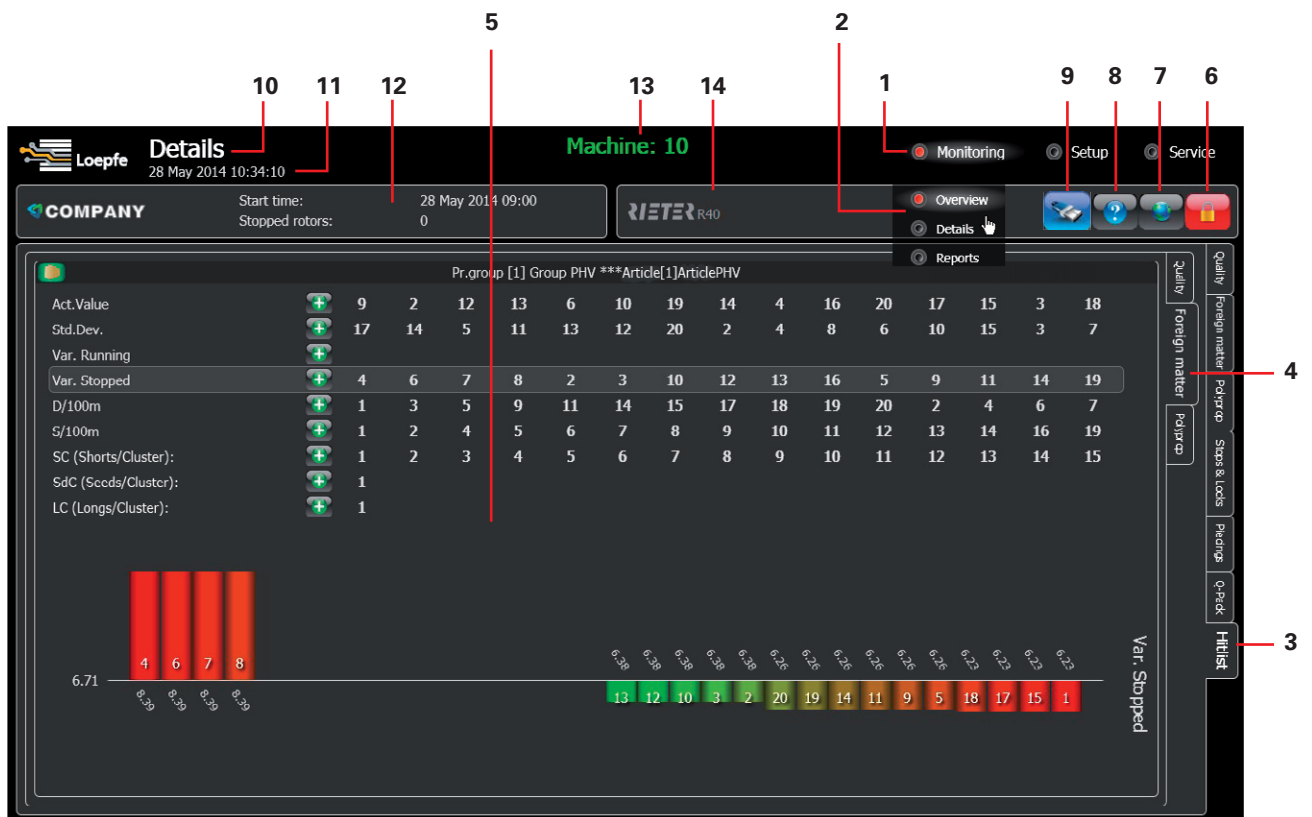
1   1st level menu navigation

2   2nd level menu navigation

3   1st level tab navigation

4   2nd level tab navigation

5   Detail page

6   Lock / unlock

7   Language selection

8   Help

9   USB device

10   Page name

11   Date and time

12   Shift start date and time / Number of stopped rotors

13   Machine number

14   Machine type

5.4.1   Menu Overview

Monitoring			
	>	>	>
Overview			
Details	Quality	-	
	Foreign matter	-	
	Polyprop	-	
	Stops and Locks	-	
	Piecings	-	
	Q-Pack	-	
	Hitlist	Quality Foreign matter Polyprop	
Reports	-	-	

Setup			
	>	>	>
Machine	Configuration	-	
	Shifts	-	
	System	-	
Articles	Quality	-	
	Foreign matter	-	
	Polyprop	-	
Production groups	-	-	

Service			
	>	>	>
Diagnostics	Versions	-	
	Events	-	
	Tests	Force stops	
	Loggings	-	
	External	-	
	Input / Output	-	

5.4.2 Function Buttons (additional buttons explained per page)

	Language selection
/	Unlock / lock
	Online help
/	Next / previous page/list. Select next / previous option/value.
	Enter rotor number
/	Previous / next rotor. Hold for fast scrolling.
	Switch machine side
	Refresh the displayed data
	Warm restart
	Cold restart / reboot the SCU
/	Switch hitlist order
/	Scroll the list
	Replace the settings by the default settings. Touch "Yes" to apply the default settings.
	Undo changes
/	Add / remove rotors
	Save the entered data (all changes need to be confirmed)
	Touchscreen calibration
	Show events for all rotors

	Filter events
	Rename article
	Archive manipulation
	Open USB possibilities
	Go to the operating system

5.5 Language Selection

The required operator language can be selected.

5.6 User Password

Default: 123

- Enter the password and confirm.
- The password can be changed individually: Setup > Machine > Configuration
- Qualified personnel can touch the lock button and enter the service password.

Change to capital letters and alternative characters with "Cap" and/or "Alt Gr" button.

5.7 Data Entry

A data input window opens for all setup changes.

Information about the selected parameter , the possible limit range for the parameter (...) and the incrementation value «...» is shown on the top of the data entry window.

Data entry needs to be confirmed twice with , once in the data entry window and once in the corresponding main window.

Numeric data entry

Change to capital letters and alternative characters with "Cap" and/or "Alt Gr" button.

Alphanumeric data entry

5.8 Base Settings

5.8.1 Configuration

Setup > Machine > Configuration
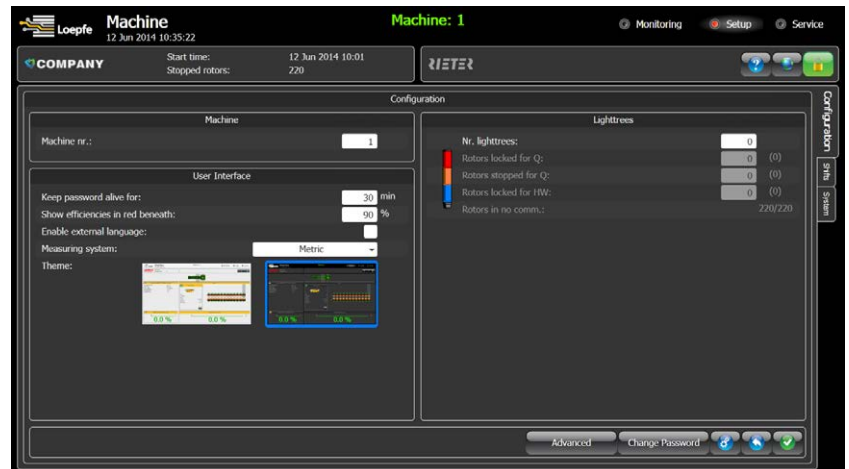
- Machine
    - Set a machine number
- User interface
    - Set time-out (min) for the password
    - Set limit for the minimum target efficiency. Once the efficiency of the selected production group or the entire machine is below the set value, the efficiency on the Overview screen will be displayed in red.
    - Enable external language (only possible with a 4k or CAN connection that provides this data).
    - Select your measuring system
    - Select your GUI theme
- Light trees
    - Optional if a light tree is connected to the LZE-V

Set an individual password.

| | Advanced settings should only be entered and changed by an authorized Loepfe service technician. |

5.8.2 Shifts

Setup > Machine > Shifts
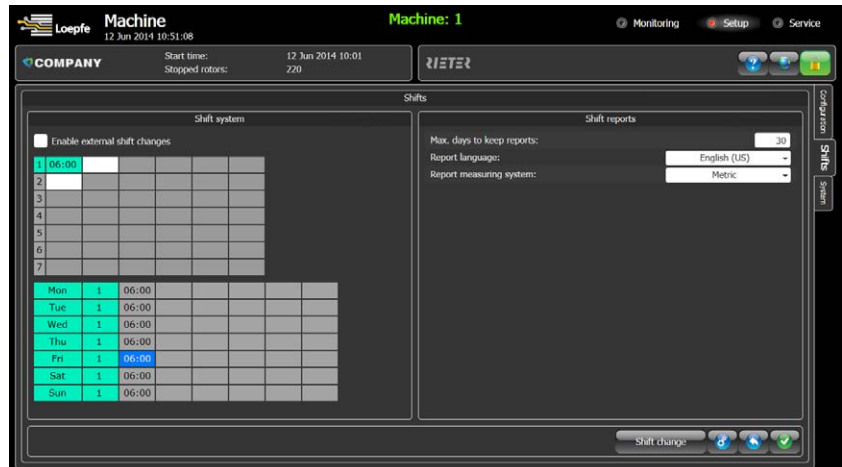
- Shift system

  – Enable external shift cycles if the machine central unit provides this information.

  – It is therefore possible to set up to 7 different shift cycles manually. Therefore determine the shift cycle per day (2nd column).

- Shift reports

  – Set the time to keep reports in the memory.

  – Set the report language.

  – Set the report measuring system.

5.8.3 System

Setup > Machine > System

- Date & Time

  – Set date, time and time zone of the LZE-V.

- Network

  – Set a network connection for remote access.

5.9 Group Administration

Setup > Production Groups

With LZE-V it is possible to run up to two different production groups on one machine (only for double sided machines). The range of the production groups can be either one machine side or the entire machine.

The rotor range of a group can be selected by enlarging or reducing the size of the transparent window on the rotor overview.
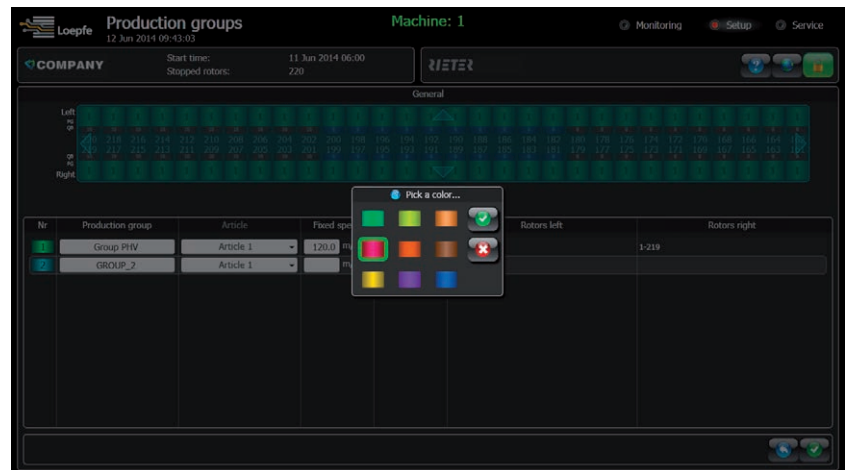
1. Tap the production group of which you wish to set the range.

2. Select a color in which the group should be displayed in the overview.
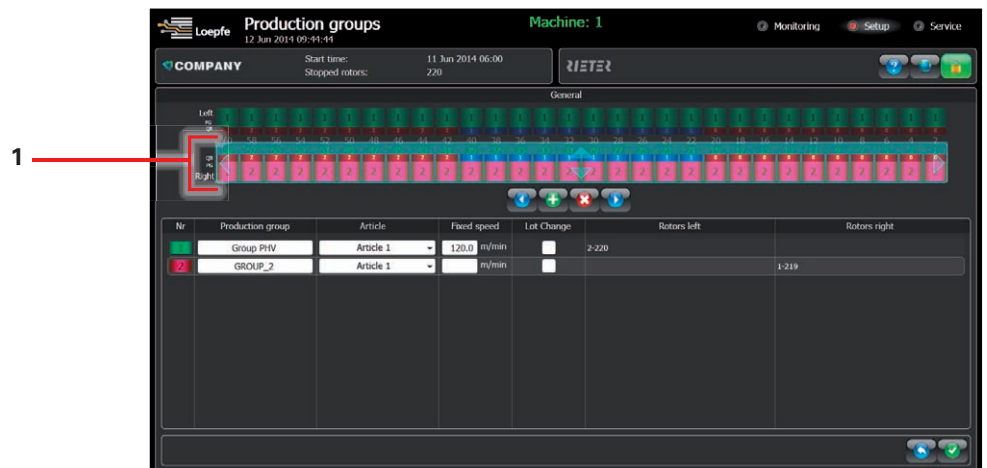
3. Select the rotors for the production group by enlarging or reducing the transparent window (**1**).

4. Press ➕ to add selected rotors to a group, press ❌ to remove rotors from a group.
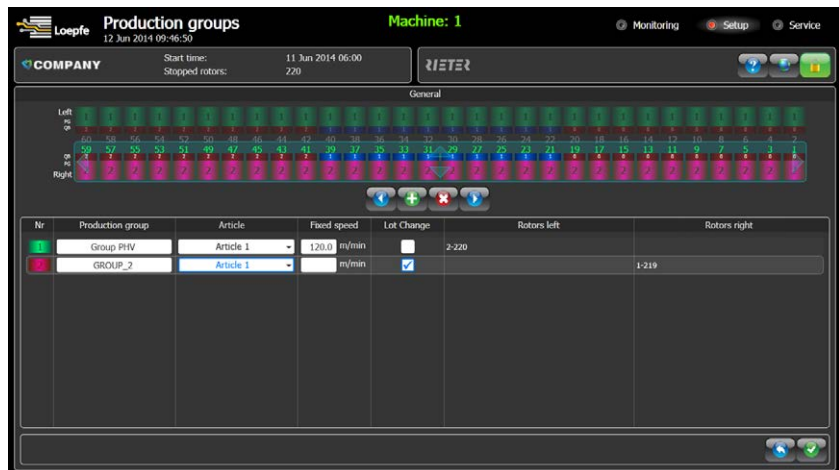
5. An article with assigned clearer settings must be selected from the 10 active articles of the LZE-V. More details for article selection can be found in the chapter "Article Administration".

6. For a lot change tick the box of the production group that you want to change and confirm. A lot change as well as a shift change will be forced.

> Please make sure that all rotors of a group are stopped when you activate the lot change, otherwise they will all stop with a dust lock.

Initiate a lot change:

– After changing the yarn count
– After changing the lot
– After changing the spinning parameters on the machine
– After changing the of the take-up speed
– After an interruption of more than 24 hours

Fixed speed

You can enter a fixed take-up speed, if necessary. But this setting will only be activated if there is no PXI connected, or a 4k or CAN connection is established to the LZE-V through which the LZE-V receives the actual speed.

5.10 Article Administration

The LZE-V uses clearer parameters, which are saved as articles. An article contains the assigned clearer settings required to achieve the relevant yarn quality needed for production.
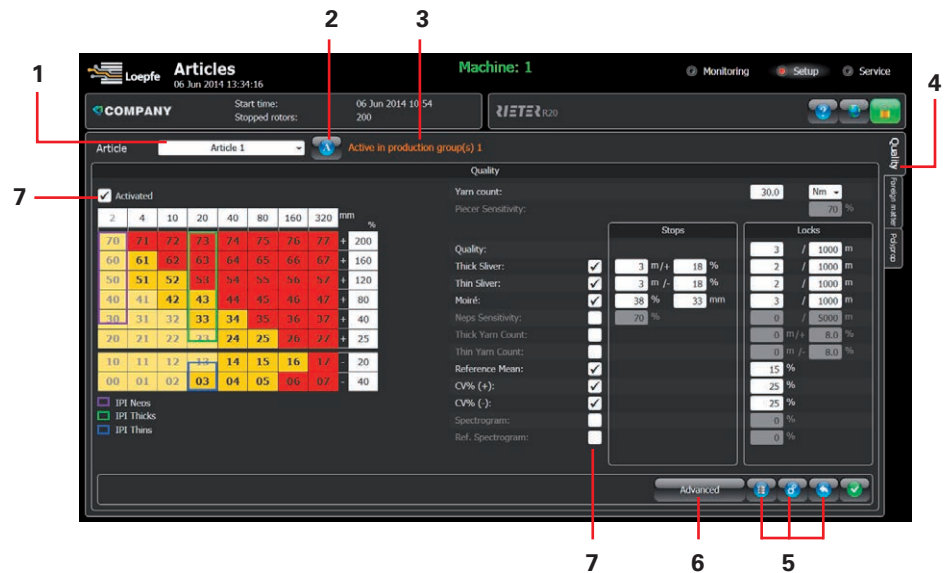
1 Active article selection.

2 To name or rename an article use the button .

3 If an article is assigned to a production group, it is indicated by the message "Active in production group(s) xxx".

4 These tabs are used to select the three different clearer functions. (Only 3N1, otherwise only the "Quality" tab is visible).

5 The three buttons are used for article archive organization / loading the default values / loading the original values.

6 Advanced menu should only be entered by Loepfe service technicians.

7 Activate the different yarn clearer functions by ticking the box ☑ Activated next to the specific clearer channels.

5.10.1 Archive Administration

The LZE-V can work with 10 active articles. These articles can be selected and modified directly as shown before. It is also possible to save a higher number of different article settings. These articles are saved in the article archive.

Press the archive button to open the archive administration to

– Copy the actual selected article to the archive
– Copy archived articles back to active articles
– Rename or delete articles from the archive
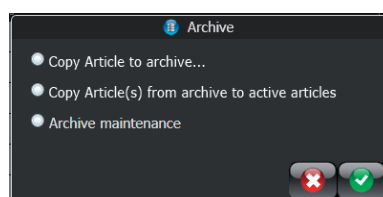
5.11 Article Settings

The major clearer channels can be set by the selection of classes within the clearer matrix through the touch screen. Each class is limited by a length and deviation limit which both can be set individually within certain limits.

A red class is activated for clearing, a yellow one can be selected in addition. The light yellow classes are disabled by the system.

The additional clearer channels can be set by entering a setting within the specified limits.

The range for all settings can be found in the chapter Technical Data / Parameter Settings, but the range will also be shown in the data entry window while changing a setting.

5.11.1 Quality (Q) (1N1/3N1)
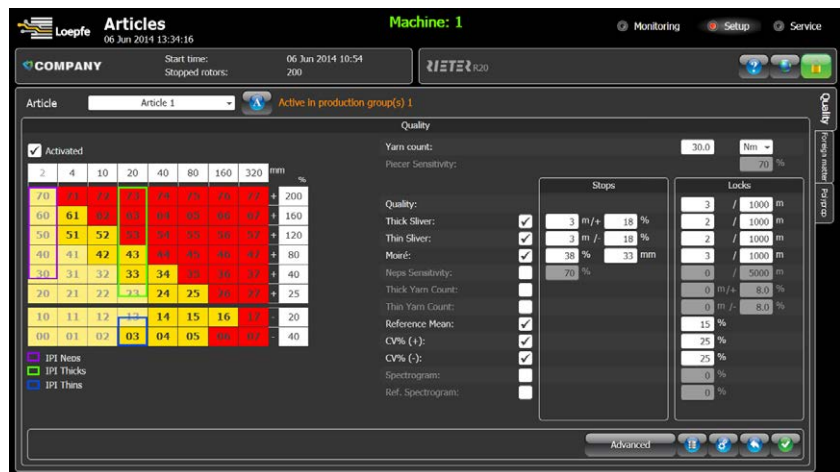
The yarn clearing to control the yarn structure is activated by setting classes within the clearer matrix. The length and deviation limits of the classes can be set individually within certain limits.

1. Enter the yarn count to the intended window. The right yarn count is necessary for the calculation of the production weight and other calculations.

2. Parameters for the longer defects can be set in the two columns "Stops" and "Locks".

Stops are used for longer defects below 5 m, which can be removed from the package with the piecing robot.

- Thick and Thin Sliver for detection of misplaced cans or partly decreasing / increasing of the sliver diameter.
- Moiré: Length of the fault depending on rotor diameter.
- Neps Sensitivity: length generally 5 mm, deviation selectable.

Locks are used to block particular rotors that have repetitive quality stops or longer defects which cannot be removed by the piecer.

- Quality, Thick / Thin Sliver and Moiré Locks: Blocks particular rotors to repeated Q stops within the set length.

- Thick / Thin Yarn Count: Long diameter deviation. Rotor gets blocked to remove the defect manually.

- Reference Mean: Rotor gets blocked when the reference mean increases or decreases more than the set percentage from the average of the machine side. Check the sensor, yarn, sliver, etc.

- CV% Lock: Relative deviation from the median per side CV%. Rotor gets blocked to remove the defect manually.

- Spectrogram / Ref. Spectrogram: Blocks particular rotor if the spectrogram changes more than the set limit for the set length, or deviates from the referenced machine side.

The blocked rotors must be unlocked again before the restart of the rotor. This can be done via LZE-V or the TK button.

ℹ	On automatic machines the piecing robot will not stop at this rotor position without unlocking.

5.11.2 Foreign Matter (F) (only 3N1)
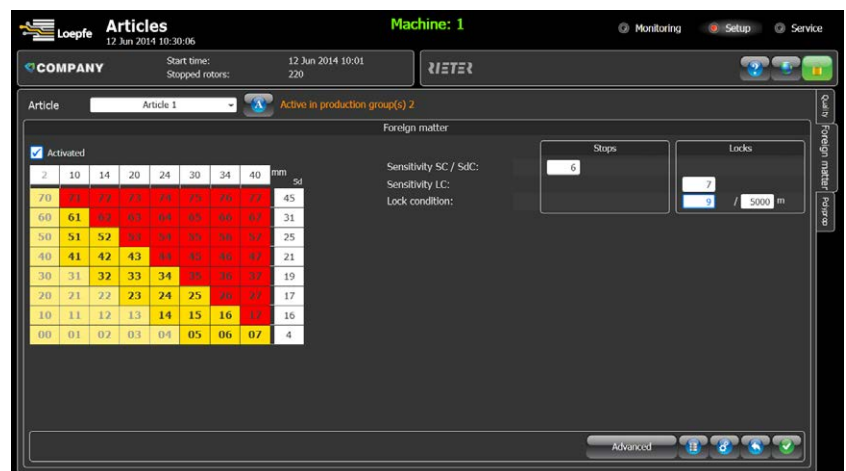
Foreign matter clearing is activated by setting classes within the clearer matrix. The length and deviation limits of the classes can be set individually within certain limits.

- Sensitivity SC / SdC: sensitivity for short cluster (possible to remove during piecing).

- Sensitivity LC: sensitivity for long cluster (locks cannot be removed during piecing. They must be removed manually).

- Lock condition: repeated F stops within the set length. In case of a lock, check the sliver for contaminants and remove the yarn from the package.

The sensitivity can be set from 1 to 9. Setting 1 is the most sensitive. Choose 9 if you do not want to use the foreign matter cluster.

5.11.3 Polypropylene (P) (only 3N1)
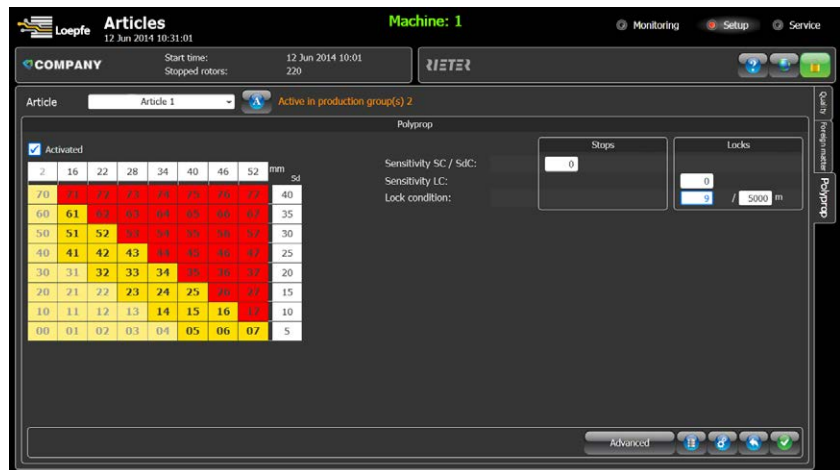
Polypropylene clearing is activated by setting classes within the clearer matrix. The length and deviation limits of the classes can be set individually within certain limits.

- Sensitivity SC / SdC: sensitivity for short cluster (possible to remove during piecing)

- Sensitivity LC: sensitivity for long cluster (locks cannot be removed during piecing. They must be removed manually).

- Lock condition: repeated P-stops within the set length. In case of a lock, check the sliver for contaminants and remove the yarn from the package.

The sensitivity can be set from 1 to 9. Setting 1 is the most sensitive. Choose 9 if you do not want to use the polypropylene cluster.

5.12 Machine Data

Monitoring > Overview

The Overview shows all important production related data.

- Machine Block

  - Shows the state and the efficiency of each particular rotor.
  - The state of a rotor is indicated by the color of the efficiency bar.

- Production Group

  - Related information of the selected production group are displayed.
  - The values efficiency, produced weight and Rh (rotor hours) are in relation to the start time shown in the header.

- Scope

  - Shows an enlargement of a 24 rotor section of the machine block. The selection can be changed by moving the transparent window to the required position on the machine block.
  - The scope also shows actual production data of a single rotor which are selected in the section enlargement.
  - A double click to the rotor data opens the clearer details (Monitoring > Details) of the selected rotor.

- Efficiency

  - Shows the actual efficiency of the selected production group as well as of the entire machine.
  - As per the set target efficiency the numbers will get displayed either in red (below target) or in green (above target). The target efficiency can be set in Setup > Machine > Configuration.

In addition to the actual efficiency, the efficiency trend of the last two hours is also displayed.

5.12.1 Rotor Status Color Codes

The Rotor status color informs about the condition of each rotor.

Color	Status
Lime green	Running
Grey	No communication
Black	Hardware locks, forced lock
Red	Quality locks
Purple	Foreign matter locks
Teal	Polyprop locks
Orange	Quality stops

Color	Status
Fuchsia	Foreign matter stops
Blue	Polyprop stops
White	Yarn broken
Green yellow	Run + inhibit
Tan	Dust stops
Brown	Dust locks
Cyan	Forced stop

5.13 Monitoring Data

Monitoring > Details

It is possible to view the following production data for the production group and for each rotor (for more information refer to the chapter Index Data Explanation).
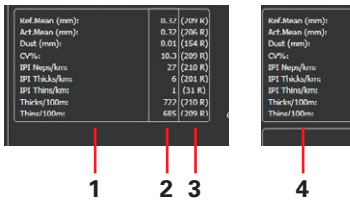
Chart (for all Clearer Data):

1 Value description

2 Values of selected rotor

3 Mean value: Machine

4 Number of rotors for the corresponding mean calculation

5.13.1 Quality
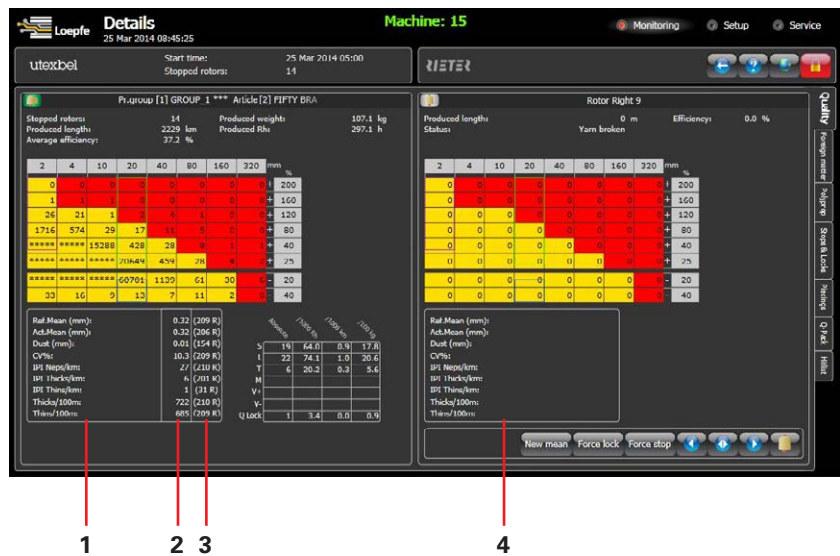
Displays quality yarn cleaning data for the production group as well as a particular rotor of the same group.

Specific information of the production group

– Stopped rotor: total stops

– Produced length (since shift start)

– Average eff.: of the machine (since shift start)

– Produced weight: of the production group (since shift start)

– Produced Rh: Rotor hours of the machine (since shift start)

Specific information of the rotor

– Produced length (since shift start)

– Efficiency of the rotor (since shift start)

– Status: current state of the rotor

5.13.2 Foreign Matter
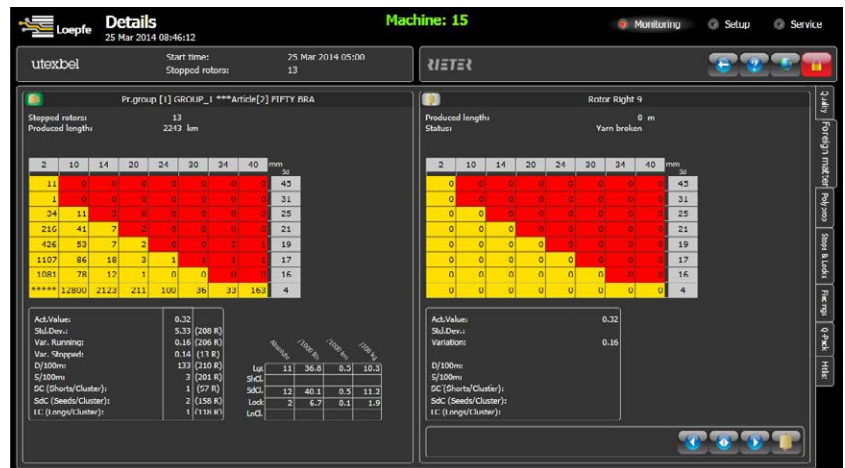
Displays foreign matter cleaning data for the production group as well as a particular rotor of the same group.

Specific information of the production group

– Stopped rotor: total stops

– Produced length (since shift start)

Specific information of the rotor

– Produced length (since shift start)

– Status: current state of the rotor

5.13.3 Polyprop

Displays polypropelene cleaning data for the production group as well as a particular rotor of the same group.

Specific information of the production group

– Stopped rotor: total stops

– Produced length (since shift start)

Specific information of the rotor

– Produced length (since shift start)

– Status: current state of the rotor

5.13.4 Stops & Locks

Information about the stops and locks for the production group as well as a particular rotor of the same group.

– Amount of the particular state since shift start

– Quality generally: amount of the particular state since shift start

– HW/Dust Lock: amount of the particular state since shift start (depends on machine type)

5.13.5 Piecings

Reports the classification of all faulty attempts during the piecing phase of the production group as well as a particular rotor.

Information on the last piecing is also provided.

1N1/3N1

5.13.6 Q-Pack

Real time online laboratory for advanced analysis of the production group as well as specific rotors.

Histogram

X-axis: + / -x / 100 mm
Y-axis: relative % to maximum value

Spectrogram

Helps to analyze the yarn diameter profile for the presence of periodically occurring deviations.

Sample: required length for a picture of the spectrogram
Mean: reference mean
CVh = CV% hairiness (CV% on 2 mm)
CVy = CV% yarn (CV% on 8 mm)
CVs = CV% sliver (CV% on 500 mm)

Y-axis: relative % to the max. amplitude

CVL Curve

Analysis of the CV% of a certain length.

5.13.7 Hitlist

Quality

Displays the rotors with the highest or lowest measured or calculated Q values.

Choose + for the highest values
Choose - for the lowest values

Foreign Matter

Displays the rotors with the highest or lowest measured or calculated F values.

A = variance of the signal for the displayed rotors
D = classified defects
S = short defects

SC (Shorts/Cluster):   short cluster accumulating (chain)
SdC (Seeds/Cluster):   short cluster accumulating (distributed)
LC (Longs/Cluster):   long cluster accumulating

(Also displays those counted, even if cluster settings are not active)

Polypropylene

Displays the rotors with the highest or lowest measured or calculated P values.

A = variance of the signal for the displayed rotors
D = classified defects
S = short defects

SC (Shorts/Cluster):   short cluster accumulating (chain)
SdC (Seeds/Cluster):   short cluster accumulating (distributed)
LC (Longs/Cluster):   long cluster accumulating

(Also displays those counted, even if cluster settings are not active)

5.14 Reports

Monitoring > Reports
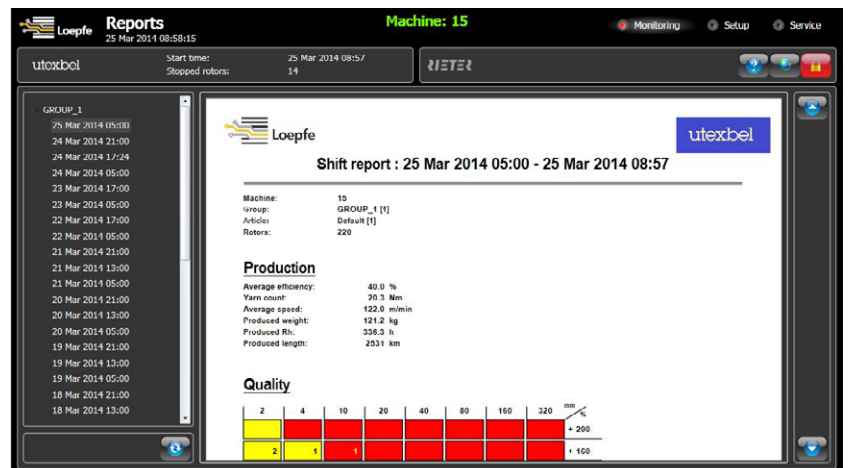
The LZE-V continuous collects all production data of each rotor that is assigned to an active production group. After each lot or shift change, data collection is finished and the collected data of each production group is summarized and saved as a separate report, along with the used clearer setting.

At the same time data collection for the new report is started.

The completed report will be saved as pdf- file on the LZE-V.

The LZE-V can save reports up to 60 days. The default setting is 7 days, but this setting can be changed in Setup > Machine > Shifts *(see chapter 5.8.2 Shifts)*.

After the set time frame is reached the older report is automatically deleted.

It is also possible to copy the reports to a USB stick to keep them for longer *(see chapter 6 USB (Export/Import))*.

6   **USB** (Export / Import)

The LZE-V contains a USB port on the front panel of the central unit.

> **ATTENTION:**
> *Make sure that the USB stick is free from viruses! LOEPFE assumes no liability for possible damage on the system (loss of data etc.,) which could be caused by viruses!*
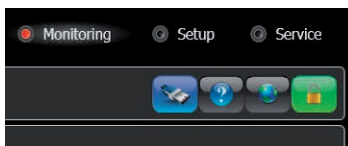
When a USB stick is inserted into the USB port, the USB device icon is displayed in the header.
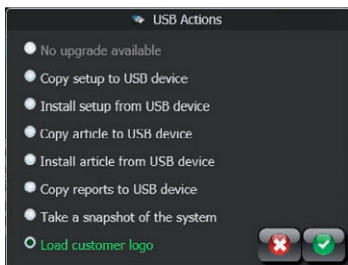
When the USB device icon is tapped, a window opens displaying the possible actions.

6.1   Upgrades

The LZE-V recognizes when a GUI software update file is available on the inserted USB stick.

Without an update file the message "No upgrade available" will be shown.

> **ATTENTION:**
> *Software upgrades of the 1N1/3N1 clearer system should be conducted by an authorized LOEPFE service technician only!*

6.2   Data Export / Import

6.2.1   Export

The LZE-V offers the possibility to export the machine setup, the archived articles as well as the reports to an inserted USB stick.

– Copy setup to USB device
– Copy articles to USB device
– Copy reports to USB device

Once one of the possibilities (USB Actions) is chosen and confirmed, a window opens showing the directory of the USB stick. In this window the folder to save the wanted data can be selected.
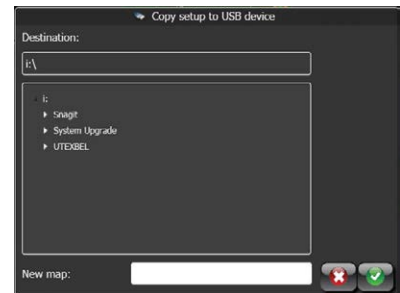
When exporting the reports, the popup window includes a calendar in addition to the directory.

The calendar can be used to only export reports between two specific dates. By pressing the button , all reports are saved to the USB stick.
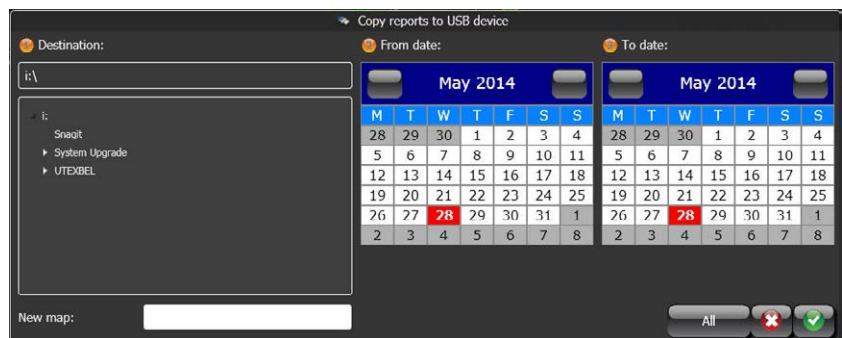
6.2.2   **Import**

The LZE-V offers the possibility to import a machine setup or articles to the LZE.

- – Install setup from USB device
- – Install articles from USB device

Once one of the possibilities is chosen and confirmed, a window displaying the directory of the USB stick is opened. The file can be selected for import in the directory.

Import Articles

Articles can be uploaded from USB to the archive, or to an active article (1 of the 10).

1. First select the location of one or more article files (xml format).

2. Then click the article file that has to be uploaded.

3. Select the location where you want the article to be uploaded: archive or one of the not grayed-out active styles (non-active articles).

4. Click the button to add the article to the location of your choice (nothing has happened yet)

5. Use the button to undo step 4 if required.

6. Follow steps 1 to 4 for each article to be uploaded.

7. Once all required articles have been indicated to be uploaded, clicking the button will execute the upload command.
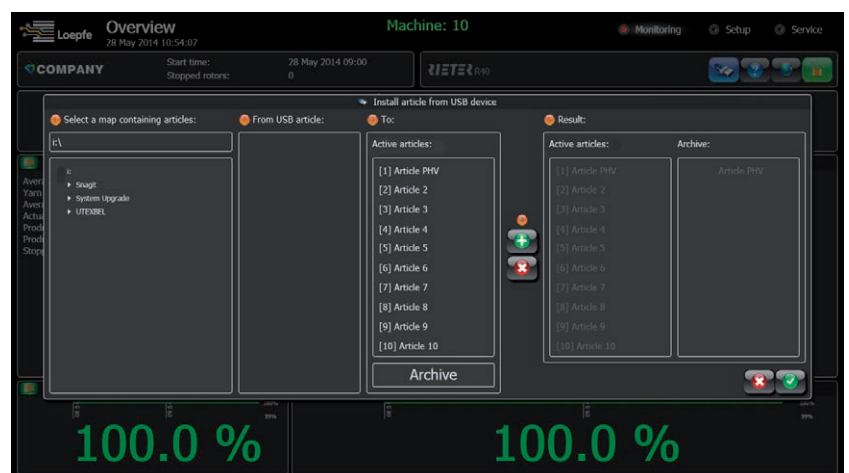
6.3   System Snapshot

The action "Take a snapshot of the system" is used for diagnosis purposes only. Once the action is chosen and confirmed, the LZE-V will collect all relevant setup, production and diagnosis values from the GUI and save it as a folder named "snap-shot_YYMMDD_hhmm".

For further analysis the whole folder should be compressed and sent to the official Loepfe service representative!

6.4   Customer Logo

The LZE-V offers the possibility to create and upload a customized logo to the GUI. The logo is shown in the machine header of every menu screen.

- Load customer logo
  - Once the action is chosen and confirmed, a window showing the directory of the USB stick is opened.
  - Choose the png file and confirm.
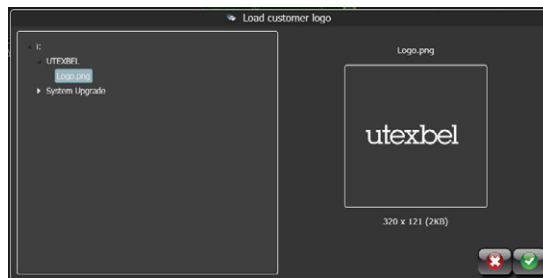
7 Inspection and Maintenance

7.1 General

Regular inspections of the yarn clearer system ensure troublefree and reliable operation.

7.2 Safety

7.2.1 Personnel

Only authorized and trained persons are allowed to perform maintenance.

They must have read and understood the safety instructions.

All maintenance NOT described in chapter 7 "Inspection and Maintenance" has to be done by service engineers.

7.2.2 Electric Current

DANGER	**Danger to life due to electric voltage!** Immediate danger to life when touching live parts. ▷ *Work on electrical equipment must be performed by persons with the appropriate qualification.* ▷ *Only perform maintenance work on electric components when these are switched off, disconnected from the mains and potential-free.* ▷ *The yarn clearer system may be installed to the power supply system only when all front panels, plug-in boards and provided covers, especially on the central unit, are installed.* ▷ *The yarn clearer system may be operated only with the standard local line voltage/frequency and with grounded protective ground conductor.*

7.3 Spare Parts / Accessories

ATTENTION	**Safety risk with non-original spare parts or non-approved accessories!** Non-original spare parts or non-approved accessories could affect safety and cause damage, malfunctions or total failure of the yarn clearer system. ▷ *Only use original spare parts or accessories approved by Loepfe.*

7.4 Cleaning the Measuring Slot

> **❗**
> **ATTENTION**
>
> **Sensor damage caused by improper cleaning!**
> The sensors could become damaged by improper cleaning!
>
> ▷ *Clean the sensors with utmost care.*

Any damage to the optics resulting from incorrect cleaning is not covered by warranty!

Do not immerse the sensing head in cleaning agent!

Do not spray the cleaning agent directly into the optical system!

Do not use any hard / sharp objects!

7.4.1 When?

Clean the measuring slot of the sensing head regularly, for example during lot change. This will reduce dust locks. Always clean when a rotor is stopped for dust lock (both sensor LEDs on).

7.4.2 With?

Only use the cleaning swabs from LOEPFE (part no. 16964900)**.**

Use it either dry or dampened with optical lens cleaner.

7.4.3 How?

Drag the soft tip of the cleaning stick a few times through the measuring slot. When the LEDs go out automatically after removing the cleaning stick, the sensor is cleaned correctly.

7.5 Diagnostics

Service > Diagnostics

7.5.1 Versions

The submenu Versions displays a summary of the installed software package, as well as the included LZE-V, SE and SH software versions. In addition it also shows a summary of the software actually installed on the SE boards and the sensing head.

The information on the installed software versions is important for any support communication.

7.5.2 Events
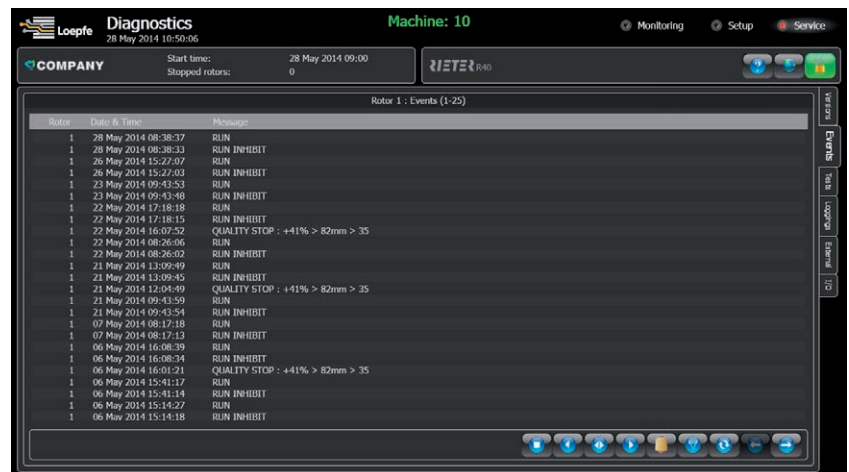
The events list shows a summary of all stops of either the machine or a particular rotor. It is especially useful to assess the behavior of individual rotors on the rotor level.

The event data contains the following columns

- Rotor
- Date & Time
- Message (rotor status information)

Use the filter to select particular events.

7.5.3 Tests

Tests are used to check the communication between the LZE-V, the SE and the sensing heads as well as the communication of the interface connections between the SE and the machine section electronics.

When starting the test, each rotor of the chosen rotor range will go into a forced lock one by one starting with the smallest rotor number.

At the same time, the rotor position will also switch to red if the interface cable between the SE and the machine section electronic is connected the right way.

7.6 Replacement of Sensing Head and SE-Board

7.6.1 Sensing Head

Replacement of the sensing head and its cables is possible while the machine is running. Just unplug the cables.

7.6.2 SE-Board

⚠️ **DANGER**

Danger to life due to electric voltage!
Immediate danger to life when touching live parts.

▷ *Switch off the machine before replacing the SE-board!*

ℹ️ After changing the SE board, please check the software version in the menu Service > Diagnostic > Versions.

8   Troubleshooting

8.1   Hardware Locks / Recommended Action

LOEPFE YM 1N1/3N1 has a built-in diagnostic function. Technical problems are indicated by means of hardware locks. Hardware locks can only be cancelled on the LZE-V GUI.

> **!**
> **ATTENTION**
>
> **Hardware failures can have a severe influence on yarn quality!**
>
> ▷ *They should be corrected and reset by qualified personnel only!*

A hardware alarm is indicated on the sensing head: Both LEDs flash. The type of alarm can be viewed on the LZE-V screen.

Fault	Description	Possible cause	Recommended action
Hardware SE lock 0	Unspecified diagnostic lock after restart of SE	A lock was present before Power Down of the SE and is restored by the LZE-V	Correct lock situations before Power Down of SE Reset lock and check again
Hardware SE lock 1 (*)	The SH detects no Yarn signal although the rotor is in RUN state	Yarn not or not correctly in the SH measuring slot SH lower ceramic missing SH defective	Check Yarn position and guiding Replace SH
Hardware SE lock 2	Measured Yarn signal is too low	Yarn position wrong SH lower ceramic missing SH defective	Check Yarn position and guiding Replace SH
Hardware SE lock 3	Measured Yarn signal is too high	Measuring slot obstructed by dust or lint SH defective	Remove dust or lint Replace SH
Hardware SE lock 4	Too many Run/Stop transitions in the measured yarn signal	Maximum piecing attempts reached (default 20 per shift) Yarn position wrong SH defective	Check piecing robot and spinbox components Check and correct Replace SH
Hardware SE lock 5	No communication with YM 3N1 SH	Cable unplugged or defective SH defective SE has a defective input	Connect or replace cable Replace SH Replace SE
Hardware SE lock 6	Minimum intensity signal. (F channel)	SH has no F function SH defective	Install correct SH Replace SH
Hardware SE lock 7	Maximum intensity signal. (F channel)	Machine is producing heather yarn SH defective	Disable F channel of YM 3N1 Replace SH
Hardware SE lock 8	Minimum intensity signal. (P channel)	SH has no P function SH defective	Install correct SH Replace SH
Hardware SE lock 9	Maximum intensity signal. (P channel)	Machine is producing synthetic yarn SH defective	Disable P channel of YM 3N1 Replace SH

Notes:

(*) = Function not present on stand-alone installations

YM 3N1 = YarnMaster 3N1

8.2 Analysis of rotors with unusual behavior

Rotors with unusual behavior, such as too many cuts, increased Q, F or P data etc., are an indication that something at this rotor position is different from the rest of the machine. This unusual behavior can have various causes, such as differences in the applied sliver, the spinning components or malfunctions of the clearer.

In addition to the built-in diagnostic functions the LZE-V also provides information for verifiying such clearers and for analyzing the source.

The easiest way to determine a rotor position with an unusual behavior is to use the Hitlist (*5.13.7 Hitlist*) since it displays most relevant production related values and data of the three sensors.
The mean or Std.Dev related values can indicate wrongly adjusted values, contaminations or malfunctions of the sensors or the spun material.
The surface related values can be an indication to wrong slivers or worn out spinning components.

If such a rotor position is identified the Events (*7.5.2 Events*) of the specific rotor can give an overview of the production behavior and history over the last few hours. Very short running times after piecing and the reason for the stop can be an indication of the source of the unusual behavior.

In case of doubts regarding the communication or the measured sensor values of a clearer, the following four buttons below the rotor data (Monitoring > Details) can be used for different actions.

Force stop: Checks the communication between LZE-V, SE-Board, sensing head and machine SE. The piecer starts the rotor again without operator intervention.

Force lock: Basically the same effect as Force Stop, but also blocks the spindle. Means the user has to unlock the rotor either with the unlock button or by making a new mean.

New mean: New adjustment to the yarn after the next piecing.

Unlock Rotor: Unlock the rotor position.

> ℹ️ Any found fault or malfunction must be inspected and corrected by a qualified person to guarantee the performance of the clearer system.

1N1/3N1

9 Index Data Explanation

Q

Ref.Mean (mm):	Reference mean value from adjustment at the lot start or from a forced mean by the user Measurement absolute in mm
Act. Mean (mm):	Current mean in real time
Dust (mm):	Contamination of the sensor (according to the empty and clean optic)
CV%:	Statistic calculation
IPI Neps/km:	2–4mm, +50% diameter deviation
IPI Thicks/km:	20–40mm, +30% diameter deviation
IPI Thins/km:	20–40mm, -30% diameter deviation
Thicks/100m:	Generally classified
Thins/100m:	Generally classified
S:	Stops short fault up to 80 mm
L:	Stops long starts from 80 mm
T:	Stops thin
M:	Stops moiré
V+:	Stops thick sliver
V-:	Stops thin sliver
Q-Lock:	Quality lock

F

Act. Value:	Current measured standard deviation
Std.Dev.:	Standard deviation value from adjustment at the lot start or from a forced mean by the user
A:	Variance of the actual value
Ar:	Variance running
As:	Variance stopped
D/100m:	Classified defects (matrix)
S/100m:	Short (up to 80 mm)
SC (Shorts/Cluster):	Short cluster accumulating (chain)
SdC (Seeds/Cluster):	Short cluster accumulating (distributed)
LC (Longs/Cluster):	Long cluster accumulating
Lock:	Foreign matter locks

P

Act. Value:	Current measured standard deviation
Std.Dev.:	Standard deviation value from adjustment at the lot start or from a forced mean by the user
A:	Variance of the actual value
Ar:	Variance running
As:	Variance stopped
D/100m:	Classified defects (matrix)
SC (Shorts/Cluster):	Short cluster accumulating (chain)
SdC (Seeds/Cluster):	Short cluster accumulating (distributed)
LC (Longs/Cluster):	Long cluster accumulating
Lock:	Polyprop locks

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