QualiMaster

Fabric inspection and optimized cutting

QualiMaster is the BMSvision solution for on-loom, grey and finished fabric inspection.

Installed as a stand alone system or as an extension to the BMS WeaveMaster MES system, QualiMaster offers a powerful fabric inspection solution that allows full quality analysis and fabric classification.

Weaving plants equipped with the WeaveMaster production monitoring system can integrate QualiMaster's powerful "on-loom" inspection package, thus minimizing the risk for off-quality fabric in the weaving plant and reducing the workload in the grey fabric inspection department.

For finished fabric inspection, dedicated software for optimized mapping and cutting allows to maximize the first quality yield with a minimum of cut operations.

Benefits

- Reduced off-quality through on-loom inspection
- Real time alarms in case of quality problems
- Customer specific ticket printing
- Full quality reporting
- Monitoring inspector efficiency
- Extreme flexibility through built in report generator
- Interface with ERP systems

On-loom inspection "by pass" at doffing

Ethernet

Hub

Ethernet

Stop and defect information

Quality advice

QUALIMASTER server
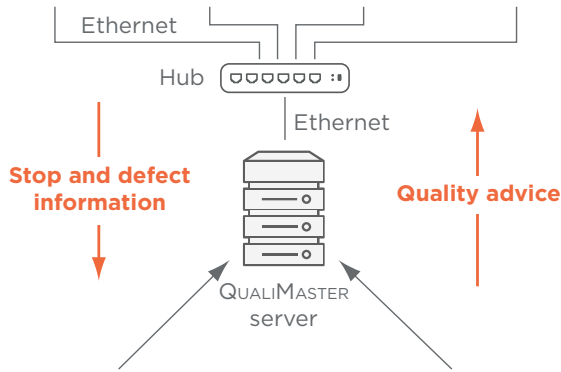
Quality risk

Calculation based on:
- Number of defects
- Number of warp and filling stops
- Coverage of inspection
- Concentration of above events

Quality advice

- By-pass greige inspection if no quality risk
- If a quality risk present, proceed to greige inspection

▲ QT touch PC

▲ Ticket examples

On-loom fabric inspection

To reduce the risk for off-quality, QUALIMASTER offers a solution for "on-loom" inspection. Using BMSvision Data Units installed on the looms, the roving inspector enters the defect code or declares the fabric "defect free". Each entry is automatically related to the pick counter, allowing the generation of a piece map during weaving.

Based on the concentration of defects and stops, the system predicts the quality of the fabric. Alarm messages are generated in case of an off-quality fabric and at doffing, the system formulates a quality advice.

In case of first grade, no further inspection is required and the fabric roll can be transferred to finishing or to the finished goods warehouse. If the calculation shows a risk for off-quality, then the roll is sent to the grey inspection or mending department.

Of course, QUALIMASTER also integrates the BMSvision CYCLOPS and ARGUS automatic on-loom inspection system.

Fabric inspection terminal (QT)

In grey and finished fabric inspection, the inspection frames are equipped with QT touch PCs. Linked with the length counter, ticket tagging device, machine signals, ... the QT offers a user friendly interface for defect entry.

The inspector enters the defect just by tapping the corresponding defect button on the screen. Screen layouts can be configured to meet customer's requirements. A defect map with grade calculation is available on the terminal.
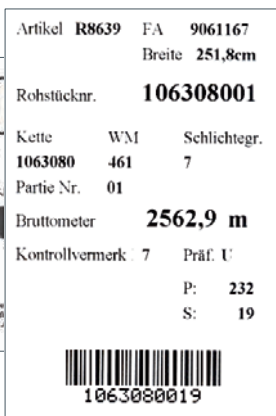
In finished inspection and cutting, instructions can be displayed for cutting and packing the finished goods roll. These instructions can be extracted from the customer related information as stored in the ERP system.
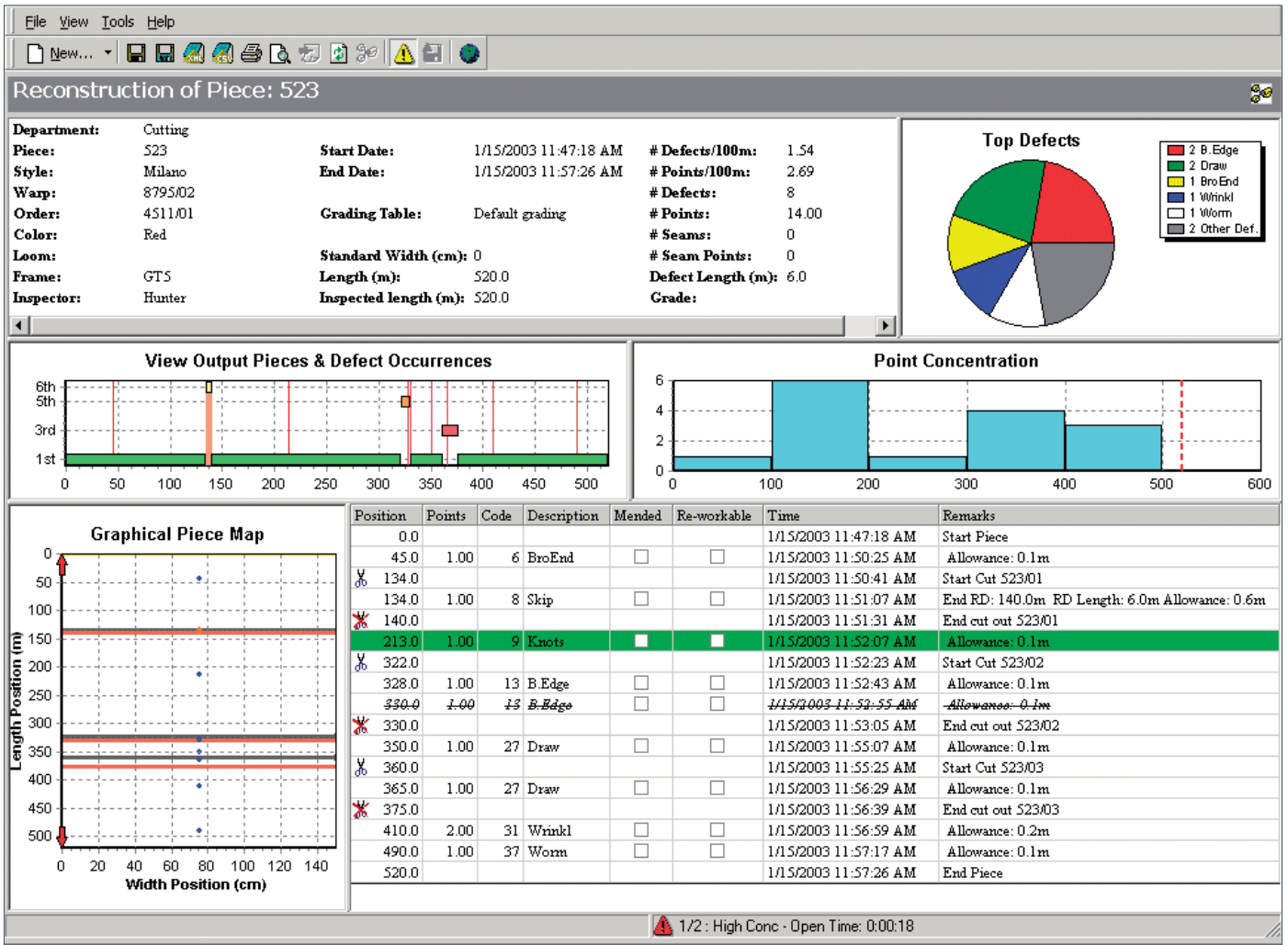
Piece map and ticket printing

For each piece inspected, be it on-loom, in the grey or in the finished inspection department, QUALIMASTER generates and stores a piece map. The piece map consists of a user definable header, a summary graph showing the concentration of defects throughout the piece and a detailed list of all defects with their length and width location.

Through edit functions, the user can add, delete or modify defects, insert notes or change the length of the piece. Piece maps can be exported in PDF, CSV or XML format and can be archived for long time storage if required.

In case bigger rolls are cut into small output pieces, QUALIMASTER allows the reconstruction of the input roll starting from an output piece or can show all output pieces generated from a selected input roll.

At the end of each piece or cut-out, QUALIMASTER can print a piece ticket. Customer or style dependent ticket layouts can be defined by the user. QUALIMASTER translates the inspection results in commercial information such as piece length, grade, allowance, ... which are printed on the final piece ticket.

Reconstruction of Piece: 523

Department:	Cutting				
Piece:	523	Start Date:	1/15/2003 11:47:18 AM	# Defects/100m:	1.54
Style:	Milano	End Date:	1/15/2003 11:57:26 AM	# Points/100m:	2.69
Warp:	8795/02			# Defects:	8
Order:	4511/01	Grading Table:	Default grading	# Points:	14.00
Color:	Red			# Seams:	0
Loom:		Standard Width (cm):	0	# Seam Points:	0
Frame:	GT5	Length (m):	520.0	Defect Length (m):	6.0
Inspector:	Hunter	Inspected length (m):	520.0	Grade:	

Top Defects: 2 B.Edge, 2 Draw, 1 BroEnd, 1 Wrinkl, 1 Worm, 2 Other Def.

View Output Pieces & Defect Occurrences

Point Concentration

Graphical Piece Map

Position	Points	Code	Description	Mended	Re-workable	Time	Remarks
0.0						1/15/2003 11:47:18 AM	Start Piece
45.0	1.00	6	BroEnd	☐	☐	1/15/2003 11:50:25 AM	Allowance: 0.1m
134.0						1/15/2003 11:50:41 AM	Start Cut 523/01
134.0	1.00	8	Skip	☐	☐	1/15/2003 11:51:07 AM	End RD: 140.0m RD Length: 6.0m Allowance: 0.6m
140.0						1/15/2003 11:51:31 AM	End cut out 523/01
213.0	1.00	9	Knots	☐	☐	1/15/2003 11:52:07 AM	Allowance: 0.1m
322.0						1/15/2003 11:52:23 AM	Start Cut 523/02
328.0	1.00	13	B.Edge	☐	☐	1/15/2003 11:52:43 AM	Allowance: 0.1m
330.0	1.00	13	B.Edge	☐	☐	1/15/2003 11:52:55 AM	Allowance: 0.1m
330.0						1/15/2003 11:53:05 AM	End cut out 523/02
350.0	1.00	27	Draw	☐	☐	1/15/2003 11:55:07 AM	Allowance: 0.1m
360.0						1/15/2003 11:55:25 AM	Start Cut 523/03
365.0	1.00	27	Draw	☐	☐	1/15/2003 11:56:29 AM	Allowance: 0.1m
375.0						1/15/2003 11:56:39 AM	End cut out 523/03
410.0	2.00	31	Wrinkl	☐	☐	1/15/2003 11:56:59 AM	Allowance: 0.2m
490.0	1.00	37	Worm	☐	☐	1/15/2003 11:57:17 AM	Allowance: 0.1m
520.0						1/15/2003 11:57:26 AM	End Piece

⚠ 1/2 : High Conc - Open Time: 0:00:18

▲ Piece map with cutouts

Quality reporting

The QUALIMASTER fabric inspection software comes with extensive reporting. By means of the integrated report generator, these reports can be customized to suit the needs of every textile mill.

Typical reports are:

- Defect analysis by style: to identify the most important defects in a particular style.
- Grade overview by style: to identify critical styles from a quality point of view.
- Inspector performance report by style.
- Quality trend report by style to see the evolution of the quality over a longer time period.
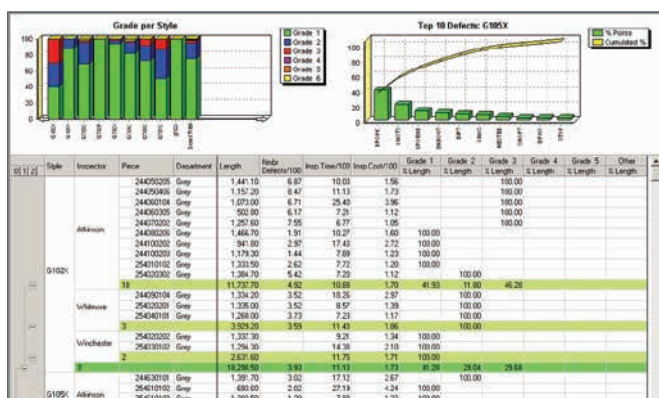
Alarm handling

With the QUALIMASTER alarm handling module, the quality manager can follow up on piece quality in real time. Alarm criteria and alarm priorities can be defined for each style or group of styles. Active alarms will appear as a banner in the QUALIMASTER reports, are displayed on the inspection terminal and are visible in the piece map. In on-loom inspection, a lamp in the loom's lamp tree can be activated in case of an alarm.

Alarm analysis reports show all the alarms that occurred during a specified period.

▼ Grade overview

▼ Alarm overview

Optimized mapping and cutting
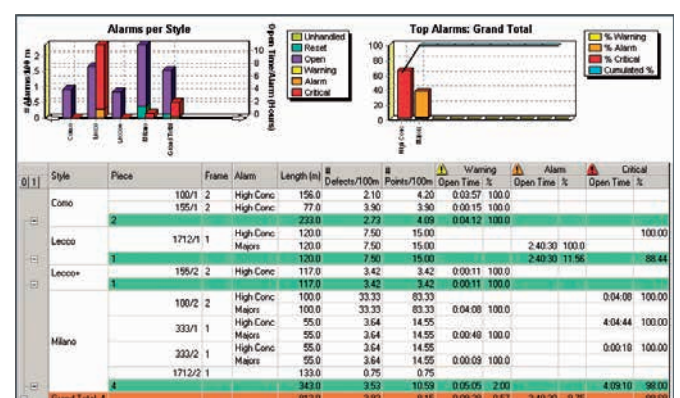
A-frame to A-frame inspection

Defects and their location in the fabric

Grading criteria stored on the QualiMaster server

QT

Optimized cutting instructions are calculated based on the grading criteria and defect location

Parameters:
- Locate cuts on defect locations
- Use the min/max piece length tolerance to position cuts
- Avoid short pieces at the end of the batch
- Respect the cut instructions such as:
  - Max. defects per 100 m
  - Max. seams
  - Max. length running defects
  - Max. number of major defects

Optimized cutting instructions transmitted and visualized on the cutting machine terminal

Nr	From	From	Action	1st Grade Length	Total	2nd Length	3rd Length	Off Qual Length	1st Grade Pnts/100	Off Qual Pnts/100	Grade	Cut Reason	Imp Def	# M
1	0,0	109,9	Roll	109,9	109,9				37,31		1st		603	8
2	109,9	209,9	Roll	100,0	100,0				12,60		1st	Defect that must cut out	403	2
3	209,9	248,8	Tube				38,90			425,71	Grge 2nd	Running defect	613	9
4	248,8	283,0	Roll	34,2	34,2				35,09		1st		809	2
5	283,0	294,0	Tube				11,00			516,36	Grge 2nd	Running defect	613	2
6	294,0	388,9	Roll	94,9	94,9				22,34		1st		204	4
7	388,9	488,9	Roll	100,0	100,0				14,00		1st		728	3
8	488,9	588,9	Roll	100,0	100,0				13,00		1st		728	3
9	588,9	688,9	Roll	100,0	100,0				5,00		1st		822	1
10	688,9	694,1	Tube					5,2		400,00	CatchAll	Re-workable	403	1
11	694,1	731,9	Roll	37,8	37,8				10,58		1st		822	1
12	731,9	831,9	Roll	100,0	100,0						1st			0
13	831,9	931,9	Roll	100,0	100,0				3,00		1st		818	0
14	931,9	1.031,9	Roll	100,0	100,0				9,00		1st		617	2
15	1.031,9	1.039,2	Tube					7,3		400,00	CatchAll	Re-workable	102	1
16	1.039,2	1.158,7	Roll	119,5	119,5				10,88		1st		904	3
17	1.158,7	1.269,7	Tube				111,00			399,28	Grge 2nd	Running defect	904	3
18	1.269,7	1.348,1	Tube				78,40			400,00	Grge 2nd	Running defect	904	1
19	1.348,1	1.429,2	Tube				81,10			391,62	Grge 2nd	Running defect	904	2
20	1.429,2	1.600,2	Tube					171,0		400,00	CatchAll	Re-workable	102	1
	0,0	1.600,2			1.096,3		320,40	183,5	13,48	403,02		Yield: 68,51 %		49

QualiMaster offers a very powerful package to optimize the cutting of big rolls into smaller pieces.

If inspection and cutting are done in a two-step process, QualiMaster calculates where to cut the fabric based on the defect map and grading criteria. It takes into account customer requirements such as minimum/maximum piece length, minimum defect free zones, etc. and generates a cut proposal so that a maximum yield in first quality is obtained.

These cutting instructions can be printed out or sent directly to a terminal at the cutting table upon identification of the roll.

Interfaces are available for automatic cutting and packing machines. QualiMaster sends the cutting instructions to the computer of the cutting machine that cuts the roll into smaller pieces as calculated and prints the labels to be fixed to every piece.

◄ Cut instruction sheet
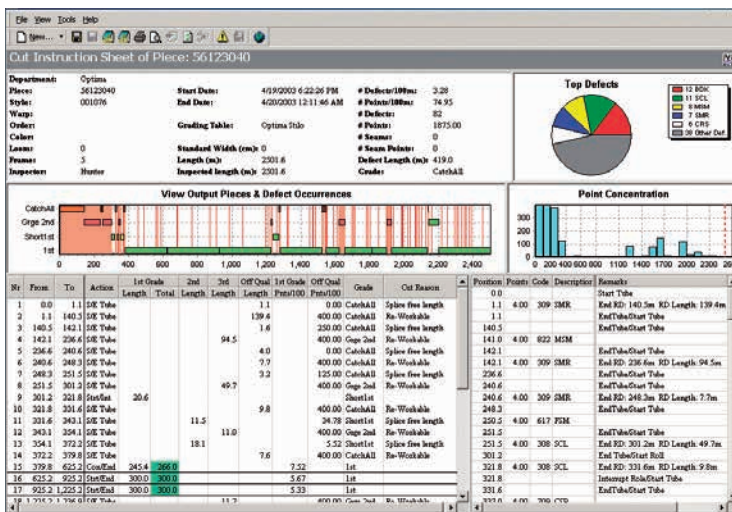
Through interfaces with automatic palletizers, the pieces that are cut and packed are automatically put on the right pallet. QualiMaster knows when the pallet or container is completed and gives the instructions to transport it to the finished goods warehouse.

Benefits
- Increased output of first grade fabric.
- Reduced customer complaints.
- Grading criteria per style/customer.
- Interface with automatic cutting and packing machines.

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