





The wireless solution to monitor and control your knitting process

ADVANCED KNITTING TECHNOLOGY

Description of the System

- The NEWORKER MONITORING SYSTEM is a complete system to control production and programming of the machine parameters.
- This package is composed by the NETWORKER MONITORING SOFT-WARE which collects data from the machines, shows real time status, stores information in a data base, offers different statistical views, handles articles, orders and supports production managment.
- All information is accessible by standard Internet browser available on every PC, smartphone or tablet PC.
- The NETWORKER MACHINE PANEL is a touch panel which is easy to connect to all types and brands of machines. It permits the WIFI of the Knitting machine to the NETWOR-KER MONITORING SOFTWARE which is installed on a server PC.

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Key Points



- The wireless solution to monitor and control your manufacturing process
- Independent of machine type and manufacturer
- NETWORKER SYSTEM can be accessed through standard web browser
- no additional software installation on the user PC
- platform independent

Solution Overview



Function

- The data base and WEB server is installed on the server PC. If this PC is available with a Public IP address, it is possible to watch the data from everywhere by a standard internet browser (external option: access technology to be provided by the customer).
- The status of the knitting factory is displayed e.g.:
 - Run, stop, error, speed and revolution counter
 - By selecting menu "Statistics" there is the possibility to show and print the production history of each machine.
 - By selecting "Log" Data logs of the events will be shown.
 - By selecting "Details" actual setting of the machine LFA, takedown, speed, etc. will be displayed.

Components

Machine Panel

Each machine which should be connected to the network needs one NETWORKER MACHINE PANEL. The NETWORKER MACHINE PANEL will be connected to the network via WIFI. Each unit has its own IP address which can receive and transmit information. All information, coming from the machine is collected in the NETWORKER MACHI-NE PANEL and sent from there via an access point to a server PC.





The NETWORKER MONITO-RING SOFTWARE

The NETWORKER MONITORING SOFTWARE is installed on a server PC to scan the machine information via the MACHINE PANEL. The data is saved in a SQL data base.

The software gives an overview about the actual situation in the knitting room as well as about progress of orders, machine efficency, available machines, machine down time statistics and other statistics.

NETWORKER MONITORING SOFTWARE consists of the following modules:







Connection Box

The connection box is set between knitting machine and NETWORKER MACHINE PANEL. It is prepared for input connection of:

- positive feeders such as MPF
- elastane feeders like MER
- target stop
- LFA Option

The connection box is connected to the NETWORKER MACHINE PANEL with one cable.

LFA Option (Loop/Stitch Length Measurement)

Yarn consumption measuring wheels are necessary to give the information of the yarn consumption of the different belts to the NETWORKER MONITO-RING SYSTEM. With this information the system can calculate the weight of the produced fabric. Furthermore the system will warn the operator if the yarn consumption is out of preset tolerance. The LFA option consists of MRT IP devices to measure the yarn consumption of the positive feeders for non- elastic yarns as well as for bare elastane.





Access to your data from everywhere

Web browser based software to show the data on different workstations via intranet or internet.

Label Print Option

Labels for each roll can be printed. After weighing, the real weight of each roll can be entered into the NETWORKER MONITORING SOFTWARE. The content of the label can be created individually during set up.

Q	Machine	Room

000	Knit	tting Netv	work - Home pa	ige									
	<u>Graphical V</u>	View											
	ID 🛛		Order	Article	Details	Status	Target	Progress	No. of Rolls	Speed	Error	Check	Log
-	1		©		<u>Details</u>	Run	2187/4550	48%		24 Rpm			Log
	2	<u>40876</u>	[02-10 13:48] 🔮	<u>5267</u>	<u>Details</u>	Run	3605/5100	71%	5 / 12	22 Rpm		4	Log
	з	<u>40914</u>	[03-10 18:52] 🔮	<u>5326</u>	<u>Details</u>	Run	1091/4000	27%	3/20	24 Rpm		4	Log
	4	40875	[03-10 20:56] 📀	<u>544</u>	<u>Details</u>	Run	4525/4900	92%	13 / 28	24 Rpm		4	Log
	5		©		<u>Details</u>	Stop	1/4450	0%		0 Rpm			Log
	6		©		<u>Details</u>	Run	391/3900	10%		24 Rpm			Log
	7		0		<u>Details</u>	Run	596/2600	23%		26 Rpm			Log
	8	40852	[02-10 7:50] 🔮	<u>5332</u>	<u>Details</u>	Run	3127/3900	80%	12 / 20	24 Rpm		~	Log
	9		©		<u>Details</u>	Stop	0/3	0%		0 Rpm			Log

Machine Room:

The machine room is the homepage of the application. It consists of a list showing all machines in the system. This page gives an overview about the actual status in real time of the production facility. Information shown on this page can be defined by the user. For instance the table can show machine details such as starting time, order name, article name, the actual machine status, already produced number of fabric rolls, order status in graphical view and others. For each defined order the system will show the expected time to complete the order.

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Graphical View:

This is the machine room in graphical view mode. It can be displayed also in a full screen mode to monitor on an individual screen. Each icon represents a machine to which the operator can assign a colour similar at the real colour of the machine.

Depending on actual machine status the border colour of the icon will change: green - RUN, red - ERROR, blue - STOP and gray - OFFLINE. If you move the mouse over each icon a popup-menu will be shown to display the information of the selected machine.



Logs of Events - Machin	ie: 6		
d Start Date		End Date	
nt 🔲 Stop	C Offine	🖾 Run	Error
Data	Durth	Commont	Confi
28.00.2012 02:11:47	OFFLINE	Comment	Lap (Fabric - Order)
25-09-2012 20:03:54	RUN		210015*~408641
25-09-2012 20:03:36	STOP		110015* ~ 408641
25-09-2012 19 43 41	ERROR	Target achieved	010015* - 408641
25-09-2012 17 01:06	RUN		4[0015* ~ 40864]
25-09-2012 17:00:30	STOP		110014" ~ 408641
25-09-2012 16:59:54	ERROR	Target achieved	0[0014* ~ 40864]
25-09-2012 14:17:50	RUN		1510014* - 408641
AF 46 0010 11 17 11	55545	March Residence And A	ALAALA (883.0

Log of Events:

This page shows an event log for each machine. Every event that happened on the machine is registered in the database and displayed with date, type and description. It also shows in which revolution of the fabric roll the event happened including the reference of order and corresponding fabric number. A search system is implemented which allows to search by date and for type of event. The software is able to record changes of status of the machine (RUN, STOP, ERROR, PROGRAM, ONLINE), changes of work shift, parameter changes and others.

Check - Machine: 10									
Home									
	Article	Machine							
	cm/rev	cm/rev							
Yarn consum. 1	753	753							
Yarn consum. 2	0	0							
Yarn consum. 3	748	743							
Yarn consum. 4	0	0							
Yarn consum. 5	432	430							
Yarn consum. 6	0	0							
Speed RPM	28	0							
Takedown %	0	0							
Target	1900	1900							

Check:

The "check" page is accessible from a link in the machine room. This page shows a comparison in real time between the data defined in the article and the actual data obtained from the machine. In case the data differs and / or does not meet the predetermined tolerance it will be highlighted in red to warn the user about abnormalities. The tolerance can be defined for yarn consumption, for speed and takedown.



•••	Articles Edit													
Article	<u>95</u>													
				Art	icle	Feeds Disposition	Mech	nanical and Pi	roductio	on				
	Article Code:	2045												
	Description:	Felpa												
	Barcode:													
	Created:	2013-03-27	7 - 11:47:30											
	Modified:	2013-03-27	7 - 11:50:36											
	Choose the	27				-	Co	nfirm						
	machine:	Category:	ID: 27 I	Machine:					Gauge:	22		Diameter: 30	No. of F	eeds: 90
		Belt	Count	Unit		Description		Code		% Fil	ore	No. of Feed	s Yarn consum	mm/100ndis
		1	8	Ne 🔻	1	Cotton		FCJ008		21	%	15	158	
		2	30	Ne 🔻		Polyster		FCXM030		31	%	30	453	
	Supply:	3	8	Ne 🔻		Cotton		FCJ008		21	%	15	158	
		4	30	Ne 🔻		Lycra	_	FCX031	-	28	%	30	398	
		5		Nm 👻			_		-88		%	0	0	
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Article / Edit:

Use the first tab to insert some information like name and description. The machine on which the article will be knitted can be selected. Up to 6 belts can be accessed and technical parameters could be entered. This data allows to calculate the theoretical weight of the fabric. The second tab (feed disposition) allows to enter the feed disposition. It is possible to choose up to 16 feeds and up to 3 yarns per feed to match the pattern which is setup for this article.

The third tab (mechanical and production) contains all technical fields descriptive for the machine. In addition there are two buttons that allow to calculate the weight of the fabric or how many machine revolutions are necessary to produce a certain quantity of knitted fabric.



Article List

Home | New | Search

Article Code	Description	Machine	Status		
5008	Single Jersey	6 -	Standby	Ø	>
5071	Interlock	2 -	Standby	2	>
5228	Rib	6 -	Standby	Ď	2
5170	Interlock	14 -	Standby	1	2
5205	Single Jersey	2 -	Standby	Þ	2
5267	Interlock	14 -	Standby	1	2
5326	Interlock	3 -	Standby	Þ	2
5027	Rib	5 -	Standby	1	
5332	Pique	8 -	Standby	Þ	
544	Rib	4 -	Standby	Þ	
5017	Single Jersey	13 -	Running	Þ	
5308	Pique	8 -	Standby	1	
582	Pique	4 -	Running	Þ	-
5327	Interlock	3 -	Standby	1	1
5038	Single Jersey	13 -	Standby	Þ	-
5218	Interlock	2 -	Standby	1	
565	Double Jersey	8 -	Running	Þ	-
5295	Interlock	14 -	Standby	1	
5245	Pique	8 -	Standby	Þ	3
5143	Interlock	2 -	Standby	1	

Article List:

The list of items in the system is represented by a table that shows the code and the description of the article, the production machine and the status. As long as the article is not in production, parameters can be edited 2° or the complete article can be changed. A search function is included.



	Order	Start Date	End Date	Revs	No. of Rolls	Working Time	Stop Time	Average Speed	Weight (kg)	No. of Events	Efficiency
	40817 (*)	17-09-2012	24-09-2012	98,148	50	54h 50m	15h 38m	29.8	1254.8	293	78
	40883	24-09-2012	24-09-2012	4.019	3	0h 32m	2h 58m	125.6	51.4	12	15
der	40884	24-09-2012	24-09-2012	4.000	2	2h 11m	0h 17m	30.5	51.1	7	88
21222	40889	24-09-2012	25-09-2012	7.038	4	4h 01m	0h 44m	29.2	90	44	84
	40867	25-09-2012	002000000028	14.446	7	7h 55m	2h 08m	30.4	184.7	29	79

(*) invalid start/end date!

Report				Start Date : End Date	18-09-20 05-10-20	12 12				Shift: All Shifts	l.
	Order	Shift	Revs	No. of Rolls	Working Time	Stop Time	Average Speed	Weight (kg)	No. of Events	Efficiency	
Total	10	All	123.337	78	66h 40m	23h 47m	30.8	1562.4	390	74	0
Shift Subtotal		1 2	58.535 64.802	38 40	32h 26m 34n 13m	10h 36m 13h 10m	30.1 31.6	734.4 828	197 193	75	8
05 10 2012	40867	2	7	0008*	00h 00m	01h 02m	5.7	0.1	1	1	0
25-09-2012	40857 40857 40857 40857 40857 40857 40857 40857 40857 40857 40857 40857 40857 40857 40857	1 2 2 2 2 2 2 2 2 1 1 1 1 1 1 1 1	1.094 422 2.000 2.000 2.000 2.000 2.000 350 1.650 2.000 1.038 2.000 2.000 1.545	0035* 0008* 0005* 0005* 0004* 0003* 0002* 0002* 0002* 0001* 0003*	00n 03m 00h 13m 01h 05m 01h 05m 01h 05m 01h 05m 00h 11m 00h 54m 01h 05m 01h 05m 01h 05m 01h 05m	000 13m 000 02m 000 07m 000 13m 000 05m 000 10m 000 06m 000 11m 000 05m 000 11m	364.7 32.5 30.8 30.8 30.8 30.8 30.4 31.8 30.6 30.6 30.6 30.5 30.5 30.8 20.5 20.5	0 54 25.6 25.6 25.6 25.6 25.6 21.1 25.6 13.3 25.6 13.3 25.6 19.8	7 2 3 4 5 5 4 2 1 2 8 9 12	18 84 90 83 93 93 93 91 44 98 94 86 95 87 84	000000000000000000000000000000000000000
24-09-2012	40917 40983 40883 40883 40883 40884 40884 40884 40884	2 1 1 2 2 2 2 2 2 2	39 0 19 2 000 2 000 2 000 2 000 455	0035* 0035* 0050* 0003* 0002* 0001* 0002* 0001*	00h 03m 00h 00m 00h 01m 00h 24m 00h 06m 01h 06m 01h 06m 01h 06m	01h 25m 01h 00m 03h 50m 00h 01m 00h 43m 02h 13m 00h 13m 00h 03m 00h 05m	13 0 19 83.3 333.3 30.8 30.3 30.3 30.3	0 0 02 25.6 25.6 25.6 25.6 5.8	9 1 1 1 1 4 3 7	4 0 50 38 5 83 94 75	000000000000000000000000000000000000000

Statistics

The user can select the different options in the drop-down menu for a individual selected time period with options as follows:

- all machines
- individual machine
- machine group
- operator

The upper part shows a statistic with orders, the bottom part shows the statistic of a selected machine with the corresponding orders. Besides the information about number of rolls, working time, stop time and number of events one can also get the information about the efficency. Each page can be printed and exported to Excel. Also a stop statsitic for each stop reason can be generated. It can be displayed as graph and table view.





Statistics:

By pressing the info button in the row of an order you get more details and a pie chart that distinguishes the percentage of working hours, machine down time and machine down time due to error messages. There are two histograms representing the percentage of time for each order of each event (in relation with all events) and the number of times each error happened.

Stop Statistics:

A seperate stop statistic can be generated for each stop reason individually. This can be displayed either as graph with stop time in total or per machine with number of stops and total stop time. The time period for this stop statistic can be selectred as well.



	34	User priviledges		
Machine Room	View	Modify	Edit	Delete
Articles	View	Modify	Edit	Delete
Registry	View	Modify	Edit	Delete
Orders	2 View	Modity	Edit	Delete
Stock	10 view	Modity	Edit	Delete
Archive	View	Modity	Edit	Delete
Statistics	12 view	Modify	Edit	🖾 Delete
Log	View	Modify	Edit	Delete

Setup – User Privileges:

This menu allows to set privileges. It is only accessible by the administrator. For several menus the administrator defines who is allowed to view, edit, modify or delete data in the different main menus.

Shift					·			
Setup shifts Delete al	Lshifts							
	Shift	Shift 1	Shift 2	Shift 3	Shift 4	Shift 5	Shift 6	Edt
	Monday	07:00 - 14:00	14.00 - 22.00	100-01 V			<u></u>	2
	Tuesday	07:00 - 14:00	14:00 - 22:00					1
	Wednesday	07:00 - 14:00	14.00 - 22.00					2
	Thursday	07:00 - 14:00	14:00 - 22:00		*_*			1
	Friday	07:00 - 14:00	14.00 - 22.00	and and and and				2
	Saturday	07:00 - 14:00	14:00 - 22:00		*			1
	Sunday	07:00 - 14:00	14.00 - 22:00					2

Setup – Shift:

In this menu working shifts can be determined independently for each day. Up to 6 shifts are available.



Registry Edit	
nistry	
	٥
ID Name t	2
ID Address t	5
IP Address *:	192.168.1.3
Manufacturer *:	
Model *:	
Year:	2010 💌
Diameter *:	30
Gauge *:	20
Registration Number:	102048
Dial Needle Code:	
Dial Needle Supplier	
Cylinder Needles Code:	
Cylinder Needles Supplier:	
Cam 1:	
Cam 2	
Cam 3:	
Cam 4	
Cam 5	
Cam 6	
Cam 7	
Cam II.	
Maintenance Interval (hours):	5200 2 Reset
Oil Type:	
Total Hours	13 252
Total Revolutions	15 902 402

Setup – Machine Registry:

In this menu the administrator creates machines which will be linked to the NETWORKER MONITORING SOFT- WARE. It is possible to enter several parameters and descriptive text, e.g. single or double jersey machine, manufacturer, model, information about needles and cams and etc. Also the colour can be defined in which the machine appears in the graphical view of the machine room.



Order List:

The order page shows a list of all the jobs in the system. These orders are shown in a table that allows the sorting of all its columns. The columns are present status (standby, in queue, running, completed), order code, description, customer, article, machine, weight, start and estimated finish dates. The order can be changed by clicking the appropriate symbol \checkmark on the right side of each order. Only orders in standby can be changed. If an order is completed it gets an icon a which leads directly to the statistics. All orders which are in "running" status have a magnifying glass which leads to more detailed information e.g. about the progress.







Operator Management

Operator managment allows to assign a machine to a operator for each shift. In the statistic section the operator activities can be displayed and analyzed.

A operator database is included and a entry for each operator can be set up.



ADVANCED KNITTING TECHNOLOGY

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