

# **Sustainability in commercial laundering processes**

Module 6  
**Special aspects**

Chapter 6

## **Monitoring, Controlling, Documentation**

# Content

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- Targets
- Textile logistics
- Application of transponders
- Production data collection
- Process monitoring
- Machine monitoring
- Monitoring washing machine, examples

## Targets of data collection

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### ⇒ **Quality control**

- ✓ Process data protocol
- ✓ Laundry identification, traceability

### ⇒ **Warranty to maintain product quality**

- ✓ Textile identification, functionality-monitoring

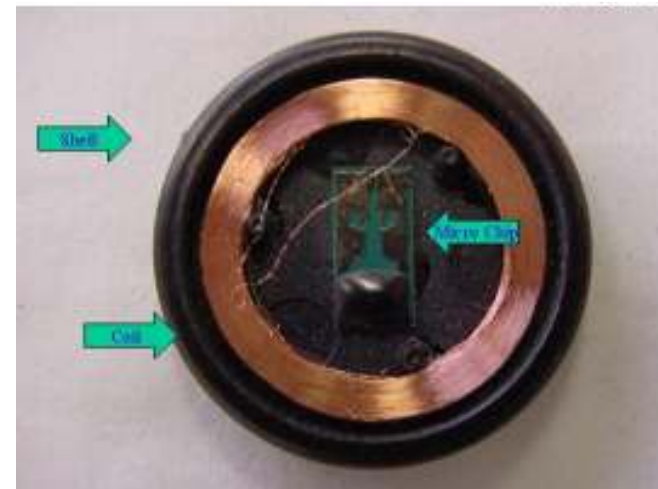
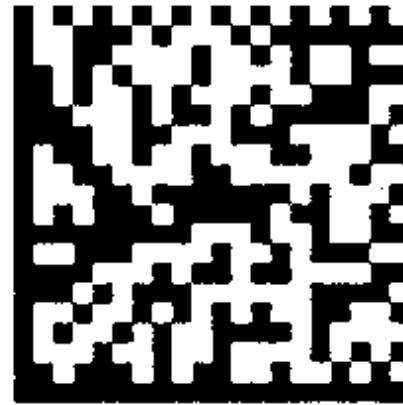
### ⇒ **Cost reduction, sustainable production**

- ✓ Textile logistics
- ✓ Life cycle control, comparison of performance
- ✓ Staff coordination, application of machines (coordination)

### ⇒ **Warranty by maintenance**

- ✓ Reduction of stop periods/down times

# Possibilities of data collection



# Transponder application, advantages

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- More transparency (data-/product flow)
- Warranty of textiles availability
- Improvement of quality control and traceability
- Efficient supply-/store management
- Efficient and constant quality check
- Data processing and monitoring immediately
- Simple complaint and textile item exchange management

# Transponder application, advantages

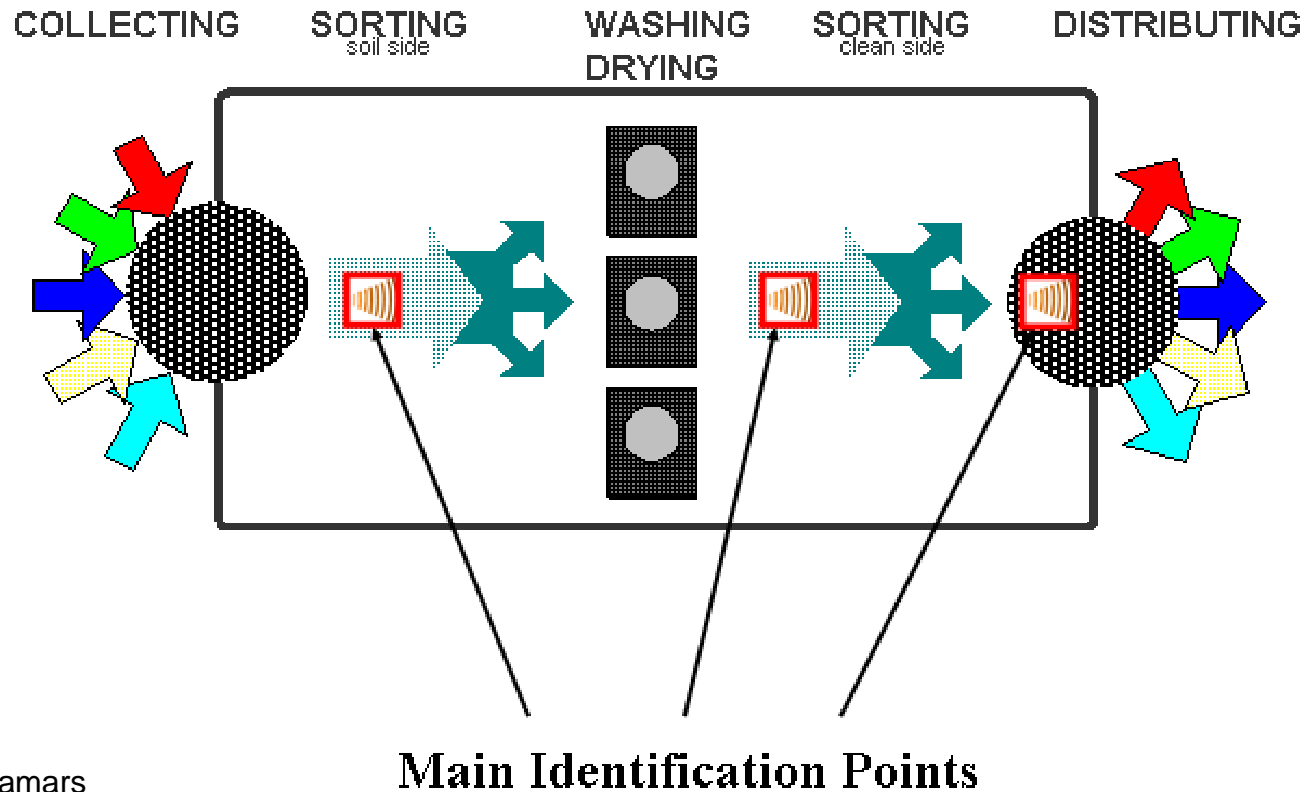
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- Supply Chain Management – Controlling of the entire process
- Automatically registration of soiled laundry, separate laundry in chaotic position
- Register without contact
- Robust labelling, resistant against soiling, chemical and thermal action
- High data collection performance in comparison to manual
- Low error rate
- No risk of contamination

# RFID application possibilities

## TYPICAL LAUNDRY CYCLE



source: Datamars

# Teleservice

(also see 6-7)



source: Kannegiesser

# Production data washing

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## Available production data

### Consumption data

- Product consumption
- Per product, dosing unit and kg dry laundry

### Detergent dosing programmes of washer extractor

- Amount of dosage per impulse
- Pump performance/min
- Dosage per kg dry laundry

### Fault protocol

- Lack of product
- Machine defects
- Exceed of dosage time
- Flow-monitoring

### Failure protocol

- Failure per signal
- Machine assignment
- Date, time, duration

### Daily diagram

- Program start of each washer extractor
- Including optional load and program duration
- Amount of batches per machine

source: ecolab

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# Production data washing

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## Available production data

### Daily production

- Amount of dosing programmes per washing machine
- Batches per machine in kg
- Total amount of batches

### Duration

- Washing time
- Machine running time
- Machine down time/idle time

### Manual functions

- Kind, date/time and duration of manual operations

### Dosage processes to calibrate

- Per dosing unit
- power per second/per minute
- Date of last calibration

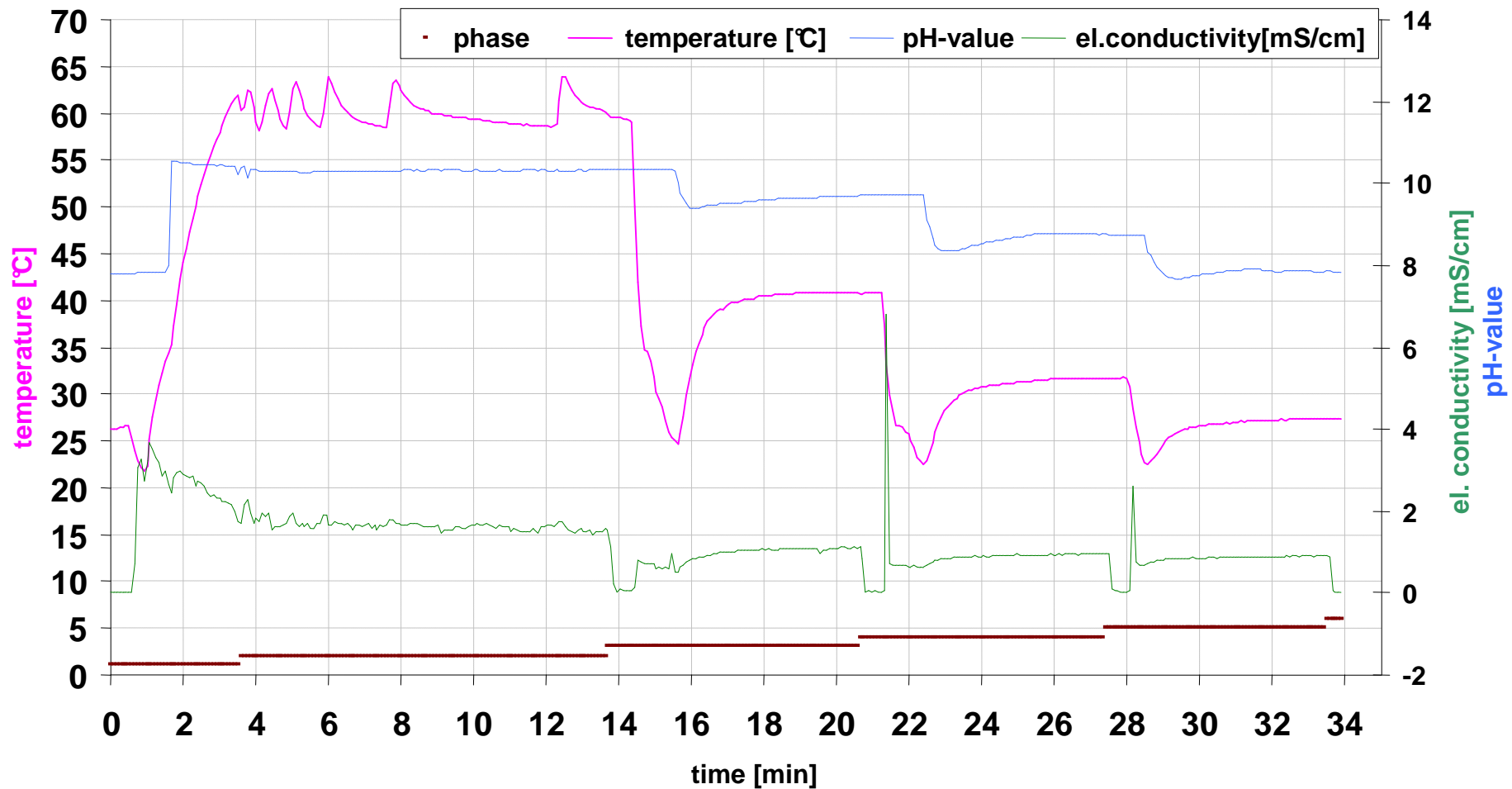
source: ecolab

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## ➤ **Measuring data**

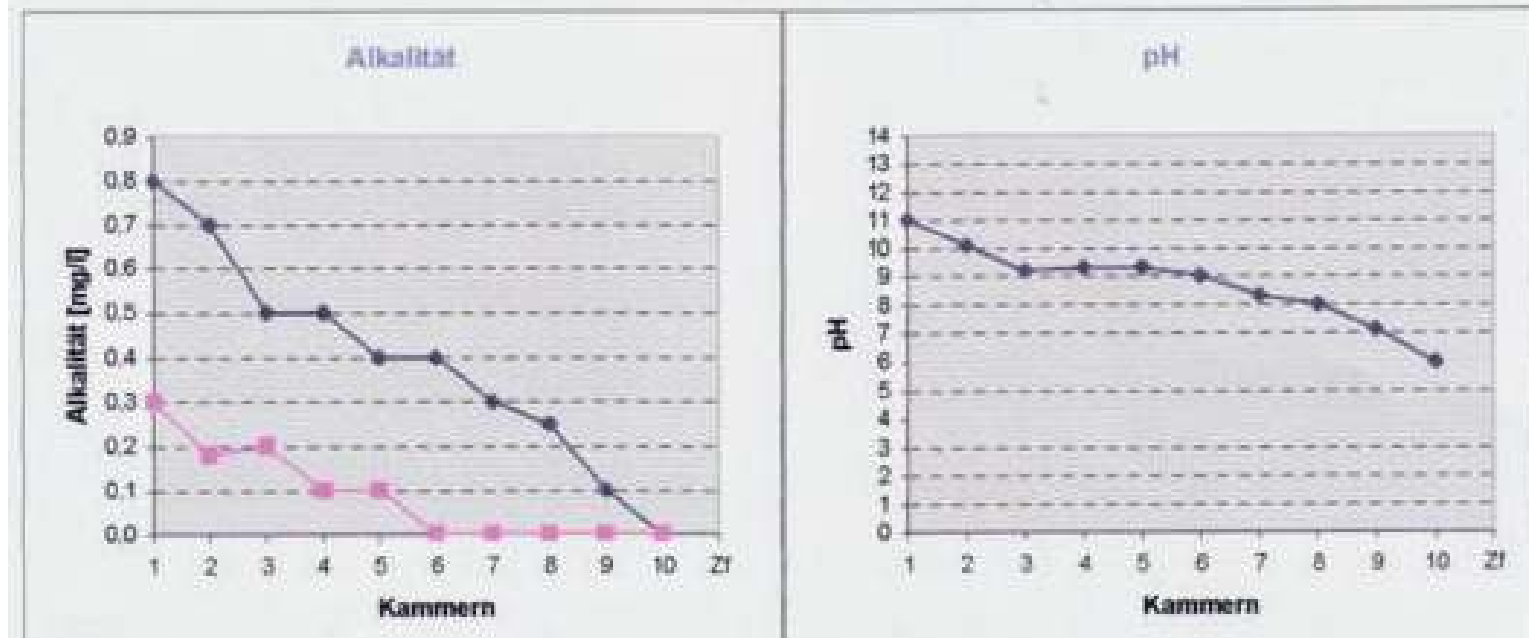
- ⇒ Load ratio
- ⇒ Bleaching agents and dosage
- ⇒ Max. liquor temperature, duration
- ⇒ Liquor ratio main wash, rinsing phase
- ⇒ Concentration of alkalinity
- ⇒ Water consumption (fresh water, total water)

# Process control washing

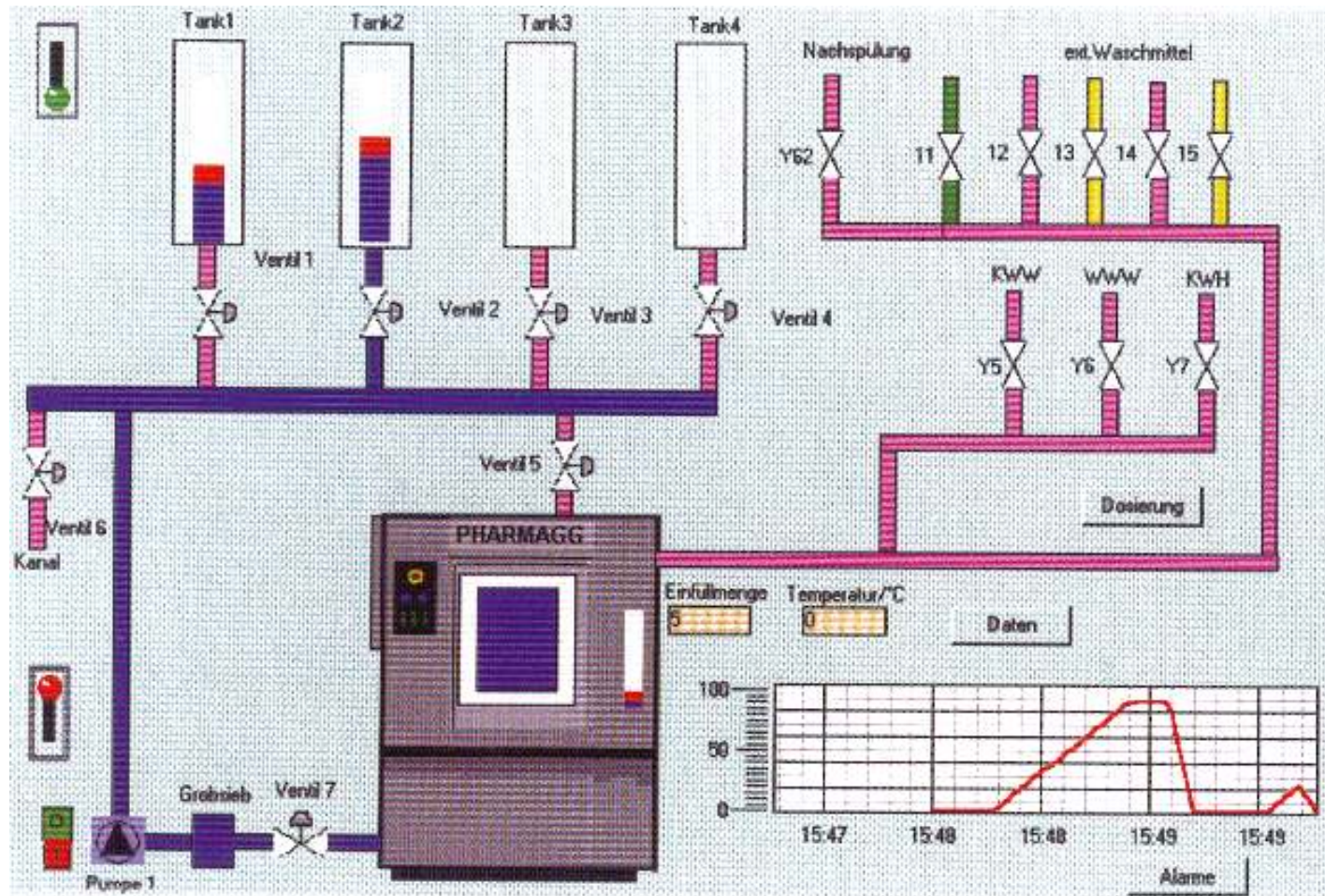


# Titration protocol OP-theatre

Messwerte	pre wash			main wash				rinse		finish	
pH	11,0	10,1	9,2	9,3	9,3	9,0	8,3	8,0	7,1	6,0	
Gesamtaalkalität [mg/l]	0,8	0,7	0,5	0,5	0,4	0,4	0,3	0,3	0,1	0,0	
Atzalkalität [mg/l]	0,3	0,2	0,2	0,1	0,1	0,0	0,0	0,0	0,0	0,0	
Sauerstoffgehalt [mg/l]	42	40	192	172	156	123	98	67	45	35	



# Process control washer extractor



source: Pharmagg

# Documentation washing process

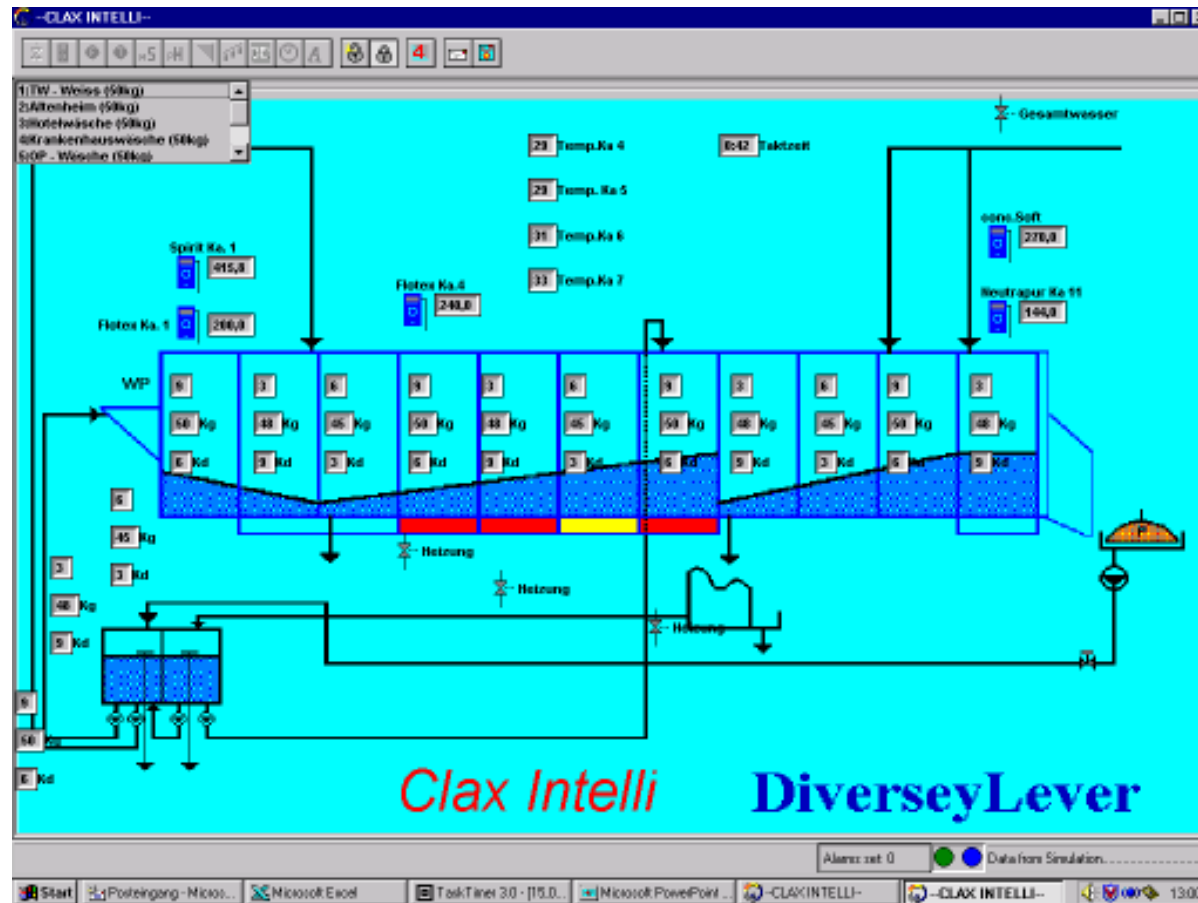


Leonardo da Vinci

Waschverfahren DTV-Standard statistische Auswertung Mischgewebe **blau dunkelbunt**

		rein weiß	weiß hellbunt	weiß kontrastbunt	hellbunt kontrast dunk	dunkelbunt kontrast h	dunkelbunt	schwarz			
1.) Sortierung	Gräumaßstab								keine Angaben		
in welchen Sortierungen wurde der Kittel gewaschen											
2.) Maschinentyp	Tunnelwascher										
	Waschschleuder										
	Trommelteilung										
	ungeteilt										
	Pullmann /Diagonal-Tig.										
	Y-Teilung										
	Trommelgeometrie										
	Tiefe / Durchmesser	0,5	0,6	0,7	0,8	0,9	1,0	1,1		1,2	
Beladeverhältnis	Beladegewicht zu Trommelvolumen	1 : 6	1 : 8	1 : 10	1 : 12	1:14	1 :16	1:20	1:24		
		0,166	0,125	0,100	0,083	0,071	0,062	0,05	0,041		
Art der Flottentührung		sprüh	Bad								
3.) Bleichtyp											
im Klarbad	Chlor (NaOCl) Aktivchlor	0	6	12	25	50	100	200	400	800	mg/l Chlor
	Sauerstoff (H2O2) Aktivsauerstoff	0	6	12	25	50	100	200	400	800	mg/l O <sub>2</sub>
4.) verfahrenstypische Besonderheiten											
	mit Encym										
	Desinfekt.										
5.)maximale im Verfahrensverlauf erreichte Temperatur in grad Celsius											
		30	40	50	60	70	80	90		°C	
Einordnung											

# Data collection washing



Quelle:  
DiverseyLever



Education and Culture

Leonardo da Vinci

# Data collection washing

Determination of product consumption on basis of nominal values (pump power) or by measuring flow

