

# SMARTLIQUOR® TYPE «SL-AT»

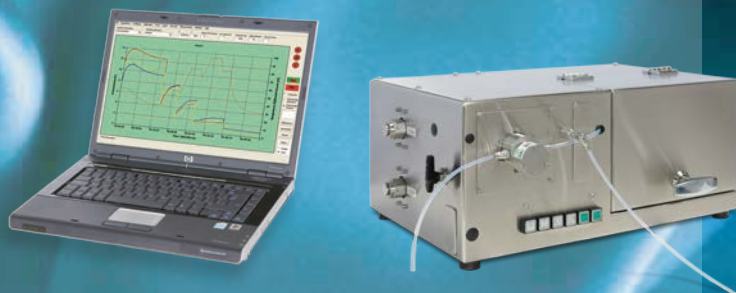
## Dyebath Analysis «Off-line Measurement»

### General Description

SmartLiquor «SL-AT» is a state-of-the-art system for the off-line measurement of dye liquors. It is composed of hardware with spectrophotometer, pump for liquid transport and motorized cell changer, controlled by software. It has been designed for the requirements of semi-continuous (Cold Pad Batch, CPB) and continuous dyeing and includes software for the pass/fail analysis of stock tank solutions.

A unique feature is its software for the correction of tailing problems, making it possible to eliminate substantivity-induced changes in the pad liquor when dye and alkali are jointly applied.

SmartLiquor uses a fully-fledged spectrophotometer for the analysis and was introduced at the ITMA 2003 in Birmingham. It is now being used by many dyehouses, dye and chemical suppliers as well as research institutions all over the world.



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### Application areas

- Suitable for all major dyestuff classes (reactive, disperse, direct, acid etc.)
- Pass/fail analysis of stock tank solutions before start of a production run
- Elimination of tailing-problems when dye and alkali are jointly added to the application trough (e.g. CPB, E-Control, Pad Steam)
- Quality control of dyestuff deliveries
- Analysis of washing off characteristics on bulk production machines

### Features

- Spectrophotometer with USB-port for full spectral analysis of visible light with better than 1nm resolution (optionally, the UV-range can also be covered)
- Up to six dyes measured simultaneously
- Compensation for lamp drift for high accuracy and reproducibility
- Concentration range: ca. 0.1 g/l up to ca. 100 g/l dye
- Dye amount correction values for stock tank solutions
- Tailing correction values for pad liquor adjustments



### Jointly developed with SmartLab Limited, England

SmartLab Limited was founded 2004 by a scientist of the Dye Chemistry Institute at the University of Leeds in England. The company is specialized on Software and Measurement techniques for process optimization of dye houses.



Quality Control Results			
IB file:	C:\Users\MartinFC\Documents\SmartLiquor\Customers\		
Sample file:	C:\Users\MartinFC\Documents\SmartLiquor\Customers\		
	Levafix Amber CA-I	Levafix Fast Red CA	Levafix Blue CA
Dye conc. IB, g/l	0.830	0.692	0.731
SmartLiquor Measurements			
Dye conc. sample, g/l:	0.967	0.662	0.892
Concentration error, %:	16.5	-4.3	22.1
Total colour strength, %	0.0		
Fail		<div>Calculate Corrections</div> <div>Recalculate</div>	
Corrections			
Volume tank, l:	1000		
Water volume to be added, l:	221.000		
	Levafix Amber CA-I	Levafix Fast Red C	Levafix Blue CA
Dye to be added, g:	46.48	182.69	0.00

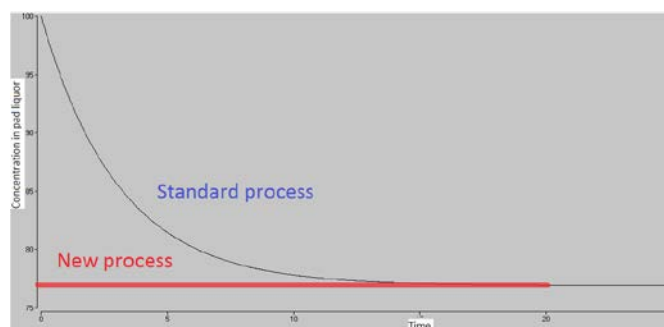
### Pass/Fail analysis of stock tank solutions

Incorrect dye concentrations of the stock tank are a frequent cause for lab-to-bulk and bulk-to-bulk reproducibility problems in semi-continuous and continuous dyeing. SmartLiquor makes a quantitative comparison possible of the standard and the sample solution and converts the measurement to three kinds of conclusion: «Pass», «Warning» and «Fail».

If the difference between sample and standard is unacceptably high, the software calculates the required additions of water and dyestuff to bring the sample to the same concentrations as the standard.

### Tailing Control

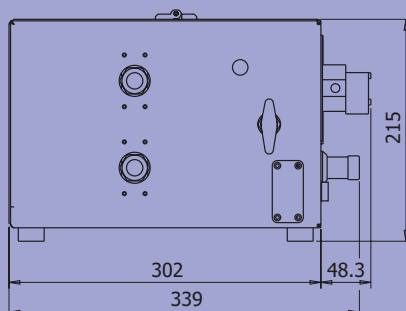
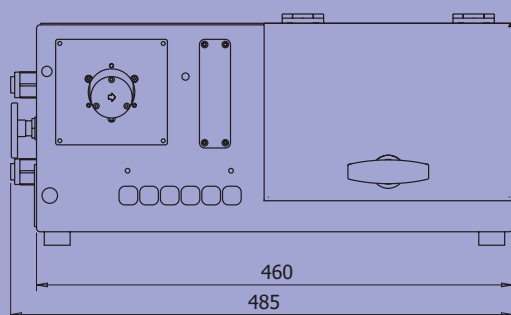
When dyes and alkali are jointly applied in the padding trough, the so-called tailing of dyes, i.e. the initial drop in the dye concentration in the trough caused by the substantivity of the dyes for the textile, can be considerable. Tailing, when not appropriately compensated for, reduces lab-to-bulk reproducibility and increases off-quality yardages. The degree of tailing and its duration depend on many variables, such as dye characteristics, dye amount, electrolyte concentration, fabric construction, trough volume, machine speed and liquor pick-up of the fabric. Therefore, the degree of tailing is difficult to calculate theoretically. With SmartLiquor «SL-AT», however, the degree of tailing can be measured and corrected using a simple, proprietary lab test before the actual production run.



## Technical Details

### SL-AT

Number of dyes per dye analysis:	up to 6
Measuring range of dye concentration:	approx. 0.1 g/l to 100 g/l
Spectrophotometer measuring range:	200 - 1100 nm
Spectrophotometer resolution:	1 nm
Temperature range:	up to 110°C
Dimensions L x W x H :	485 x 340 x 220 mm
Weight:	~12 kg



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