



## THEN-AIRFLOW<sup>®</sup> **SYNERGY**

The consequence of piece dyeing

# The THEN aerodynamic system



The new THEN-AIRFLOW® SYNERGY represents the combined result of the entire technological possibilities provided by the latest, patented THEN-AIRFLOW® technology. Through the interplay of all the technical possibilities and functions, economic and ecological advantages are achieved, which up to now, were unobtainable with the available dyeing technology.

## Let the Air Flow

The patented aerodynamic system is based on the principle that the fabric transport is effected by air only, which means that as opposed to a hydraulic

dyeing machine, no dye liquor or aqueous medium is required to transport the fabric. The fabric is constantly in motion from loading to the batch end, even during the discharge and filling processes.

## No Limits

Knits and woven fabrics from light up to heavy weight and virtually any fibre or fibre blend can be bleached and dyed without machine modifications or changes.

The modular system of the THEN-AIRFLOW® SYNERGY allows tailor made machine configurations, which guarantees maximum efficiency.

## Proven Success

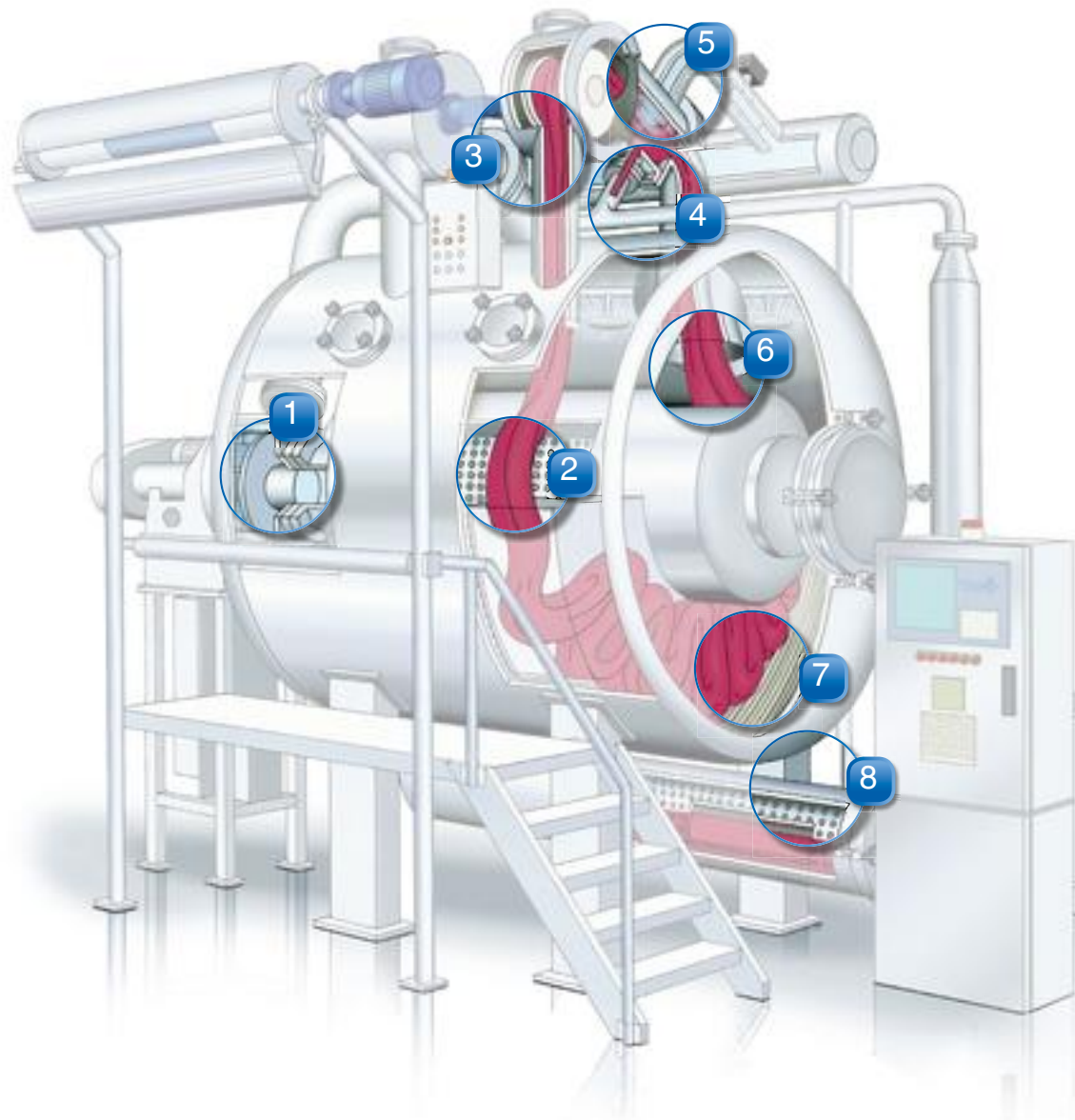
Several hundred plants in successful operation around the world document the reliability and economy of this dyeing system, which is based on aerodynamic principles.

## Ongoing Research

Ongoing, further development guarantees reliable and long-term investment protection.

Moreover, the diversity of the applications offered by the system is genuinely outstanding.

# The aerodynamic original



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|---|---|--|
| <p><b>1</b> Aerodynamic transport. Economical, frequency controlled blower.</p>   | <p><b>4</b> Unique rinsing method. Short processing times with excellent rinsing through spraying with fresh water.</p>       | <p><b>7</b> Dye liquor and fabric separation. PTFE slide bottom ensures maximum gliding and protection of the fabric surface.</p>        |
| <p><b>2</b> Safe fabric transport. Optimum displacement and minimum crease formation are ensured by the aerodynamic drive.</p>                            | <p><b>5</b> Maximum dyeing safety. Aerodynamic fabric transport enables dyeing processes in a saturated steam atmosphere.</p> | <p><b>8</b> Liquor sump. The "Self Cleaner" filter system ensures a lint-free surface and reduces the setting times between batches.</p> |
| <p><b>3</b> Active fabric running control. This facilitates slip regulation, the exact monitoring of the fabric speed and protective fabric handling.</p> | <p><b>6</b> Optimised fabric storage. Smooth plaiting guarantees excellent fabric displacement.</p>                           |  |



## The ecological solution



For hundreds of years, water, which is a precious human resource, has been the most important element in textile finishing. Water has been used in large quantities for fabric dyeing.

A step in the opposite direction was taking place in 1979. The THEN Research and Development department asked itself the question how the enormous volumes of water required for piece dyeing could be reduced along with the related energy costs.

This rethink commenced with the development of the THEN-AIRFLOW® technology, which already faced the fact that even though water had served as a transport medium in the past; it was and is still today not available everywhere in sufficient quantities.

However, water is today an even more expensive medium. The answer to this is the new THEN-AIRFLOW® SYNERGY. This model offers previously unattainable economic and ecological advantages.

The outstanding advantages are:

- Unlimited flexibility with regard to all fibres (except pure wool) and fabrics weight classes between 50–600 g/m.
- The lowest liquor ratio on the market: man-made fibres approx. 1:2, natural fibres 1:3 to 1:4, depending on the article and structure.
- Energy savings of approx. 40% compared to hydraulic jet-dyeing machines.
- A reduction in the overall process time of around 25%.
- The most advanced piece-dyeing machine available today. Providing a competitive edge through the lowest available processing costs.
- Lowest water consumption and effluent represent an ecologically sound solution.

# The modular system for maximum efficiency

The new THEN-AIRFLOW® SYNERGY is the perfect dyeing machine for almost every application, fabrics made of natural or man-made fibres and its blends.

The different modules allow the perfect set-up for any customer requirement. Through the interplay of all the technical possibilities and functions, each model

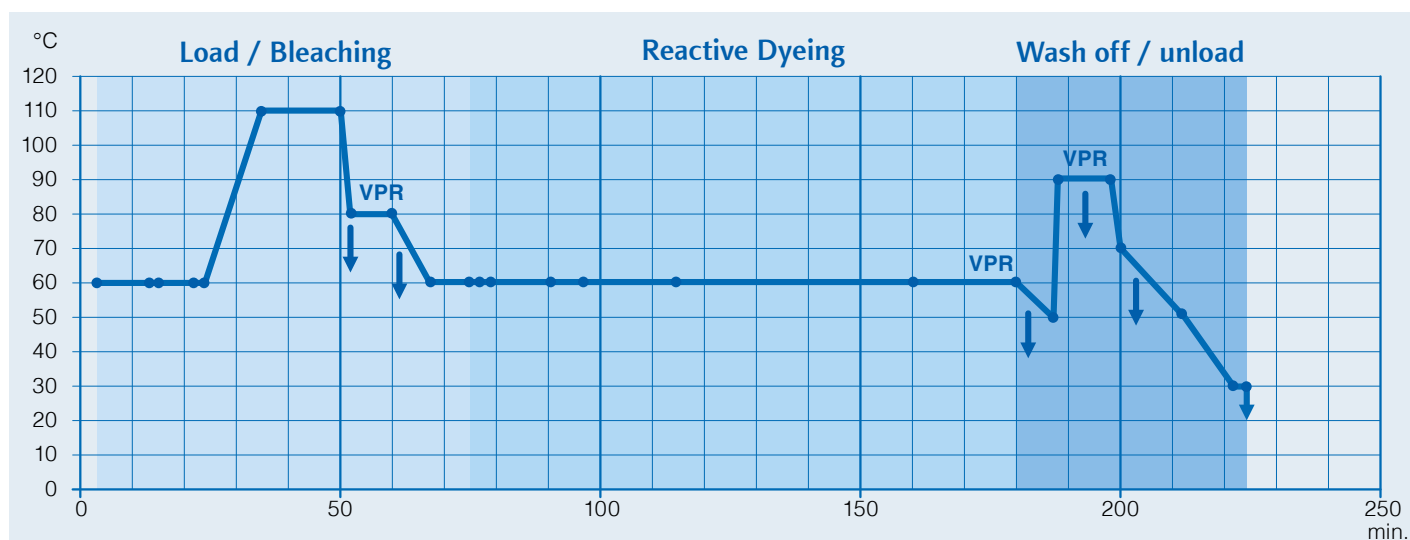
represents the optimum solution for an economical and ecological dyeing process. The achieved economy is quite considerable.

## Fabric features

Article	100% Co
Process	react. Isotherm 60°C
Colour	brown
gr/m	416.7
gr/m <sup>2</sup>	220.5
Width [cm]	189
Tubular [cm]	94.5
Total capacity [kg]	500
Total meters	1200

## Results

Process time	[min.]	225
Machine steam	[kgs]	526
Hot water steam	[kgs]	596
Cold water	[ltrs]	5746
Hot water	[ltrs]	9381
Water for cooling	[ltrs]	0
Electricity	[kWh]	122
Consumption per kg fabric		
Steam	[kgs]	2.21
Water	[ltrs]	29.76
Electricity	[kWh]	0.24



Consumption comparison between THEN-AIRFLOW® SYNERGY and conventional hydraulic jet-dyeing machine.

		THEN-AIRFLOW® SYNERGY	Conventional
Water	[kg]	24–42	58–86
Steam	[kg/kg]	1.85–2.90	3.35–6.35
Electricity	[kWh/kg]	0.22–0.32	0.24–0.38

# Components

## THEN-Time saver®

The "THEN-Time saver®" has an effect on all the process phases downstream of dyeing: Massive timesavings being achieved through the effective use of the unique THEN-AIRFLOW® "Direct Rinse" method in combination with the "Power Rinse" process. Precisely matching components are increasing these timesavings even further. The most important ones are:

The volume of pre-heated rinsing water (60°C) which allows rinsing up to 85° per time unit can be programmed and is matched to the need for the rapid washing off of chemicals and hydrolysed dye. Observation takes place via a through flow measurement device, which ensures that optimum rinsing is achieved. An optional hot water tank ensures that sufficient rinsing water is available at the right temperature.

"Volmedos" facilitates extremely, exact dye and chemical dosing via a control circuit with through flow measurement device and control valve.



## THEN-DYNET®

The intelligent THEN-DYNET® control unit consists of a Windows® PC with touch-screen and BoxPC.

On the one hand, in network operation, the control system can access the control station data and, on the other hand, the complete control system can also be operated from the control station.

Batch processing is shown in real time. Apart from the set and actual values of the machine, defects and manual interventions by the operator are also registered.



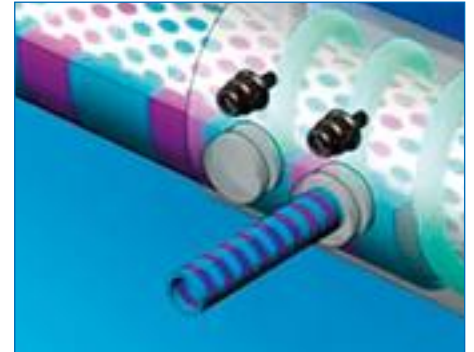
## Self cleaning filter

The self cleaning filter system ensures a lint-free surface and greatly reduces the setting times between batches. As opposed to conventional filters, which can only be cleaned manually, the self cleaning filter system continually keeps itself clean. The lint is washed away automatically at the end of the process.



## THEN-Hot drainer

The THEN-AIRFLOW® SYNERGY allows a drain at temperatures of over 95 °C at sealevel while the fabric is in motion. This is possible after pre-bleaching and dyeing and results in timesavings of 15–30 minutes. In the case of polyester fabrics, oligomers contamination can be removed efficiently.

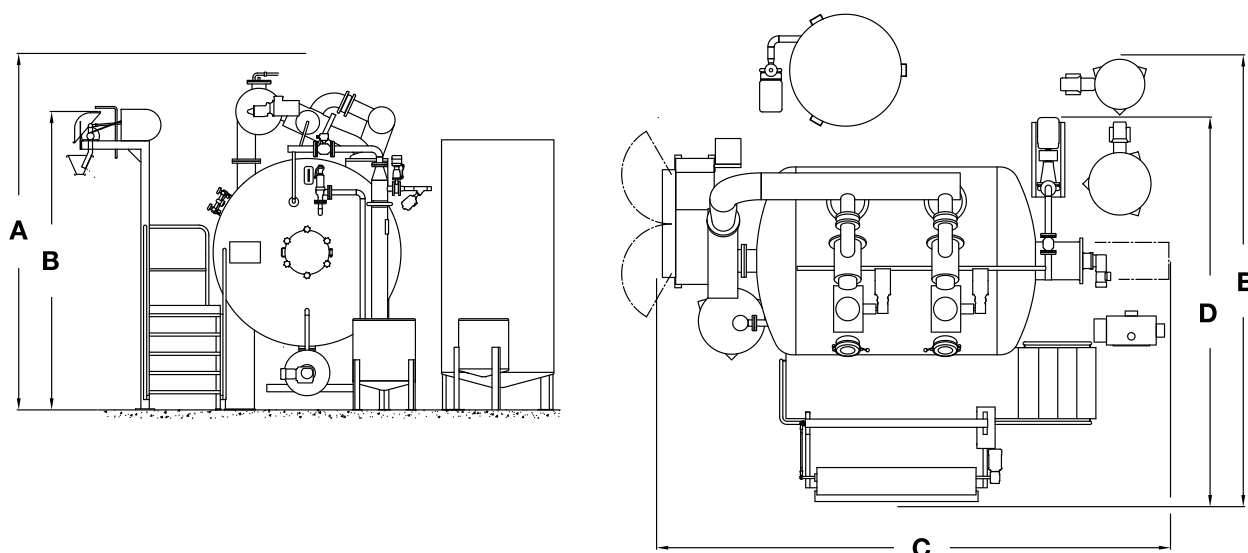


## Spectra dyeing

A simple modification of the THEN-AIRFLOW® SYNERGY machine using the SPECTRA module allows the creation of a wealth of effects, e.g. multicolour, rainbow and batik shading. During the SPECTRA process, liquor circulation is interrupted once the fixing conditions have been reached. Dye application takes place rapidly via the special SPECTRA nozzles. The designs appear to be original.



# Models and technical specifications



AIRFLOW® SYNERGY	50	250	500	750	1000	1500
Dimension A [mm]	3900	4300	4300	4300	4300	4300
Dimension B [mm]	3370	3580	3580	3580	3580	3580
Dimension C [mm]	4300	4800	6200	8200	9500	12700
Dimension D [mm]	4400	4650	4700	4800	4900	5200
Dimension E [mm]	4400	5050	5450	5800	5800	6400

Operating temperature: max. 140 °C at 3 bar overpressure.

Liquor carrying parts in special steel, material no. 1.4571 (AISI 316 Ti) / 1.4404 (AISI 316 L).

FONG'S EUROPE GMBH reserves its right to make design changes, the quoted dimensions are non-binding.

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