

New Innovative Concept for Continuous Microwave Dyeing

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In the realm of textile dyeing, traditional methods have long relied on household microwave ovens as a quick fixation for the discontinuous fixation of reactive dyes in their laboratories. However, a recent groundbreaking initiative has breathed new life into this technology, evolving it into a cutting-edge concept for the continuous dyeing of cellulosic fibers on an industrial scale.

A collaborative effort involving a German-based expert team from ITA RWTH Aachen, Püschner GmbH & Co KG and DyStar Colours Distribution GmbH has designed a Continuous Microwave Dyeing Machine.

Following the successful pilot machine installation, a series of dyeing trials were carried out and guideline parameters were defined yielding excellent dyeing results:



- Dye yields matching or surpassing CPB dyeing standards
- Elimination of the need for urea or salt in the process
- Swift dye fixation and drying within 60 to 120 seconds
- Deep fiber penetration
- Homogeneous dyeing result on both front/back
- Good levelness
- Significantly reduced migration tendencies compared to a convection drying process.

This electronically driven system does not depend on gas or oil for the power supply and can be operated based on renewable energy. Furthermore, it achieves higher dye yields without the addition of salt or urea, resulting in a reduced environmental footprint. The advent of the Continuous Microwave Dyeing could be a key to unlocking the landscape of textile finishing, marking a significant stride toward a more sustainable industry future.