

## Advanced Web Handling (Tension Decoupling Network)

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### Abstract

The basis of technical progress is the growing understanding of the underlying physical relationships and the consequent consideration of the various web handling issues. In the plastic electronics R2R industry the primary demands are higher machining qualities, such as accuracy of web speed, web tension and lateral positioning. To realise these demands it is necessary to consider the web transport mechanisms and consequently evaluate and compensate for any disturbing influences which are in contradiction with these demands.

The web behaviour was investigated, analytically derived and numerically simulated. For optimal web guiding, in addition to the compensation of disturbing influences, the internal couplings of the multivariable system were considered. Identification procedures were developed, which allows the determination of the parameters of the analytically derived web tension and the velocity behaviour.

Based on the control influences on the web tension and velocity behaviour of the web material, technical control measures like preventive feed forward control and new controller designs were realized in the Tension Decoupling Network functionality.

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