

NipSense and NipMaster for optimized dewatering

Perfect Team play in the Nip

In times of rising energy costs and resource shortages, the identification of saving potentials in a paper machine becomes more and more important. The biggest saving capacity certainly can be found in the press section. But which measures can be taken? Trials are expensive and time consuming. NipMaster can help.



Screenshot of NipMaster.

NipMaster is a software tool which models and analyzes roll covers. Instead of expensive trials and failures, the modeling of roll covers becomes

more and more important. NipMaster helps to quickly identify potentials and implement steps to improve the machine efficiency.

Felts integrated into NipMaster

Roll covers and felts are equally important for the dewatering of the nip.



Using data from NipSense, NipMaster creates a video that enables one to observe the nip closing precisely.



Pull-in of NipSense mat.

In cooperation with Voith Paper Fabrics the behavior of the clothing in the nip was tested. The efficiency of new felts was compared to used ones. The results of these tests, like changes in compressibility, thickness and void volume were integrated into the NipMaster, enabling the tool to calculate nip width and nip loads with and without felt. The calculation is based on complex material models – this is unique within the industry. The evaluation of the dewatering capacity is defined by the available void volume in the covers and felts. Here, it is important to analyze the capacity when the covers and felts have reached their life end.

More than 500 nip positions worldwide have been calculated and optimized with NipMaster thus far. The experienced outcomes enrich the know-how data base of Voith Paper constantly.

For example, the improvements on an LWC machine:
A steel suction roll was installed on the machine. NipMaster calculated how the dewatering situation would change if

a polyurethane cover is installed. The results showed a clear increase in dewatering capacity. The paper mill decided to install SolarFlow. The effective outcome was an increase of dryness of 1% after the 4th press and elimination of shadow marking.

NipSense

But just a software is not enough. Besides the analysis of moisture cross profile and conditioning of felts and covers, it is also important to know the real nip conditions. Theory and practice are combined by NipSense, the electronic nip measurement from Voith Paper Rolls. The measured data can be easily analyzed with NipMaster. The software translates the data into a video showing the nip closure procedure. The dewatering efficiency can only be increased with a proper closure of the nip. NipSense already identified weaknesses in nip conditions:

- Identification of unaligned nip closure and definition of correction measures
- Adjustments of nipco rolls
- Check of crown calculations

A nip allowing a uniform moisture cross profile is of crucial importance; not only for optimized dewatering, which leads to energy savings in the drying process, but also for optimum paper quality. NipMaster and NipSense ensure this.

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