
Experience with ultrasonic drying in the paper making process

G.J. Emory and G. Plavnik · Heat Technologies Inc. · Atlanta / USA

Heat Technologies Inc ("HTI"), is a US company based in Atlanta, GA, manufacturing custom-designed advanced heat and mass transfer technology systems on the basis of ultrasonic energy for a wide spectrum of industrial applications. The primary systems are sold under the Spectra Ultra HE™ brand. The company has earlier presented IMPS participants with an introduction to the underlying principles of ultrasonic heat and mass transfer with generic examples of potential results across a portfolio of application fields.

Since that time, a number of paper producers have installed systems for the drying of paper during the board manufacturing process as well as moisture control in the board. Other installations are drying of coatings that traditionally restrict press throughput. For the IMPS-2020, HTI will focus on these applications.

Participants will receive a brief overview of ultrasonic energy and gain an understanding of the basic points to review when considering the appropriateness of HTI systems. Participants will be guided on known ideal points of installation for paper makers to achieve line throughput or finished product quality advantages. HTI will share case study data from:

- A recent drying installation for the control of moisture / accelerated drying on the web edges
 - Objective: Remove 1% (approximately 30 kg/hr) of water along the 40cm edge
 - Result: 1.7% (50 kg/hr) to 2.8% (84 kg/hr) reduction measured
 - Energy Consumed: ~70 kW (operational)
- An example of paper drying / conditioning
 - Objective: Reduce and control residual moisture in paper from nominal 5-7% and increase line speed by 2x
 - Result: Run steady at 2-3% residual moisture and line speed matched to gearing of press
 - Energy Consumed: ~40 kW (operational)
- Drying of specialty paper application
 - Objective: Reduce length of drying from standard 8m; lower energy intensity; increase line speed, if possible
 - Result: Booster of 40cm drove 150% increase in line speed;
 - Energy Consumed: ~70 kW (operational)

The case studies will include photos from the installations, line data before and after installation and important design criteria of the HTI Spectra Ultra HE system.

In addition to the presentation, HTI will have a representative drying module for examination and discussion with attendees.

There will be a bonus section and an additional paper-based case study provided in the post-meeting attendee information.
