

PITA PMC Workshop



*In November 2016 PITA held a morning workshop on various aspects of Paper Machine Clothing. Below is a short summary of the various technical presentations; we hope in future issues to carry full articles based around some of these talks. In addition to the companies shown below, thanks are also due to **Detech Agency and Spraying Systems** for sponsoring the event.*

Feltest

Press felts need to have a certain and controlled void volume to accept water from the wet web; however, the degree of openness is a complicated subject, as is its measurement. A complete article relating to this presentation is published in this edition.

Heimbach UK

Forming fabrics are woven meshes, once made of wire but now manufactured from polymers. This talk took the audience through the entire process, involving: Yarn Storage; Warping; Weaving; Inspection (still best done by humans); Heat Setting; Relaxation; Cutting; Seaming; Finishing; then Packaging and Shipping. Regardless of the machine, it is now common to weave a large area then cut a fabric to suit a particular machine; of great importance here is heat setting, which involves running a fabric around heated rollers (around 190°C) to control stretch, after which the fabric is cooled and relaxed for a minimum of 24 hours to stabilise. From start to shipping the entire process can take several weeks to complete, hence the long lead time required for orders.

Heimbach UK

A forming fabric has a number of roles to perform: it conveys the stock from headbox to press section; requires wear & stability properties, flatness & uniformity; must be an effective filter to aid in the formation and drainage of the sheet; and must transmit the power around the machine. The earliest fabrics had a relatively simple structure, which, over the years, has been developed into the modern multi-layer SSB (Sheet Support Binder) patterns, where the upper (paper side) layer is designed to give maximum fibre support, and the bottom (machine side) gives both void volume to aid water transmittance and optimum wear resistance. By careful alteration of the weave design and materials used for their manufacture, the fabric supplier can produce thinner forms that improve dewatering, giving a drier sheet at the press, so equating to a power increase; equally, if the machine is press or dryer limited, customers may benefit from a slightly thicker forming fabric which gives longer life. The fabric manufacturer has a large number of variables which can be altered to tailor properties to any required situation.

Cristini

This presentation described the EPIC™ (Energy; Protection; Intelligent; Control) system for measuring dewatering in real time. Aside from the control system, it features two measurement heads: FibreScan™ and SmartScan™ high frequency microwave sensors, both of which can be used as a fixed or scanning head. FibreScan™ is used in the wet-end, and SmartScan™ in the press section. Having the ability to measure dewatering allows the process to be controlled in real time: for instance the FibreScan™ can be used to control vacuum levels – high vacuum does not necessarily equate to best dewatering since it may result in pre-

mature closure of the web. Likewise, the press sensor can be used to assess dewatering in what has traditionally been a difficult area to access. Unlike infrared systems, which assess surface phenomena only, and which can be affected by web colour, surface condition, and contamination, this microwave system assesses the whole sheet thickness up to around 600gsm. A related meter, the DuoScan™, measures felt moisture and permeability, online, again in real time. Overall the various measuring heads can be found in numerous mills throughout the world (including one in the UK), and together bring the Industry 4.0 concept into being as regards dewatering measurement.

Valmet

Water removal at the press can take two forms: uhle-box or nip dewatering. The former, where water is pressed into the fabric and then removed by vacuum, is most favoured by older, slower machines and for heavier grammages. Nip dewatering involves water being pressed through the fabric and into grooves or holes in the press roll; this is easiest on fast machines and lightweight grades. The felt requirements are different for the two techniques: an open structure is required for uhle-box, while a more dense structure is needed for nip. In addition, newer designs of uhle-box, with perforations rather than slots, can give added benefits and performance improvement.

Papermachine Consultancy Services

Conventional cleaning of fabrics uses high pressure water (up to 60MPa), which can induce corrosion on the fabric rolls and shortening of fabric life. Cleaning efficiency can also be uneven and inconsistent due to oscillation of the cleaning nozzle. To bypass these issues AOKI have developed a foil-type cleaning system that uses no water and that provides continuous cleaning across the full width. It works by a series of ‘foils’ which are pressed a distance of about 1mm into the moving fabric; the fabric movement induces a ‘foil effect’, drawing out stickies and other contaminants from the wet fabric. Blades operate 24/7, and life is given as typically 6-12 months. The result is both a cleaner fabric and drying cylinder, and fewer breaks due to stickies and pitch. At present none are installed in the UK, but several have been installed in Japan and on the European continent, all on packaging machines producing CCM grades from recycled furnish. The main reference in Europe is Klingele Papierwerke GmbH & Co., which has three installed.

Runtech Systems

Older vacuum systems tend to involve large, fixed speed blowers, where the impeller speed defines the vacuum level. By contrast, Ecopump Turbo™ blowers are all variable speed, and have automated speed control which can adapt to changes in speed, web grammage or felt age. Furthermore, several smaller units can be used to replace one old large unit, which makes the modern vacuum system much more flexible, and allows energy saving capability. The company also produces advanced doctor blade systems for optimum dewatering and cleaning of press and couch rolls, and the Ecoflow™ dewatering measurement system for both the wire and press section, which is a stand-alone meter installed underneath the water separator and press saveall pan, and is widely used throughout the world with numerous references.