Technology: Basis for resource and energy saving

Frankfurt and Shanghai, 14th October 2016 – On the occasion of ITMA ASIA + CITME 2016, taking place end of October in Shanghai, VDMA member companies spoke about their technologies and concepts in order to add content to the sometimes loosely used watchword sustainability. Their best practice examples deal with technologies that help to save resources and energy.

Mr Nicolai Strauch, Press Officer VDMA Textile Machinery interviewed André Wissenberg, Vice President, Oerlikon Manmade Fibers Segment, Jan Siebert, Head of Rieter Business Group Machines & Systems, André Imhof, CEO Autefa Solutions, Eric Schöller, Managing Director, Groz-Beckert, Thomas Laissle, Product Manager, Weko and Axel Pieper, CEO Brückner Trockentechnik.

Strauch: Gentlemen, in this panel of industry experts we want to focus on the topic resource and energy efficiency as a cornerstone of sustainability. Mr Wissenberg, Oerlikon Manmade Fibers with the product brands Oerlikon Barmag and Oerlikon Neumag is well known in the textile world for its filament spinning solutions, texturing machines and BCF carpet yarn, staple fibre spinning as well as nonwovens solutions. Are your customers happy to pay for sustainable technologies and improved energy efficiency?

Wissenberg: Yes, because our solutions increase our customer's competitiveness and enable a faster return on investment than with other solutions, some of which are supposedly less expensive at first glance. Therefore, customers who use our technology solutions are substantially more successful, with regard to both profitability and quality.

Strauch: Is it possible to quantify the magnitude of the energy savings that are realised in textile production by using the latest machines from your segment?

Wissenberg: The contribution of our product solutions to sustainable, economical production is substantial, particularly for chemical fibre spinning. Here are two examples for you: Our latest WINGS technology (Winder Integrated Godet Solution) reduced average energy...
consumption by 40 percent per ton of the POY yarn type (Pre-oriented Yarn). For the FDY yarn type (Fully-drawn Yarn), this reduction is as high as 55 percent compared with our systems produced in the mid-90s. As you can see, our most recent solutions are exceptionally energy efficient.

**Strauch:** How are you able to minimise negative influences of industrial production?

**Wissenberg:** The manufacture of textile products and components, machines and systems used for this are traditionally associated with many unfortunate environmental consequences. By applying the latest in scientific and technical expertise, we help to reduce these negative effects to a minimum. Some of the ways our products do this include using all raw materials involved in the production process as efficiently and effectively as possible, significantly reducing emissions, optimising energy footprints, and in some cases considerably reducing space requirements. A good example again is our WINGS product family. With this development, Oerlikon Barmag was able to reduce the space requirements compared to conventional spinning plants by more than 35 percent.

**Strauch:** What persuaded the Oerlikon Manmade Fibers Segment to join the VDMA’s BLUECOMPETENCE sustainability initiative?

**Wissenberg:** As a pioneer in matters of sustainability in our industry, it seemed quite logical to combine the message of our „e-save“ programme with the wider BLUECOMPETENCE campaign launched by the VDMA in 2011. This yields synergies for both sides, and we are able to market the VDMA initiative globally at the same time and thus also provide strength to our German location. Industrial production inevitably affects the environment.

**Strauch:** Mr. Siebert, Rieter is a leading supplier of systems for short-staple fibre spinning. Recently you announced the presentation of a new single-head drawframe generation at ITMA ASIA + CITME 2016. China is a significant market in the production of synthetic fibres and their blends. Furthermore, energy efficiency is becoming increasingly important in this market. To what extent does the new drawframe generation from Rieter fulfil this brief?

**Siebert:** The new RSB-D 50 single-head drawframe generation offers a hitherto unattained level of productivity of the highest quality, compared to its predecessor. The new coiler CLEANcoil-PES extends the cleaning cycle for critical polyester fibres by at least 100 percent. The patented drive concept ECOrized uses 25 percent fewer belts, saves up to 1,000 euros in energy costs annually and allows higher output speeds for polyester and combed wool, for example. The new single-head drawframe is already fitted and supplied with energy-saving ECOrized solutions. For older machine generations, Rieter After Sales offers custom-made, energy-saving packages.
**Strauch:** Mr Imhof, Autefa solutions covers automation, bale packing, carding as well as nonwoven technologies. What are the key drivers for your customers to invest into an energy saving technology?

**Imhof:** Two reasons drive our customer’s decision for such an investment: Number one are the rules and regulations and number two is the economy. Especially in China, the entrepreneur’s decisions are influenced by the 5-year plan which aims at increasing the renewable energy mix by 28 percent and, at the same time, reducing the coal energy by 10 percent. Gas will be doubled. Within the next 10 years China wants to reduce CO₂ exhaust by 40 percent. This worldwide trend will drive nonwovens and textile manufacturers to invest. Reducing the drying energy with our new SquareDrum Spunlace Dryer or the V-Jet Hydroentangeling technology has proven that with an average line capacity more than 250,000 EUR/year energy cost can be saved.

**Strauch:** What are you doing differently than others, what customer benefits do you offer?

**Imhof:** The EnRec, Energy Recovery technology for ovens has being continuously improved over the last years. Among the first we equipped complete factory roofs with thermal solar panels to pre-heat the air to 100°C. Since the sun does not send you a bill, it is almost free of charge. We installed block heating power plants to use electrical energy produced by a gas generator and get heat for the ovens free of charge. This year, we will modify a 50,000-ton fibre production financed by Autefa Solutions. The customer has no risks, no initial investment. Benefiting from the first day using 0.5 Mio EUR less energy p.a., Autefa Solutions gets paid by a profit sharing over the next years.

**Strauch:** For sure a challenging business model. However, energy saving is one aspect to protect the environment, do you think of other technologies coming up in the near future supporting the sustainability thought?

**Imhof:** The wipe market is one of the fastest growing. Using flushable wipes which are biodegradable reduces big problems we have with the sewage water treatment. This is why certain standards have already become law in the US, so here we’re back to the driver number one again. Together with Varo Campen, Autefa Solutions has entered the airlaids market for flushable wipes.

**Strauch:** Mr Schöller, Groz-Beckert is one of the largest textile machinery equipment suppliers in the world. „Sustainability meets profit“, how do you support this concept?

**Schöller:** At Groz-Beckert, the guiding principle of sustainability is formed by acceptance of our ecological, economic and social accountability as well as profitable growth. Accordingly, topics like process capacity utilisation, resource conservation and energy reduction determine our products and innovations.
**Strauch:** Could you give a few examples?

**Schöller:** For example, the new modules in our expanded warp knitting range. When they are used together with a Groz-Beckert knitting machine needle, perfectly coordinated tools are guaranteed. This, in turn, means that processes run smoothly in every sense, and are not interrupted by errors, thus ensuring maximum productivity while conserving resources. Another example is the EcoStar needle used to make nonwovens. When used, it reduces energy consumption by as much as 7 percent compared to a standard needle, and it has a considerably longer service life.

**Strauch:** Sustainability as sales argument. What orders of magnitude are we talking about?

**Schöller:** When „Litespeed Plus“ needles are used, it has proven possible to lower the machine temperature and energy consumption by up to 20 percent compared to a standard knitting machine needle. With a single needle set consisting of 3,000 needles, knitting mills in China have recorded a CO₂ reduction of 1.4 tons per year; in India this figure was found to be over 2.4 tons. For the sake of comparison: In order to create an equivalent quantity of nitrogen emissions, you would have to fly 3,800 or 6,400 kilometres respectively.

**Strauch:** Let’s go a step forward in the textile chain and focus on textile finishing. Mr Laissle, Weitmann & Konrad (Weko) is the inventor of a non-contact rotor system for precise, metered application of liquids and chemicals to fabrics. The non-contact rotor system for coating surfaces can be integrated in existing systems. How does that work?

**Laissle:** Surface coating is part of the standard procedure in the paper, textile, printing or foil industries, for example. It is a way to endow the base material, produced in webs, with certain functional properties that are not intrinsic to the base material alone, such as flame retardant properties, softness, antimicrobial/antibacterial, hydrophilic/hydrophobic or oleophilic/oleophobic additives. With our rotor, which works like a rapidly rotating disc, the corresponding liquids can be applied without contact and continuously according to a precise quantity specification. Unlike the conventional technology, the contactless application means that the surface to be coated is not subjected to any mechanical load. In addition, the distribution of the liquid is improved considerably, because it is applied as a homogeneous stream of fine micro droplets.

**Strauch:** Please explain the advantages of this economising approach with an example …

**Laissle:** … woven fabrics. For these products, padding is the traditional method for the finishing. In padding, the textile to be treated is transported through a liquid or auxiliary bath as a web. As a result, it is much more than just the essential quantity of liquid applied, but it also penetrates practically the entire textile, so it has to be squeezed out afterwards using nip rollers and then dried to remove the excess liquid. As an illustration: Before coating, the
absolute moisture content of a conventional textile is in the order of 8-10 percent; this means that 1 kg of material contains 80-100 grams of water. After padding, the moisture content in the material is about 60-70 percent. Drying processes that consume a great deal of energy have to be applied to lower the moisture content to a normal level again. On the other hand, with the Weko liquid application system the woven fabrics only have an absolute moisture content of about 20-30 percent after coating, and much less energy is needed to reduce this to the required 8-10 percent – this corresponds to about 40 percent less drying power than is needed in the padding process. With our approach, only the quantity of liquid that is actually needed is applied onto the surface. This reduces the consumption not only of electricity, oil or gas – depending on the method used – because the drying process is less extensive, but also of chemicals and water, depending on the coating requirement. Incidentally, with metered, non-contact application, hardly any chemical residue is left over.

Strauch: Mr Pieper, the Brückner Group has developed, manufactured and sold machine systems for coating and finishing textiles for more than 65 years. How is your company addressing the issue of sustainability?

Pieper: We offer for our customers solutions saving resources and energy and helping thus to minimise the ecological footprint. For the finishing of elastic fabrics, we developed an indirect gas heating system with a unique heat-recovery. This system saves energy and prevents the yellowing of elastic fabric despite using a gas heating. If the producer does not want to invest in a completely new line, we offer a modification of the heating system, for example, from oil to indirect gas heating.

Strauch: Energy is a big topic for textile finishing companies. What else does your company offer to minimise energy consumption in the textile finishing process? And besides energy, which other resources and materials can be saved?

Pieper: For textile finishing we have developed a new application unit for chemicals in liquid state. It features the following advantages:

a) very low system filling of < 5l and thus minimum residual waste

b) minimum application of liquor - less water to be evaporated in dryer - significant energy savings

c) versatility in use: both impregnation as well as single sides application possible

Strauch: Is it always necessary to invest in a completely new line in order to increase a finishing plant’s efficiency or are there other possibilities, too?

Pieper: Many energy saving systems can be retrofitted on existing BRÜCKNER–lines. We can upgrade existing machines with heat-recovery systems, new heating systems (e.g. indirect gas-heating) or new application units. In order to meet strict environmental
regulations, we can also retrofit air-purification systems. It is also possible to modify the entire drive and control system of a machine to enable our customers to run more sensitive fabrics on the machines.

Another innovation is a co-generation plant, which we have integrated into our dryers / stenters. The core is a micro gas turbine, which generates both heat for the drying process as well electricity at the same time. The micro gas turbine is powered with natural gas or LPG. The electrical output of the micro gas turbine is sufficient to power the entire stenter. The great advantage is that the stenter needs no external electrical power supply - all we need is gas! This system is not only interesting in terms of energy savings, but also for those countries, which suffer from frequent power failures.

With our heat-recovery systems, the producers can save additionally energy depending on the process and fabric type by recirculating exhaust air to the drying process or generating warm water for wet finishing. Such systems are generally available as upgrade even for textile machines which are not made by Brückner. To comply reliably with environmental regulations, we offer different exhaust air cleaning systems which can be used in most cases combined with heat-recovery units.

**Strauch:** Gentlemen, thank you very much for this well-founded overview of resource and energy efficiency that can be realised with the technology of VDMA member companies. I think with these solutions on hand you are well prepared for ITMA ASIA + CITME in Shanghai, since the Chinese five-year plan is paying highest attention to ecological production – a topic that is on the agenda of many other countries, too.

**World champion technology at ITMA ASIA + CITME – VDMA booth in hall 1**

Almost 100 German exhibitors will be present at ITMA ASIA + CITME in Shanghai. They cover nearly all different machinery chapters with a focus on spinning, nonwoven, weaving, knitting, warp knitting and finishing. The VDMA booth (H1F81) is the first contact point for visitors interested in German Technology. Visitors get a compact overview of German manufacturers and their products:

- The useful pocket guide lists all exhibiting VDMA members by halls and shows their stand location in the hall plans.

Another little helper for the fair visit:

- Buyers guides textile machinery and nonwoven machinery.

Know-how to take home:

- An updated edition of our publication, describing energy saving potentials of complete chains for the production of t-shirts, textile billboard, architectural fabrics and hygienic
nonwovens thanks to German Technologies: “World Champion Technology: Higher Energy Efficiency – Higher Profits”
- Energy efficiency guide textile machinery (available on a USB stick)