Marcus Wallenberg Prize 2012 Announcement

Description

The Marcus Wallenberg Foundation proudly announces that the 2012 Marcus Wallenberg Prize is awarded to Mr. Mika Severi Viljanmaa, Finland

for his ground-breaking development of metal belt calendering technology resulting in better paper print surfaces with less fibre materials, and higher production efficiency. The invention also paves the way for applications in pressing and drying with the opportunity of becoming a wider platform technology expected to substantially enhance production efficiency, competitiveness and sustainability of paper and board making.

Calendering is done to improve the paper surface and thus print quality. Compared to conventional calendering, the metal belt calendering technology enables manufacturing of paper and board with better surface smoothness at a desired level of stiffness and bulk, but using 3-10% less fibre raw material. In addition, it consumes less energy and yields higher production efficiency than other calendering concepts. It is particularly suitable for low cost fibres such as recycled fibres and thus enables development of new cost-competitive paper and board products.

The metal belt technology has an outstanding potential to make a major impact on the industry and the environment. Around 20% of the annual global production of paper and board grades could fully utilize the metal belt calendering technology. Theoretically, if this full potential was to be realized, the global annual savings long term would be in the order of:

- 5 Mt of fibre, equivalent to 500,000 truckloads of wood (EUR 2.5 bn)
- 4 TWh of electricity, equivalent to the annual production of a 500 MW power plant (EUR 0.2 bn)
- 15,000 TJ of steam (EUR 0.8 bn) and 50 million m3 of water roughly corresponding to the heat and water consumption of a city of half a million people in Northern Europe.

In a 300,000 t/a coated board machine, the annual raw material savings would be equivalent to the amount of fibres needed to produce 700 million one litre milk cartons.The success of metal belt calendering has stimulated further application of the technology in the paper pressing and drying operations and can be seen as a platform technology which has the potential to radically change paper and board making concepts from the forming section to the reel, enabling compact designs that feature sustainable and efficient production with lower investment and operating costs. The impact of future applications in pressing and drying sections may long term become at least of the same order of size than in calendering.The development of metal belt calendering has been systematic with a clear long

term goal from the start. Preliminary studies and tests of metal belt calendering were made in 1996-2000, followed by the development phase with pilot tests in 2000-2005. The first application was started up in 2006. Current production capacity with metal belt calendering is 2.2 Mt/a worldwide. It is expected that during the coming 5-10 years, up to five new metal belt calenders will be taken in use annually.The development of this breakthrough technology has inspired wide and deep research cooperation with universities and research institutes. The inventor, Mika Viljanmaa, has been of key importance for this cooperation. Of the research in this area, he has guided, instructed or contributed to a large number of theses, seminars and publications and has received honours in the field of paper making technology.

Mika Severi Viljanmaa

Mr. Mika Viljanmaa, M.Sc., was born in 1966 in Finland. He started his career in 1996 as a development engineer at Valmet Corporation (now Metso Paper), JÃ¤rvenpÃ¤Ã¤, Finland, where he also completed his Masterâ??s thesis as a Helsinki University of Technology student. Since 2003 he was in charge of calendering research and development at Metso Paper and since 2009 he has been responsible for R&D in surface treatment technology.

Viljanmaa is a highly prolific innovator, having altogether 120 protected inventions. Fifty-seven of these are related to metal belt technology with Viljanmaa as the sole inventor in 12 of these.

Prize Ceremony and Symposium

The Prize will be presented by His Majesty, The King of Sweden, at a ceremony in Stockholm on 1 October, 2012. On 2 October, a symposium will be arranged around the subject of the Prize-winning research and its impact on the forest products industries.

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