The Arne Asplund Mechanical Pulping Award was established in 1985 to commemorate Dr. Asplund’s contribution to the pulp and paper industry worldwide. The Award is presented biennially at the International Mechanical Pulping Conference, ICMP. Established to promote the development of new technology for the manufacture of high-yield pulp in refiners, it is awarded to a person or persons in recognition of outstanding achievement in the research and development of mechanical pulping technology. The award consists of a gold medal and an honorarium of SEK 25,000.

ARNE ASPLUND’S CONTRIBUTION TO MECHANICAL PULPING

Dr. Arne Asplund is the inventor of the thermomechanical pulping technique, known as the Defibrator™ process. He developed the process in 1931, and Defibrator AB was founded in 1933 to commercialize his invention. A patent was granted in 1934.

The process, the Defibrator™ system, the pressurized preheater and the pressurized refiner developed for continuous production, was first used in the fiberboard industry, then in the production of roofing and flooring felt. The technology introduced by Arne Asplund was later developed for the production of pulp for many grades of paper and board, including newsprint.

Pilot plant trials to produce thermomechanical pulp for paper production began in the late 1950s. The first commercial paper pulp application with a Defibrator™ refining system was at the Rockhammar Mill in Sweden in 1968. This work led to the development of the TMP process, which virtually revolutionized the pulp and paper industry in the 1970s.

Arne Asplund’s professional achievements could be rated in terms of the millions of tons of panelboard, papers and paperboard that the industry can produce in its efficient and cost-effective pulp plants based on his original idea. Following retirement as chairman of Sunda Defibrator in 1979 at age 76, Arne Asplund continued his inventive ways. A holder of more than 50 patents, his latest projects involved modifications of the mechanical pulping process to reduce energy consumption. Dr. Asplund died in 1993 at the age of 90.

In 1984, Dr. Asplund was awarded one of the ten prizes for technical achievement presented annually by the National Swedish Board for Technical Development, STU. Other honors include the tappi Gold Medal (1978), the Gold Medal of the Royal Swedish Academy of Engineering Sciences, IVA (1986), a University of Wisconsin Honors Award (1964), the Koman Gold Medal of the Swedish Association of Pulp and Paper Engineers (1966), Grand Gold Medal from IVA (1969), and Doctor h.c. at the Royal Institute of Technology in Stockholm (1967). He was elected a Fellow of IVA in 1957 and TAPPI in 1974.

In 1985, Dr. Asplund was the first to receive the Arne Asplund Mechanical Pulping Award, presented in conjunction with the announcement of its establishment at the 1985 International Mechanical Pulping Conference, ICMP.

PRESENTATION OF THE 2016 AWARD

Presentation of the 2016 Arne Asplund Mechanical Pulping Award will take place on Tuesday, September 27, 2016 at the 2016 International Mechanical Pulping Conference dinner in Jacksonville, Florida.
PREVIOUS AWARD WINNERS

1987, Vancouver, Dr. Douglas Atack, Director of Research, Pulp and Paper Research Institute of Canada (PAPRI Can) was selected to receive the 1987 Arne Asplund Award. The award was presented in recognition of the major contributions made by Dr. Atack in the field of mechanical pulping during the past 30 years.

1989, Helsinki, Dr. Hans Giertz, professor of pulping chemistry at the Norwegian Institute of Technology (1956-84), received the 1989 Arne Asplund Award. Dr. Giertz was early to recognize the potential for improving fiber bonding properties through sulfonation. This early work became an important basis for his research in the fields of mechanical, thermo-mechanical and chemimechanical pulping.

1991, Minneapolis, Mr. W. D. May, PAPRI Can, received the 1991 Arne Asplund Award, in recognition of his work in chip refining and thermomechanical pulping. Mr. May joined PAPRI Can in 1957 to work with Dr. D. Atack on the mechanism of mechanical pulping. With his coworkers, he developed a fundamental theory of chip refining which has improved our basic understanding of the process.

1993, Oslo, Professor Hans Höglund was awarded the 1993 Award. In 1992, he was appointed adjunct professor at the Royal Institute of Technology in Stockholm with mechanical pulping as his specialization and associated with SCA as Deputy Director of Research. In 2000 he was appointed a professor in mechanical pulping at the Mid Sweden University. His early work centered on the effect of temperature and frequency on the visco-elastic properties of wood, and on the delibration/refining process.

1995, Ottawa, Dr. Alkis Karnis was awarded the 1995 Award. He graduated from the University of Athens and earned an M.Sc. in Chemical Engineering from the University of Toronto. Dr. Karnis was awarded a Doctorate in Physical Chemistry from McGill University in 1963. He pioneered work with pulp characterization and testing and made important contributions to the understanding of the relationship between pulp and paper properties.

1997, Stockholm, Dr. Stuart Corson received the 1997 Arne Asplund Award. He graduated from the University of Canterbury, New Zealand in 1970 and was awarded a doctorate in engineering from the Norwegian University of Technology in Trondheim, in 1979. Dr. Corson pioneered work on the influence of wood properties in mechanical pulping and showed that a genetically differentiated Pinus radiata gives superior paper.

2001, Helsinki, Mr. Jan Sundholm was selected as recipient of the 2001 Award. He graduated from the Åbo Academy and has for many years been associated with the Central Laboratory KCL in Helsinki. Mr. Sundholm showed the importance of low preheating time as well as high speed refining to achieve reduced energy consumption in refiner mechanical pulping.

2003, Quebec, Dr. Torbjörn Helle was selected as one out of four recipients of the 2003 Award. Dr. Helle was awarded a doctorate in paper physics from the Norwegian University of Technology in 1963 and has since then been associated with the same University, now as professor emeritus.

2003, Quebec, Mr. Per Ola Johnsen was selected as one out of four recipients of the 2003 Award. Mr. Johnsen graduated as chemical engineer in Trondheim in 1979 and has been associated with the Norwegian University of Science and Technology (NTNU) and with the Norwegian Pulp and Paper Research Institute (PFI) in Trondheim, now as Research Scientist with PFI.

2003, Quebec, Dr. Kjell-Arve Kure was selected as one out of four recipients of the 2003 Award. Dr. Kure was awarded a Doctorate in Fiber Physics from NTNU in Trondheim in 1999. He has been associated with PFI and with Norske Skog, now as Production Manager.
2011, Xian, Dr. William C. Strand was selected as one of three recipients of the 2011 award. In 1989 Dr. Strand began the development and implementation of advanced pulp quality control systems for which he is most highly recognized. Strand’s creativity of how to develop softwares has made it possible to implement his fundamental ideas in a large numbers of mill applications.

2014, Helsinki, Professor Per Engstrand received the Arne Asplund Award. The award was presented in recognition of his strengthening of the unique research approach in mechanical pulping at Mid Sweden University where industrial and academic challenges meet and merge.

2007, Minneapolis, Dr. Esko Härkönen received the 2007 Arne Asplund Award. The award was presented in recognition of the major contributions made by Dr. Härkönen. He was able to provide experimental documentation to explain in detail the processes of delibration and subsequent fibre development during the refining process.

2009, Sundsvall. Mr. Jan Hill graduated from KTH, Stockholm, and has during his professional career principally been associated with STFI, SCA Control System and Norske Skog. He was a pioneer in development of on-line equipments for optical measurement of fibre dimensions in pulp flows and used such fundamental fibre properties in design of quality control systems for groundwood and TMP processes.

2011, Xian, Mr. Keith B. Miles was selected as one of three recipients of the 2011 award. Mr. Miles has during a long professional career remained faithful to the Mechanical Pulping Division at the Institute, until retirement 2010. The today generally accepted concept of refining intensity, which has emerged from his work, has been a valuable tool in processing design and control of the relationship between specific energy and pulp quality in chip refining processes.

2011, Xian, Dr. Marc J. Saborin was selected as one of three recipients of the 2011 award. Dr. Saborin has over the years made a number of contributions in order to improve the energy efficiency in chip refiner processes putting fundamental studies from Institutes into practice. He early adapted the concept of refining intensity, defined by Miles and May, for process optimizing in refiner processes regarding energy efficiency using high disc rotational speeds.

2003, Quebec, Dr. Philip Reme was selected as one out of four recipients of the 2003 Award. Dr. Reme was awarded a doctorate in fiber physics from NTNU in Trondheim in 2000. He has been associated with PFI and with Norske Skog Research in Halden, now as Research Director at PFI.

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**THE 2016 ARNE ASPULD AWARD WINNERS**

Dr. Tomas Björkqvist received his PhD degree in 2002 from Tampere University of Technology in Finland. He has during a long academic career remained faithful to the Department of Automation Science and Engineering at Tampere University of Technology where he is currently a Senior Research Fellow. Dr. Björkqvist started his forest industry related research during his master thesis dealing with grinder machine efficiency and continued with grinder control but soon the research widened to the defibration process itself. In this area he has concentrated on fundamental wood material research and modelling and simulation of mechanical defibration actions for process design optimization.

Mikael Lucander has a M.Sc degree in Wood and Polymer Chemistry from Helsinki University. A major part of his work as researcher at KCL focused on the interaction between the wood raw material and the grinding process, including both the grinder parameters and the defibration surface. He has also been active in starting several international projects both in Scandinavia and Canada. After a long career at KCL in Finland where he held a position as Research Fellow he is now retired.

Olli Tuovinen has a M.Sc. degree in Paper Technology and Process Control Technology from Helsinki University of Technology. During his 30 years career in Valmet, Metso and Tampella he has worked for research and development of mechanical pulping processes. The main areas of focus have been R&D for grinding phenomena, PGW process and its process controls, mechanical pulp screening, reject refining, bleaching and fiber-to-paper interactions. Currently he is working at Valmet as R&D manager for single layer diamond grinding surface (Galileo process), its material and manufacturing technology and customer applications.

**FOUNDATION**

The Award was made possible through a donation from the Sunds Defibrator company to the Arne Asplund Mechanical Pulping Award Foundation in 1985. The Chairman of the Board of Directors of the Foundation is Professor Göran Bengtsson.

**NOMINATIONS FOR THE AWARD**

A Selection Committee for the Arne Asplund Mechanical Pulping Award is chosen by the Swedish Association of Pulp and Paper Engineers, SPCI. The committee is chaired by Professor Per Engström, MIUN, Sweden, Professor James Olson, UBC, Canada, Dr. Philip Reme, PFI, Norway, Tkl. Esa Viljakainen, Esa Viljakainen Consulting.

**VALMET**

Valmet Corporation is a leading global developer and supplier of services and technologies for the pulp, paper and energy industries. Valmet's professionals around the world work close to our customers and are committed to moving your performance forward – every day.
In the mill scale studies the high defibration efficiency can be seen as energy saving in the range of 150 - 500 kWh/ton, depending on pulp grade and other operational factors. This energy saving also enables significant production increase of the grinders.

The shift from ceramic pulp stone with concrete core developed in the 1930 to single layer diamond surface with all steel construction, gives a boost for the existing GW and PGW grinders and increase their energy efficiency and production capacity to a new level.

The new technology has realized a revolutionary new product known as "Galileo technology".

The basic knowledge of the energy efficient single layer grinding surfaces is mainly developed by one university, one forest research institute and one industry researcher over several years. The fundamental effort lies in basic research of grinding phenomena for better grinding process understanding. This research has included both wood material research and mechanical pulping research. Studies of grinding grain materials and their impact on defibration efficiency have been an essential part of this research. All three researchers also participated in the product development project where this new basic knowledge was shifted from a laboratory scale research tool to pilot scale and finally to a novel mill scale application. The product development included also extensive material and manufacturing technology research. The researchers bear patents for the novel grinding process and tool.

Distribution of individual grinding grain height positions is the main factor in grinding intensity distribution and effectiveness of grinding action. Other important factors are grain form, size, population density and grain placement. By using these parameters in an optimal way, the new single layer defibration surface promotes narrow defibration intensity and therefore also high defibration efficiency.