

## **INNOVATION AT LGA, Inc.**

From its inception, LGA has been involved in, and in the forefront of, many forest products that are now considered standard and vital for the industry. Examples abound (within the limits of confidentiality):

**Waferboard/OSB** – LGA conducted the first outside study for a waferboard mill for Weldwood Division of Champion Paper (now West Fraser) in 1971, which resulted in the new mill at LongLac, Ontario. Prior to that time waferboard was made at Macmillan Bloedel's mill in Saskatchewan (Aspenite) using processes and studies proprietary to that company. Later we worked with Elmendorf Laboratories, the developer of oriented strandboard, and Columbia Engineering, which built the mills. Our studies resulted in the first OSB mills, a small facility located in New Hampshire and two larger mills in Alberta (Pelican Spruce, now Weyerhaeuser). We later conducted the market studies that resulted in new OSB mills for Tolko, Slocan (now Canfor), RexFor and others in Canada, as well as others in the United States.

**MDF** – LGA conducted the first outside study for an MDF mill for what was then a softwood plywood mill in Medford, OR and which resulted in the first commercial MDF mill (Medite). Prior to that time MDF was made in a small mill in NY state as a result of fiber studies by a chemical company. A form of MDF was also made in Oregon by Pope & Talbot Company, another LGA client. Since that time LGA has conducted studies which resulted in MDF mills in Alberta (the first in Canada) and elsewhere in Canada, and throughout the United States, Chile and elsewhere. Among the many MDF studies we have conducted are those dealing with alternate species (eucalyptus, radiata pine, western redcedar, others); those dealing with alternate finishes on the panels (metal powder coating, printing, certain overlays); those dealing with varying locations (British Columbia, Alaska, Hawaii, Alberta, other Canadian Provinces, various US, Caribbean and South American locations); and those dealing with specialty variations of MDF (low density, high density, water & humidity resistant, fungus & insect resistant).

**LVL** – LVL was invented at the US Forest Products Laboratory in the 1930s but commercialized primarily by TrusJoist International (now Weyerhaeuser). LGA conducted the first *published* studies on LVL in 1992 (prior to that time we had studied LVL for two companies which decided not to enter the arena). These and earlier studies were conducted for Durand-Raute Industries (now Raute Wood) a Canadian company. Durand-Raute elected to publish the 1992 study in order to interest companies in purchasing its LVL manufacturing equipment. Over 500 copies of LGA's study were distributed worldwide. LGA is the recognized authority on LVL and its studies resulted in mills in Alabama, Washington State and other locations in North America, South America and New Zealand.

**Wood I-joists** – These useful products were invented by independent entrepreneurs in Tacoma, WA and Portland, OR. TrusJoist (Weyerhaeuser) saw wood I-joists as a major opportunity to use its form of LVL and did a dramatically effective job in marketing this product. LGA's role was to conduct market studies in the initial years of wood I-joist development, as a result of which some mills were built, others not.

**Glulam Beams** – Glulam beams are the oldest engineered wood product, developed in Germany in the late 1890s. LGA's contribution has been to study markets for a number of companies on innovative glulam beams, of varying species (yellow cedar, radiata pine), varying resins (isocyanates) and added laminas (fiber-reinforced polyester, aluminum, steel).

**Harvesting timber** – LGA has conducted studies on innovative harvesting equipment and techniques, throughout North America, northern Europe and selected countries in South America. These market studies resulted in the following developments, which are standard today but considered innovative and speculative before our studies: Rubber tired logging equipment; In-the-woods chipping; Scissor type blades replacing chain saw harvesting; Circle saw harvesting to minimize stem and butt damage; and In-the-woods debarking and delimiting.

**Resin Development** – LGA conducted the first studies of which we are aware for the use of isocyanate resins to replace or supplement phenolic resins (PF) in OSB, MDF and certain EWP. Isocyanate resins are now commonplace in OSB core layers although PF resins continue to dominate the faces.

**Biocides** – Wood and wood products deteriorate under wet and humid conditions, and many chemical treatments have been devised to retard this decay. Most of these have been inorganic chemicals, often arsenic based, which is no longer acceptable. LGA has worked with a number of chemical companies (Dow, Atlantic Richfield, Rohm & Haas) in studying the need for and interest in varying organic biocides which protect wood and wood products with less hazard to human life.

**ScrimTek<sup>®</sup>** – This innovative product is a parallel strand composite beam, and will be made commercially first by Shuqualak Lumber Company at mills in Mississippi. It competes favorably with glulam beams, Parallam<sup>®</sup> and other engineered wood products. LGA's market studies have already resulted in the mills' initial output being sold to major distributors.

**Fire Retardant OSB** – There have long been concerns about the use of OSB in wood I-joists which are not as fire resistant as the solid wood joists they replace. Although there are fire retardant OSB products in the marketplace, these are all post-treated, and not acceptable by many companies. LGA's client has developed a process of making fire retardant OSB in situ, which has successfully passed flame spread and two hour burn-through tests. The client is now raising funds for a mill, which we expect to be successful.

**Hybrid Poplar Lumber** – While poplar and its cousins (cottonwood) are probably the most commonly available species on Earth, they have not been noted for strength. Several varieties of *hybrid poplar* have been developed (usually in Italy) and grown in various countries (United States, China, Chile). LGA has been working with the Chilean agency INFOR to develop markets for Chilean hybrid poplar plantation woods in the US, Canada and elsewhere.

**Utility Poles** – Millions of utility poles used for power or telephone go out of service (OOS) annually. These are usually treated with CCA, less often with creosote or pentachlorophenol. Disposal of these OOS poles is becoming a major problem as landfills fill up and as public concerns over toxicity grow. LGA is working with the Electric Power Research Institute (EPRI) to identify effective alternate uses for such OOS poles.

**SSL Joists** – As noted above, despite the elegance of wood I-joists which have grown rapidly in acceptance, there are some concerns about fire and the thin OSB web. An LGA client is developing a product called the SSL joist (solid strand lumber joist) which is pressed with an hourglass configuration in cross-section. This joist is intended to be made at lumber mills with an adequate supply of larger residue and waste which can be converted to this value-added product. So far the SSL joist has shown better fire resistance than wood I-joists, comparable strength at a competitive price.