

A Century of Building Excellence

Lemminkäinen is a 100-year-old Finnish construction group which operates in all segments of the construction sector. Lemminkäinen is the name of a God-like hero in the Kalevala – Finland's National Epic.

“A number of individuals working in the construction industry had the idea of establishing their own asphalt and cement business in Helsinki in the form of a joint-stock company”. Those words opened the first annual report of Asfaltti Oy Lemminkäinen for the year 1910.

Finland was in its final years as an Autonomous Grand Duchy of the Russian Empire, and aspirations of nationhood were much in evidence. Patriotic fervor also infused the business world. Master builders had been trained in Helsinki since 1883, and now they were enthusiastically building the capital city at the beginning of the 20th century.

Lemminkäinen Today

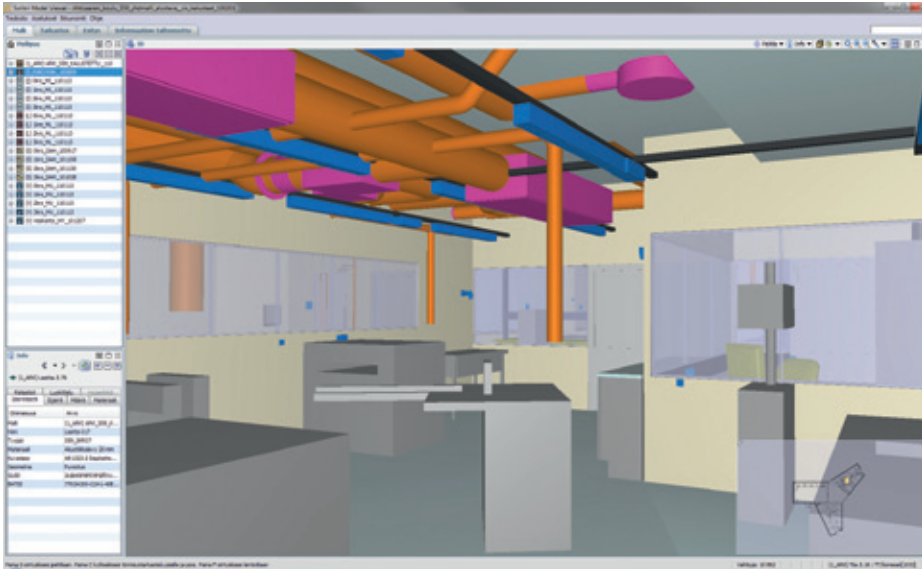
Today Lemminkäinen is a leading construction company. Lemminkäinen operates in building construction, infrastructure construction and technical building services, simultaneously exploiting new technologies and processes such as BIM, and developing capabili-

ties with new business models including Public-Private Partnership (PPP).

Lemminkäinen Group operates in Finland, Russia and the Baltic region, as well in all areas of the construction sector. The Group's business sectors are building construction and infrastructure construction and technical building services. Net sales in 2010 were approximately EUR 2 billion, of which international operations accounted for roughly a quarter. The Group employs about 8 300 people.

BIM Is the Best Way to Build

Lemminkäinen is known for its expertise in building and infrastructure construction. The company is enhancing personnel competency, and thereby efficiency. To retain the leading market position in these fields, Lemminkäinen has adapted the mindset of continuously developing and improving business operations. One of their strengths is BIM.



Analysis of the multi design discipline building information model. Courtesy of Arkkitehtitoimisto Perko Oy. On the right: Lobby of Martti Ahtisaari School. Photo Esa Kärki

BIM has been developed for use in steering the design and planning process, project management and production control. This development work generates added value for customers by providing them with illustrative information models that help them make decisions. BIM also raises productivity and improves information flow between the various parties working on a project.

By the end of 2011, Lemminkäinen intends to use BIM on all construction projects with subcontracted design services. In Lemminkäinen's view, BIM boosts planning efficiency. All production material data can be saved in the same database, all parties have access to the same up-to-date project data and it's easier to integrate various subsections. BIM also increases cost-effectiveness.

"BIM is the best way to build. What is required is rather a cultural change than a change merely in practices. With interoperability, cooperation and active attitude BIM projects will be extremely efficient." says Mrs. Karppinen. *"The benefits are clear. High quality models enable us to use model information in various business functions such as cost estimation and scheduling without the risks that exist in exploiting ordinary plans. Also, the building phase is less error prone and the construction phase smoother."*

Public Private Partnership

Public-Private Partnership, sometimes referred to as PPP, P3 or P3, is a business venture that is funded and operated through a partnership of one or more private sector companies and a public body. PPP has been used for providing various types of services and is not limited to construction in many countries.

The purpose of Public-Private Partnership is to create a public-private venture enabling the production of services, such as building infrastructure or providing health care, without the traditionally heavy public initial investment and cash outlays that have historically burdened the public sector. The main rationale is that while the need for services increases, the effective partnerships enables utilizing the lower capital cost of the public partner and the know-how, resources, capabilities and effectiveness of the private parties, creating both synergy and a win-win situation.

PPP comes in many flavors depending on the scope of the services rendered by the private partner such as Design-Build-Finance-Maintain (DBFM) or Design-Build-Finance-Maintain-Operate (DBFMO). In the former, the private sector designs, builds and finances an asset and provides facility management or maintenance services, and in the lat-



ter the private sector also operates the building under a long-term agreement.

A typical transportation infrastructure example is the E18 motorway project, which included the construction of 51.3 km of new motorway as a four lane dual-carriageway, seven motorway tunnels with a total length of 5.2 km, eight interchanges and 48 bridge sites. Lemminkäinen and another major construction company took part in the joint venture responsible for two contracts: first for design and construction, and the second for maintenance, until 2029.

Thus, from the point of view of the private parties providing the service in the partnership, a substantial finan-



Martti Ahtisaari School. Architect Arkkitehtitoimisto Perko Oy

“There is no way back. BIM will be the way we work.”

cial, technical and operational risk is included in the projects. Risk management and mitigating risks requires high quality design and construction. This is where BIM comes in.

PPP in Real Estate: a case

On 27 July 2009 Kuopio City Board selected Lemminkäinen Corporation as the service provider for a major life cycle project. The project scope encompasses the new construction and basic repair of four schools and one child day-care center. Lemminkäinen will be responsible for the maintenance and upkeep of the buildings for a period of 25 years. The total value of the project is EUR 93.5 million. All the construction works of the project will be completed by autumn 2013. Martti Ahtisaari school and Puijonsarvi school have been completed. Rajala school and Puijonlaakso child day-care center will be completed in autumn 2012, and Pohjantie school by autumn 2013.

Mr. Matti Varstala, the project manager in charge of the school project

states that PPP projects require a broad skill set. Being a large construction company that operates in many construction sectors, PPP projects fit Lemminkäinen extremely well. Having versatile skills enables Lemminkäinen to also take part in making technology decisions that are important in life cycle projects. A deep understanding of the capabilities of technology and the requirements of the use enables Lemminkäinen to avoid a common pitfall of sub-optimizing design solutions.

The greatest benefit provided by BIM has been the possibility to model and visualize the design solutions to all participants in the project, from designers to the end users and subcontractors, and ensure smooth construction flow. The greatest challenge has been the correct timing of the design deliverables in relation to the construction schedule.

BIM and quality assurance have been used throughout the project. Normally, tens of people take part in the quality assurance during the construc-

tion phase. Using BIM as the design method makes it possible to coordinate the design before construction begins. “*Solibri Model Checker has proved to be a valuable tool to designers for locating design problems. Quality assurance has produced concrete benefits, and we are satisfied with the ease that Solibri Model Checker isolates design issues.*” states Mr. Varstala.

The Lemminkäinen Way

“*There is no way back. Naturally, this will mean that our designer suppliers will need to provide us with the models we require, and invest in learning to model in a way that fulfills our needs and requirements. BIM will be the way we work.*” concludes Karppinen.

From the point of view of Lemminkäinen’s design suppliers, BIM has consequences. Because Lemminkäinen intends to use BIM on all construction projects with subcontracted design services, there will also be a new way to design and model for Lemminkäinen. ○