

Leaders of tomorrow

MIT and the University of Cambridge are busy preparing
future manufacturing leaders

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For some years now, ABB has been utilizing the knowledge and skills of manufacturing experts in academia. Two important collaborations for the company are with the Massachusetts Institute of Technology (MIT) and the University of Cambridge. Both institutions have programs dedicated to discovering and developing the principles needed to train world-class leaders in manufacturing.

In fact, MIT's Leaders For Manufacturing (LFM) and Cambridge's Manufacturing Leaders Program (MLP) perfectly complement ABB's in-house Manufacturing Technologies Program, which is designed to bring world-class manufacturing methods to ABB factories around the globe.

In this article, we present the views of graduates from the MIT and Cambridge programs, showing how they and ABB have profited.

Advanced technology, increasing customer demands and turbulent markets are some of the challenges that keep companies constantly on their toes. Meeting these challenges head-on demands good and highly-motivated leaders who possess the knowledge, tools and confidence to determine what needs to be done in any given business situation.

“Leadership cannot be taught but leaders can be educated”, as the saying goes, and MIT’s Leaders For Manufacturing (LFM) and Cambridge’s Manufacturing Leaders Program (MLP) are helping to create the kind of leaders who can transform their organisations to meet future challenges.

LFM in a nutshell

This is a two-year graduate-level academic and research program at MIT in which students have the opportunity to become “bilingual” in management and engineering sciences. LFM¹⁾ was launched in 1988 in response to the needs of American companies to become more competitive. It is an active partnership comprising MIT’s School of Engineering, Sloan School of Management, and industry. This partnership is dedicated to addressing the broad issues of manufacturing, such as product development, production, marketing and the supply chain. Together, the partners develop, design, implement, and participate in a cutting-edge, integrated engineering and management program that gives them the knowledge, tools, and support they need to strengthen, lead and transform industry.

Through its academic structure, its research, and its outreach to other universities around the globe, LFM strives to integrate the total manufacturing enterprise with customers, suppliers, government and the community. The course tutors generally have connections to major companies, and can see first hand certain business practices and technology – both new and emerging – at work. LFM participants include a diverse mix of students and alumni, senior executives at companies such as Intel, ABB and Ford, and faculty from MIT’s Sloan schools of management and engineering. Such a

mix ensures that many of the students participating have solid credentials in engineering or science.

LFM and MLP are dedicated to discovering the principles that produce world-class manufacturing leaders, and translating those principles into teaching and practice.

In addition to classes and lectures focused on improving manufacturing in the context of case studies and personal experience, students have an opportunity to apply these principles in real-world factory settings through several plant tours.

The LFM program includes a 26-week research internship at a partner company, during which students undertake a research project that exposes them to real manufacturing concerns.

ABB as a managing partner of the program plays a critical role in LFM program governance, overall program policy, and operations and internships.

Manufacturing Leaders Programme (MLP)

The Manufacturing Leaders Programme²⁾ (MLP) is a two year, part-time, Masters degree course at the University of Cam-

bridge. It is designed for experienced managers identified as having the potential for leadership positions at a level where a total business perspective is critical for success. One of the fundamental differences between this program and LFM is that participants are sponsored by their employing company.

The program is comprised of three interlinking elements:

- *Developing an understanding of manufacturing industry as a business.* A rounded understanding of business equips the leader with the knowledge, tools and confidence to determine what needs to be done in any given business situation.
- *Developing leadership competence.* Using a range of established leadership models, managers explore the meaning of leadership. This is combined with an ongoing personal development program and the necessary interpersonal skills needed to help bring about the required changes in the organization.
- *Practical in-company application of knowledge and insights.* A structured business audit helps identify in-company strategic projects that are central to the program. This ensures that new knowledge and the competency acquired by all participants is immediately put into practice so that managers are given the experience of implementing change, and their business sees a fast return on its investment.

1 Laura Kennedy, General Manager of ABB’s dry-type transformer factory at work in Bland, Virginia.



Footnote:

¹⁾ <http://lfmsdm.mit.edu/lfm/>

²⁾ <http://www.ifm.eng.cam.ac.uk/leaders/default.html>

One of the most important contributors to success in the MLP is the enthusiastic support of the company. The company should be confident that selected candidates are important to the future of the business, give them full support in the course project work and afterwards provide them with an attractive career path.

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Besides ABB, other companies who have sponsored MLP participants on the programme include Alstom, BAE Systems, British American Tobacco, Ford, GlaxoSmithKline, Jaguar, Nestle and Rolls-Royce.

What they have to say

ABB Review invited five people to present their views on the programs, and to talk about how their professional lives have changed after graduation.

When asked if their respective programs met their expectations, all answered that expectations had been more than exceeded. They were unanimous in their opinion that the intensity of the programs has prepared them for most situations in the workplace. In addition, they all feel they are well equipped with the necessary tools to help advance their careers by allowing them to move into

factory management in a global environment. And certainly their careers have gone from strength to strength. Laura Kennedy (LFM '01) is now General Manager of the dry-type transformer factory in Bland, Virginia where she manages about 300 employees ¹. The factory has annual revenues of \$75 million. Tanja Vainio (LFM '04) is Vice-President of Supply Chain Management, Power Electronics and MV Drives in Switzerland. Michal Ciach (MLP '04) is Operations Manager of ABB's software factory in Poland. Joni Rautavuori (MLP '03) is the Manufacturing Manager at ABB Shanghai Transformer Co. Ltd. He is responsible for implementing operational excellence in different manufacturing processes to enable profitable growth for Shanghai Distribution Transformer factory.

Rafael de Jesús (LFM '00), an Operations Manager in Ireland, says that since completing the course in 2000, his career has progressed in such a way as to help him in his "future aim of being at the helm of a successful business." With a background in the aerospace industry, he says LFM is for him the key that opens many doors into different industries.

One of the biggest attractions of the LFM program is the combination of manufacturing principles and business management leading to two separate degrees. Laura Kennedy said that during the course, she "was able to gain global experience (six months in Finland with ABB and one month in Argentina with a start-up company),

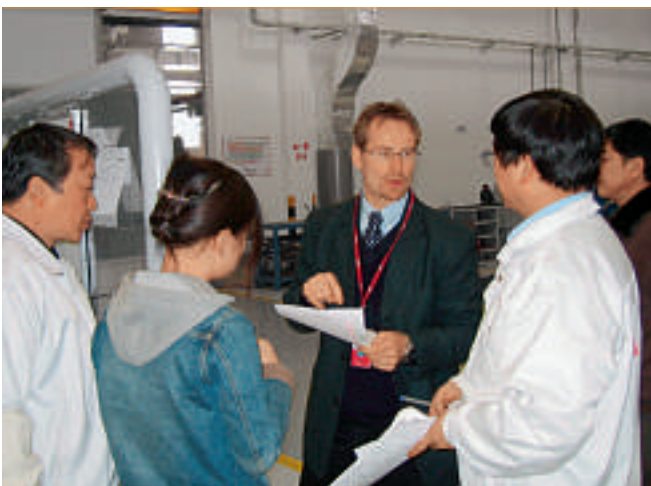
learn about her management style, build a strong network, and study management and engineering." Even social activities, such as weekly cultural parties or studying Spanish, added to the skill set needed in a diverse company like ABB. As a General Manager, Laura is "living the dream" of many LFM students in that she has a leadership role, financial responsibilities and technical expectations as part of her everyday job.

Joni Rautavuori ² found he could apply what he was learning to his daily work. The MLP course provided a means whereby he could combine study projects with his projects in ABB. This means ABB was already benefiting from the course long before Joni had even completed it!

At ABB's Corporate Research center in Krakow, Michal Ciach's ³ activities were focused on reaching manufacturing excellence in operations in different ABB units. The MLP program has not only helped him to better understand complex manufacturing issues but it has increased his self-confidence in the things he now does. He adds, "the program not only helped me to do things right, but also to do the right things."

Because many of the participants come from various industries, not only is there access to a huge industry network but each brings with them a vast collection of knowledge and experience that is shared for the duration of the program. This sentiment is echoed by Tanja Vainio ⁴ when she

² Joni Rautavuori, Manufacturing Manager at ABB Shanghai Transformer Co. Ltd., is responsible for the implementation of operational excellence into the manufacturing processes.



³ Michal Ciach (second from the right) is Operations Manager of a software factory in Poland.



- 4 Tanja Vainio is Vice President of Supply Chain Management, Power Electronics and MV Drives in Switzerland.



says that “such a network is and will continue to be a valuable asset to me in the future.”

How ABB benefits

ABB is a large decentralized company operating hundreds of businesses in different stages of operational excellence. Joni Rautavouri feels that the MLP has enabled him to better implement operational excellence in different environments and in different projects. He is able to achieve this because a key feature of the program undertaken by students is the strategic project work relating to their own companies. Such projects benefit the sponsoring company, like ABB, by enabling course material and experience to be applied immediately and practically.

Every year, a number of LFM students complete their 26-week internship at various ABB sites and their task is mostly concerned with finding ways to effectively improve a global corporation and its manufacturing operations. For students, internship experiences at ABB allow them to apply what they’ve learned at MIT to real-world problems. As a result, ABB has benefited enormously from the outcome of the various projects and research activities.

According to Karol Kaczmarek, ABB’s Manufacturing Technologies Program manager, the LFM and MLP programs expose and keep ABB up to date with new trends and thinking in the manufacturing, engineering and management environments. “We already utilize state-of-the-art methods and tools in our improvement projects. However, through university co-operation we

have a challenging discussion partner on the broad subject of manufacturing technologies as well as access to information telling us how other large corporations such as Dell, Intel, IBM, Ford, Boeing, HP etc., develop their manufacturing processes.”

But the story doesn’t end there. Some students eventually take up employment in the company and in doing so bring significant practical benefits into the ABB work environment. Laura Kennedy says the “breadth of the LFM program in terms of technical, managerial and leadership skills all bring value to ABB. I can bring examples of best practices across many industries to the company.” Tanja Vainio elaborates further on this point: “Manufacturing and supply chain management at ABB is not yet world-class everywhere and there is a huge opportunity for me to make a significant impact. LFM has given me the knowledge, tools, and support I need to strengthen, lead, and transform ABB in our future challenges.” Rafael de Jesus has been able to support the implementation of modern production control practices and other world-class concepts in multiple projects using the Lean Manufacturing toolset.

The ideal business world

We asked each person how they would improve ABB’s manufacturing business if they worked in an ideal business environment of no budget restrictions and no resource issues.

“LFM has given me the knowledge, tools, and support I need to strengthen, lead, and transform ABB in our future challenges.” –
Tanja Vainio

In a nutshell, there was feeling that an operations strategy and execution plan was needed to better align manufacturing operations to the goals of the overall company to “stop re-inventing the wheel in every location”. People felt operational excellence strategies were necessary across the entire value chain, and not just in manufacturing. One way of accomplishing this is through education and training. Rafael de Jesus, however, thinks this could be accomplished through:

- Greater *integration* of multiple local units into the global group structure to eliminate inefficiencies existing in the internal supply chains and in commercial areas.
- *Common metrics*: A corporate drive to operational excellence starts with setting common metrics, standards and practices that can be compared among the various sites.
- *Common look and feel*: All sites should look and feel very similar, right down to the office layout, despite their global locations.

Capturing these ideas in a single design would allow the cloning of successful solutions around the world. The supply chain, Key Performance Indicators, a factory layout and product flow would all be replicated wherever a new plant is built. Those on job rotation in such factories would instantly recognize the operational principles in place and would therefore be immediately productive to the benefit of all.

Giving something back

Life is a series of give and take situations and having gained so much, graduates of LFM are giving something back. In 2003, Laura set-up an Alumni council for LFM, which is responsible for creating a network to support not only the Alumni itself, but to also act as a bridge between current students, LFM directors and companies. In a previous position in ABB, one of Rafael’s tasks was to coordinate LFM internships in the company. Other graduates participate in classroom discussions and help organize company visits.

As for ABB, the company is more than happy to contribute to programs that promote the growth of future industry leaders.

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