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## Prefácio Lean

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## PREFÁCIO LEAN

This book gives an account on the progress of C. Rolim Engenharia regarding lean and green targets in recent years. It contains a theoretical introduction, a history of lean and green developments in the company, research papers made in or supported by the company, as well as results and future prospects in the field considered. This is the second book by the company giving an account of its progress; the first was published in 2010.

It is extremely rare that a building contractor publishes a book on the research and development it has done. Arguably, there are two reasons for this. Most contractors carry out very little research and development; they want to make profit, and there are other mechanisms for doing that. And if they are involved in R & D, they do not want it to be public but endeavor to create a competitive advantage by keeping it secret.

Why isn't C. Rolim following this mainstream pattern? There must be very different ideas underlying the strategy of this contractor – what could they be?

For understanding the difference, it is worthwhile first to outline the mainstream ideas underlying contracting business. The legal requirement for a company is to create profit for its owners. This occurs through contracting, producing a specified output for an agreed remuneration. For assuring the profit, it is crucial to pay attention to costs; these are caused due to activities and components. For minimizing the costs of each activity and component, management, achieving through people, is set up. Thus, the decomposition of the total transformation into its components is the main idea of management.

A contractor fully following a lean construction strategy subscribes to other ideas. First, the company is primarily seen as a unit for production. Then, useful understandings of production come to the fore. One useful understanding is that production is for creating value for the customer. Another understanding implies that production is a flow with value adding and non-value adding stages, waste, and that production can be improved by eliminating waste. Then, management is set up for creation of value and elimination of waste. With success in these activities, costs and profits take care of themselves.

However, for improvement in value creation and waste elimination, knowledge is needed. Where does it come from? Here, an expanded understanding of production, promoted by seminal thinkers in quality, Shewhart and Deming, comes to help. According to them, production could be seen as a scientific laboratory; every act of producing an artifact should also be held as an act of producing knowledge. Thus, research is seen as an integral part of production, rather than something separate and external.

Further, the concept of waste is one bridging, perhaps surprisingly, production and morality. The classical conception of waste implies that there is a moral obligation to eliminate waste. In the first comprehensive investigation into waste in different industries in 1921, this is expressed as follows: "It is peculiarly the

duty of the engineers to use their influence individually and collectively to eliminate waste in industry.” (“Report on Elimination of Waste in Industry”, Mechanical Engineering, September 1921). This implies that we should help others and collaborate for the sake of waste elimination.

Thus, in publishing results from their knowledge creation, C. Rolim is realizing important tenets of lean production: closely connecting research and production, and seeing waste elimination as a moral obligation, where newly invented means are to be shared with others.

We – all us outside the company – have to thank the company for sharing their new ideas, experience, and results. In so doing, C. Rolim Engenharia is, besides providing important and laudable leadership for the sector, also showcasing the true character of lean thinking.

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