



LEAN AND GREEN PRINTING ... THE HUNGARIAN WAY

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Abstract:

The exploration of the human-machine environment principally calls for the methods of organizational studies. Lean management is a systemic methodology that identifies, eliminates all forms of losses, as well as all such activities that do not represent any added value for the customer, client. The lean work methodology has been applied by several companies involved in graphic communication. The fundamental principle of lean is to avoid waste. The first principle of environmental improvement is the same. 80% of common actions provide mutual benefits. It means the lean and green printing have the same aims. The author introduces the movements and events of the lean and green printing in Hungary, especially at packaging companies.

Keywords:

lean printing, green printing, lean manufacturing, Hungarian printing industry

1 INTRODUCTION

“The first principle of environmental improvement is to avoid waste. The fundamental principle of Lean is to avoid waste,” - asserts the US Environmental Protection Agency that has adopted Lean techniques to improve manufacturing environmental performance.

Environmental wastes add no value and can negatively affect production flow, time, quality, and cost — making them prime targets for Lean initiatives. In many cases the costs associated with pollution and wasted energy, water and raw materials can be significant. “Lean Manufacturing” is the elimination of waste in every area of production, including customer relations, product design, supplier networks and factory management.”

Waste is anything that does not contribute directly to adding value for the customer. The key metrics are cost and time.

How we set price in the printing industry is different today than it was several years ago?

- We used to calculate price by estimating cost, adding a reasonable mark up, and totaling up for the customer quotation. Both profit and price were variables that the printer had some control over.

The old formula: Cost + Profit = Price (1)

- Today, price is largely fixed and determined by the market. Since price is largely out of control of the printer, the way to increase profits is to lower cost.

The new formula: Profit = Price - Cost (2)

2 LEAN PRINTING

A lean focus on identifying, analysing and reducing the “7 Wastes” is good



environmental management and a great tool for cost reduction

1. Overproduction consumes valuable resources with avoidable costs and environmental impact from unnecessary overruns of finished products, or sections.
2. Inventory excessive work in progress increases spoilage risk from deterioration or damage, and consumes energy used to heat and light the storage space. Review just-in-time production.
3. Transportation unnecessary handling of raw materials, partial or finished goods, should be eliminated. Impacts are energy use, greenhouse gas emissions and needless packaging.
4. Waiting/ unstable process workflows and equipment incorrectly set up, operated and/or maintained lead to breakdowns, late materials, late prior steps and missing data that can delay deliveries and incur downtime costs of people, equipment and energy.
5. Motion poor layout, lack of teamwork and process organisation lead both to unnecessary movement to get tools, materials and information and to excessive movement of work into and out of storage.
6. Over-processing/over-production avoidable waste from exceeding the customers' job specifications, over-packaging, or producing more copies than the next step in the process requires.
7. Defects and spoilage the greatest single cause of all waste is quality that is unacceptable to the customer. Consequences include waste of employee time, equipment, materials and energy, extra processing and disposal costs, plus resources to rectify defects.

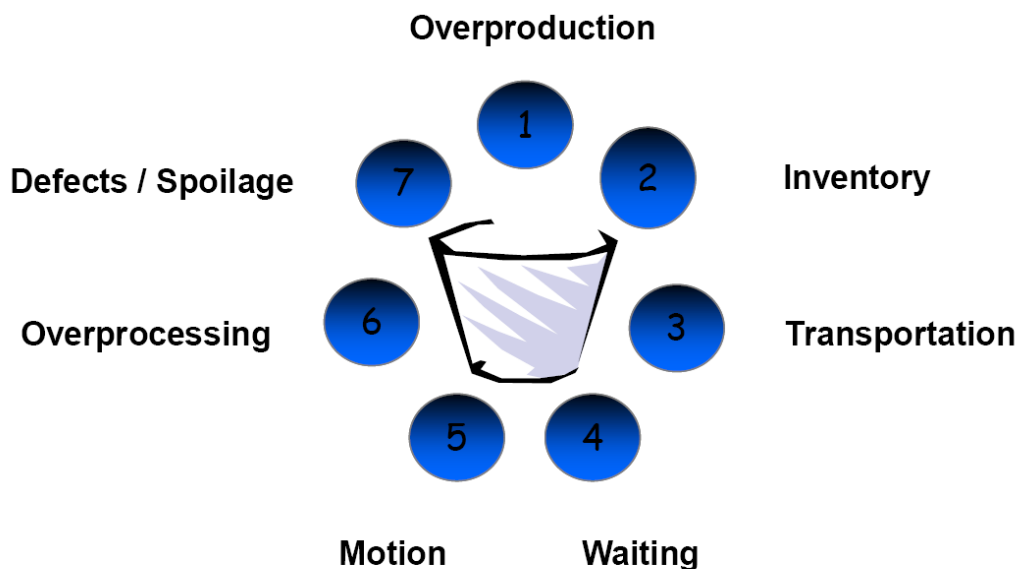


Figure 1: The 7 wastes



3 LEAN AND GREEN STRATEGY

Lean manufacturing reduces waste to minimise costs and time while simultaneously improving Green performance because any waste reduction provides direct environmental benefits as well as economic efficiency. It is promoted as a win-win strategy, which was inspired by the US Environmental Protection Agency's promotion of Lean to address environmental issues.

- To be leanerreducing the costs.
- To be greener improve the print's environmental performance and sustainable attributes.

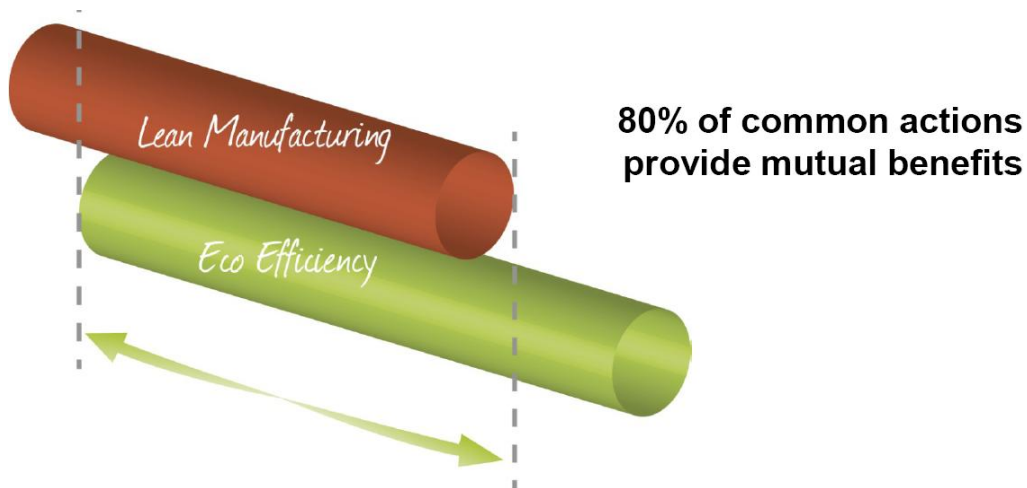


Figure 2: Lean and green together

Tips to become leaner & greener.

- Measure how many runovers are left at the end of jobs - why so many (or not enough)?
- Look in waste bins to identify and eliminate the causes of waste.
- Calculate company material yield (annual waste tonnage/annual procured tonnage).
- Calculate what a 1% reduction in material waste could add to profits.
- Quantify the cost of energy and utilities consumption and assess opportunities to reduce their waste.
- Establish cross-functional multi-level teams to reduce waste.
- If you don't know where to start then seek external assistance - the right support should pay for itself many times over.
- Start by making the job easier, faster and better, for the staff - then it will be adopted by them and it will become cheaper.
- Do only what is needed, when it is needed. Start with small and quick success steps.

What not to do.

- Try to implement improvements without engaging your entire workforce.
- Ignore Key Performance Indicators - measurement is essential to improvement.
- Fall for the recycling-is-OK rationalisation - avoiding waste is more profitable than recycling.
- Think you have done it already - there is always opportunity to improve.



4 THE HUNGARIAN WAY

In the past two years, Hungary has witnessed the adoption of the principles and practices of lean printing, primarily at foreign-owned printing businesses producing packaging materials.

Hungarian printing companies, who have been managing the lean printing

Company	Based	Ownership	Products profile	Beginning of lean
DS Smith Packaging Hungary Kft.	Győr	DS Smith Packaging (US)	cardboard box	2010
STI Petőfi Nyomda Kft.	Kecskemét	STI (G)	cardboard box	2009
Colorpack Zrt.*	Nyíregyháza	privát (H)	commercial printing	2011
Marzek Kner Packaging Kft.*	Békéscsaba	Marzek (A)	label cardboard box	2012
RR Donnelly Hungary Kft.	Debrecen	RR Donnelly (US)	manuals cardboard box	2010

Figure 3: Hungarian lean printers

One of the best examples for green printing efforts is the Green Printworld Award of the professional journal, Nyomdavidílág, founded in 2010.

Goal

Acknowledgment of achievements in the field of environmentally conscious approaches in the paper and printing industry, outstanding technological and environment-oriented enterprise resource planning activities tuned for the protection of the environment, influential and exemplary results in the development and promotion of environmental consciousness in the paper and printing industry.

Categories

Green Paper Vendor of the Year – for Hungarian paper trading companies

Green Printing House of the Year in the categories of

- small printing businesses established in Hungary,
- medium-sized printing businesses established in Hungary, and
- large printing businesses established in Hungary.

Main criteria of evaluation



The qualification system applied by the Green Printworld Award fundamentally extends to such requirements and their scoring that can be documented, verified. The evaluation considers the following key aspects: commitment to environmental consciousness and sustainability: environmental objectives and programs, application of environmentally friendly materials, equipment and green technologies, sparing consumption of materials and resources, internal and external communication of environmental consciousness, corporate social responsibility (CSR), environmental management system (e.g. ISO 14001), as well as the operation of FSC/PEFC systems.

Procedures for evaluation, qualification

Basis of evaluation: submitted documentation of application for the award; onsite audit; website of the applicant; publications, presentations, conferences; image in the industry. Minimum condition of awarding GPwA: at least 55% of the maximum score that can be achieved in the separately elaborated evaluation systems for paper vendors and printing businesses.

The applicant organizations hitting the $\geq 55\%$ mark – as depending on their individual performance – are awarded with the two- three-, four- and five-star qualifications of the Green Paper Vendor of the Year and Green Printing House of the Year titles.

The awarded entities are given certificates and the associated logos together with the right to use these logos, and moreover they are entered in Nyomdavidílág's register, a public list accessible via the www.nyvonline.hu and www.p-e.hu websites.

After the announcement of the results, the journals of Nyomdavidílág, Magyar Grafika, PRINTinfo and Lupe, as the media promoters of GPwA, publish the names of the award-winners in the respective professional forums.



Figure 4: The logo of award

5 CONCLUSION

Printing production is not feasible by means of price increases; the only expedient way to follow is to cut costs. In this respect, *lean and green management* can be supportive.

As an advisor, the Institute of Media Technology of the University of Óbuda is also involved in these lean & green printing efforts and projects. Still far from being comprehensive, these initial steps clearly demonstrate the way to walk, encourage competitors to follow the positive examples.

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