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Results Optimization Process for Automotive Electronic Production in the Best-Cost Country Production Plant

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Abstract

The aim of this paper is to provide a real example of a production factory transformation from a standard production best-cost country plant to a world class plant applying the lean principles, avoiding waste and optimizing plant organization structure for the new role. The case study of this paper is based on a Romanian Automotive Company and the main purpose is to provide an example of the optimization potential of the west automotive technology applied using local strengths and creative thinking.

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1. The Automotive product in Western Romania

The following main trends are visible in the automotive market:

- Increasing the complexity of the cars especially in regard to the electronic and software (infotainment, safety additional features, comfort features and the automatic driving features and direction)
- Car producers are focusing on car platform and the reuse concept in order to reduce the development, share part and to globally reduce the price;
- End Customers of the car industry (private persons, but also companies) have a larger expectation in quality aspects and specific customization;
- Generally, the automotive industry has an overproduction capacity in classical producers, strong competition and price pressure. It also deals with the challenges of competing more and more with the computer and communication field;
- Some of the international markets (for example the European one) are looking for complexity and sophistication, while they are also interested in cars for standard daily use and the most cost efficient solution.

Based on these trends especially the western and central part of Romania have the following main competitive advantages:

- They are reasonably close to large car producers in Europe, resulting in reasonable transport costs and delivery time especially in Western Romania;
- Good workforce and highly educated human resources at low prices;
- Good and very good capability in software development, electronic and mechanic design give the opportunity to create large development centers in Romania to serve the international headquarters.

Using the Romanian competitive advantages, during the last 5 years almost all large automotive companies (Continental, Hella, Takata, Drexelmayer, TRW) doubled their production capacity in Romania, creating or extending the international development center. This increase was often done using the strategy and method used in Western Europe and sometimes applied different local conditions. For example, production lines were often designed in the west with the target to reduce the investment, to reduce the sometimes exaggerated automatic solution, and to mainly allow manual production and control.

2. Production Plant Challenges

The production of electronic automotives is challenging because of the following main factors:

- Strong pressure in product cost and also yearly product cost reduction;
- Continuous Product Life Cycle reduction;
- The increase of product complexity combined with the extension of product variants;
- Customer pressure in product quality and quality preventive actions.

In order to be better prepared for the challenges of the automotive market, automotive companies prefer to start the production Plant in best-cost countries, reduce the investment and compensate this with extra human resources (because salaries are low) and try to properly manage the activities and the eventual difficulties using additional administrative or process-related human resources.



Fig.1. Production plant in a best-cost country

3. The right approach for the best-cost country production plant

Companies which use optimum investment in equipment have the following main challenges and waste drawbacks:

- Working intensively to optimize the use of production equipment and production planning;
- Managing dynamic bottlenecks in process;
- Production planning is strongly affected by any issue in the logistic or production chain.

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