

# PLANNING AND IMPLEMENTATION OF THE ERP SYSTEM IN PACKAGING PRODUCTION. PRACTICAL ASPECTS

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**Abstract:** *The article presents practical aspects - necessary conditions, model of planning and implementation of a specialized ERP system for packaging production at a plant, part of multinational company. Are explored main problems in implementing of such systems.*

**Key words:** *ERP, packaging production, Kiviplan*

## 1. Introduction

Evolutionary automation of production in industrial plants goes through the building of a sustainable IT infrastructure, the development and implementation of simple specialized IT systems / financial, human resources management, warehouse, manufacturing, etc./ to come to the need of ERP /Enterprise Resource Planning/ systems.

ERP systems cover all /or almost/ all information flows and provide the needed information to employees and managers to quickly make efficient decisions, make business processes more effective and help to reduce costs and increase revenue in organization. In a complex ERP system, software solutions are becoming more flexible and user-friendly. However, ERP systems are expensive and time-consuming investment that requires serious and professional planning.

In the specialized literature [2], the implementation of the ERP systems is defined as a key element of FoF - Factory of Future building, together with the renovation of the production facilities - technologies, machines and equipment.

## 2. Implementation of ERP system in a packing plant

In this article is explored an example of implementation of specialized ERP system for the managing of plant for packaging production – boxes from corrugated board, part of a large multinational company.

The basic requirements for implementing of ERP system:

- Comply with group policies - it should be compatible with the existing systems in the main company, preferably to be part of corporate ERP system. This leads to a significant reduction of deployment costs, based on shared experience and the cost of the needed IT infrastructure - equipment, licenses, administration and maintenance.

- To be integrated with existing corporate systems - financial, BI, CRM and others. As a rule, multinational companies are using unified financial systems - mainly SAP.
- Be flexible and scalable; to consist of separate standalone integrated modules. This allows only those modules that are in line with business processes to be deployed. On the other way, with the expansion of the business can be easily added new modules if it's necessary.
- To have an upgrade and maintenance policy and rules.

One of the most popular packaging plant management ERP systems for cardboard and corrugated packaging production is Kiviplan - <http://www.kiviplan.com> [1]. The system is widely distributed around the world and has more than 600 corporate customers with more than 680 covered plants.



**Fig. 1.** Kiviplan in the world

The system is built on a modular principle and is extensively flexible. All modules are presented on the diagram /Fig. 2/ and are connected with embedded interfaces.

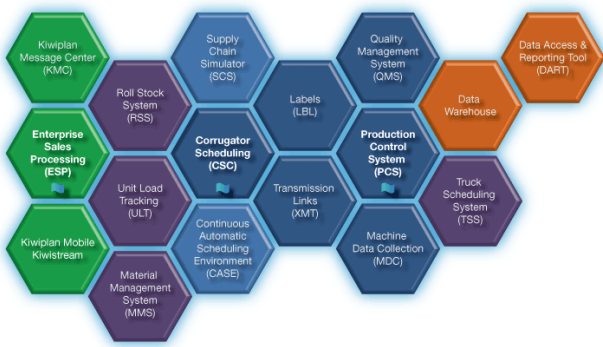


Fig. 2. Structure scheme of Kiwiplan

Main modules of Kiwiplan:

- Enterprise Sales Processing /ESP/ - managing of the sales
- Roll Stock System /RSS/ - roll paper warehouse system
- Corrugator Scheduling /CSC/ - planning of corrugated and boxes production
- Production Control System /PCS/ - managing of the production
- Data Warehouse – finish good store management
- Truck Scheduling System /TSS/ - expedition and loading

The system is bidirectional linked to the control systems of the corrugated aggregates and converting /for the boxes/ production machines. This means that in real-time production systems are exchanging information with the ERP system. Operators of the machines on a special terminals production machines monitored the required order parameters and outputs.

### 3. Example of implementation of ERP system Kiwiplan in a packaging plant

The specificities of this implementation are existing already implemented modules SAP R3 - FI /Finance/, CO /Controlling/ MM /Material Management/. Additionally, in the plant was in use own process management IS, developed by the local IT specialists of the plant by request of users, accurately reflecting the workflows of the units of the plant. This has resulted in resistance of implementation at various levels, from machine operators up to management. On the other hand, the availability of information in a structured electronic Data Bases facilitated the migration of data at the ERP implementation stage.

#### 3.1. Customization of the system for current structure of the plant

The structure of the implemented system shown on the Figure 3.

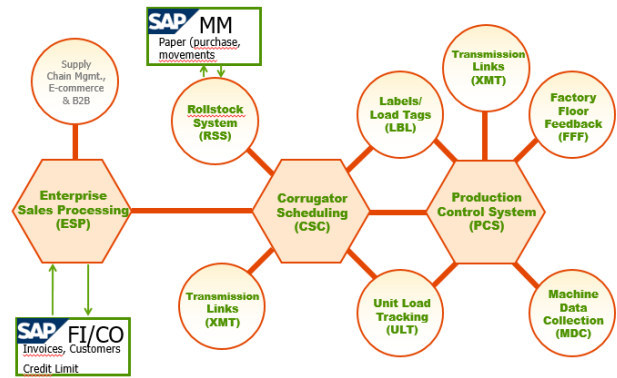


Fig. 3. Structure scheme of concrete implementation of Kiwiplan

In this implementation process, not all the system modules have been used. As an example, the quality control is done through another system because of special characteristics of the process and client needs. This has reduced the expenses/costs of the system implementation. On the figure /Fig.3/ shows also interfaces to existing SAP modules. In fact, this is done by BCS /Business Connect Servers/.

#### 3.2. Logical model of implementation

For the project realization, a model of implementation - ERP Kiwiplan has been created.

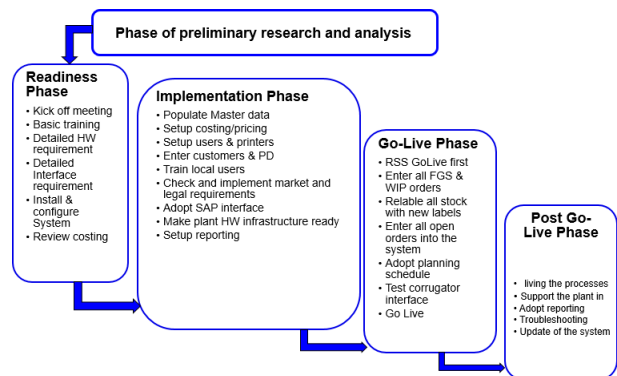


Fig. 4. Model of implementation

It includes the whole process in five basic steps:

- **Analysis Phase**  
Presentation of current plant status - Local Management  
Analyze standard process flow  
Detailed analysis / process area  
Presentation of analyzed plant status - Process Management

Discussion of results Managers Board approval meeting

- **Readiness Phase**
  - Kick off meeting
  - Basic training
  - Detailed HW requirement
  - Detailed Interface requirement
  - Install & configure System
  - Review costing
- **Implementation Phase**
  - Populate Master data
  - Setup costing/pricing
  - Setup users & printers
  - Enter customers & Project designs
  - Train local users
  - Check and implement market and legal requirements
  - Adopt SAP interface
  - Make plant HW infrastructure ready
  - Setup reporting
- **Go-Live Phase**
  - RSS GoLive first
  - Enter all FGS & WIP orders
  - Relabel all stock with new labels
  - Enter all open orders into the system
  - Adopt planning schedule
  - Test corrugator interface
- **Go Live**
  - Post Go-Live Phase
  - Support the plant in the processes
  - Adopt reporting
  - Troubleshooting
  - Update the system

All steps have their meaning.

**Analysis Phase** - this stage is a time of a complete detailed review of the production processes, of the existing information systems, outlines the possible gaps and advantages of the new ERP system. This is the time to make decisions – about time of implementation, budget, responsibility.

**Readiness Phase** - preparatory phase. Proper planning and building of infrastructure /hardware, communications systems, licenses, interfaces/ is the result of the preliminary investigation and determine the scope of the system. Key users of the system training also predetermines the implementation of the system as deadlines.

**Implementation Phase** - Implementation of the system. At this stage, the infrastructure is "aliving", the system is adapted according to the legal requirements according to the location of the plant. Specific reports are also being developed, for example required by the public authorities. In this phase starts the training of users in a test ERP environment.

**Go-Live Phase** - start of the project. Enter all data from the old system to the new ERP, re-label the available product in stock finished product. This stage is a critical. Incorrect input of previously prepared information may result in huge losses from misplaced queries, erroneous pricing and availability. Interfaces to the existing external systems are tested and real work is start.

**Post Go-Live** – This step is predicted to find the possible problems and mistakes and gives the opportunity to make some fine settings on the system.

### 3.3. Distribution of responsibilities

The main factor for success of the project is the correct distribution of responsibilities [3]. On the following table can be seen an example of possible distribution.

*Table 1. Distribution of responsivities*

Project Success Factors
• <b>Management Board</b> - commitment, trust, openness and leadership
• <b>Local Team</b> - expertise, enthusiasm and professionalism
• <b>Local Organization</b> - willingness and ability to implement change
• <b>Process Application Team</b> - expertise, professionalism and leadership
• <b>Project Management</b> - quality, methodology and control
• <b>IT Team</b> - involvement, infrastructure ownership and cooperation
• <b>Software Partner</b> - responsibility, professionalism and support
• <b>Complexity</b> - of the local organization (Products, Processes)

The success of the implementation depends on the tempo of the weakest chain in the future system. According to statistics, only 30% to 60% of the implemented ERP systems are successful. In big and complicated structures, it can be stopped or blocked on a lot of levels for a variety of reasons. For a successful implementation, the following key steps are necessary:

- Fixing the budget;
- Creating a working team of specialists at all levels;
- Choosing the right team leader. He must have organizational experience and full authority;
- Permanent control over the steps and the preparation of the system implementation according to the projects phases.

The main factor is planning and building a stable IT structure, according to the specific requirements of the system – Wi-Fi covering of the stores and production areas, installation of specialized equipment – MDC /machine data connectors/, forklift terminals, scanners, etc.

#### 4. Results of the implementation

The result of the implementation is difficult to be defined uniquely because it's a complex amount from the work of all units, but can be depicted as a sum of the cost savings on the one hand and the realized benefits on the other /Fig. 5/.



**Fig. 5.** Bidirectional benefit generation

Implementing of ERP system doesn't mean automatically generating benefits. According to recent research, a significant amount of implementations not only doesn't bring revenues, but can also generate losses.

The reasons can be externally, for example, market situation, but also an internal one, due to improper planning of implementation, too short deadlines, inability of staff to work with the system, system or IT infrastructure instability. For example, in wrong built communication connectivity, downtimes and customer problems are possible.

Of course, with a careful analysis of business processes, detailed planning, the creation of an efficient team with sufficient budget and implementation time, the ERP system provides huge competitive advantages for the business.

In this example, the implementation of the Kiwiplan ERP system led to a steady growth of volumes and profits of 3-12% on an annual basis.

Time deployment of Kiwiplan in a plant produced more than 100000 m<sup>2</sup> of packaging per year was 14 months with a budget of 800,000 €.

For more than five-year exploitation downtime of factory due to ERP system and IT infrastructure problems on an annual basis does not exceed 20 minutes.

#### 5. Conclusion

To conclude, ERP-system implementation does not have an alternative on the industry, because it allows flexible and effective management of the

processes. Especially for the medium and large companies.

The availability of information system covering all information processes enables tracking and managing key business activities, processing much more information, and providing access to quality analytics and queries. This allows managers different levels and business executives make the right decisions within the required timeframe. It is a system which unites all the processes in a big industrial factory, gives an opportunity to control all the key activities in the company, and makes access to analyses and references easier.

The presented case in the article is a general example and can be used as a model for implementing different ERP systems in another branches of the industry.

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