Technological solutions to new production challenges
In the fourth industrial revolution, intelligent plant is a computerized evolution of the currently factory where all processes are connected and interact in digital format.

One of the challenges is to reach a new generation of ground sensors (IoT - Internet of the Things) for the acquisition and capture real-time data without wiring stiffness or accessibility from dedicated terminals. Most importance is given to concepts such as "Mobility" in order to allow access to information from any device, anywhere in the factory, with software-based architectures "No License" (Cloud), human-machine interfaces "User friendly "and collaborative robotics.

Suite DLM

The Suite DLM is a set of technological solutions aimed to provide industry the transformation of productive plants into 4.0Factories. By modernizing factories through more efficient processes and thus improving productivity and flexibility of plants. To do this, we use the most advanced technologies in terms of the collection and data processing technologies.
**PRODUCTS**

**BBiG** is the solution for real-time management of all logistics needs of plant and Workcell's materials provisioning.

**ZELL** is your document and its publication management solution for the information of the entire factory. Eliminating the need for printing papers as it provides access to it in a completely digital way.

**DiViM** is the Digital Visual Management solution to facilitate internal communication and make public the information to our employees and visitors.

**ContrOlLEEr** centralizes all those KPIs which manages a plant manager for analysis and measurement the progressive improvement of these.

**Protime** is the solution for planning, scheduling and sequencing, management and production control.
BBIG is the solution for real-time management of all the needs associated with internal logistics and Workcell’s materials provisioning of the industrial factory.

It is based on the principles of Lean Manufacturing with special emphasis on eliminating one of the seven wastes: unnecessary movement or transport of containers, boxes or products.

**Module: Indoor Logistic**

Automatically manages the logistics team according to the needs captured in real time in productive Workcells.

- Requests for withdrawal / supply containers, raw materials, components, intermediate products and finished products.
- Management packaging changes.
- Automatic assignment of tasks scheduled for the carters.

Development of the optimum calculating engine for tasks management to be performed by the fleet of forklift drivers.
Module: TPM & Andon Management

- Workcell incidence reporting.
- Specific incident management. (maintenance, processes, quality ...).
- Control tests (Poka Yoke).
- TPM tests for preventive maintenance.
- Automatic generation of diagrams of failures.
- Digital Andon Management for managing the needs in WrCs.

**BBIG** is 100% configurable by the user directly, adapting to the process improvements that are implemented on the factory. It has its own parameterization interface in which the user can modify the most of attributes.

- Plant layout (adding, deleting, and relocating Workcells, buffers or stores).
- Add or modify Workcell’s parameters (setup time, cycle times).
- Add or change the number, type or characteristics of the containers.
- Add, modify or delete users and their roles.

Reducing the need for logistic resources.
Increases efficiency in logistics processes.

Improving the management and allocation of tasks to forklifts team. It helps to implement the Lean concept “forklifts drivers Pool”

Avoid unnecessary trips and minimizes the number of trips of forklifts drivers

Knowledge of the global state of the plant in real time. Transparent information to the Workcells

Avoid stop production line due to lack of containers or other materials

Minimizes time performance to breakdowns in production

Increase engagement and participation of the entire production team. It enables continuous process improvement

Computer record of releases of TPM machine.
ZELL is the solution for document and its publication management of the whole factory, thereby eliminating the need for printing paper provides access to it in a completely digital.

It is a powerful CMS (Content Management System) in which administrators users manage, edit, modify and display of all kinds of documentation associated with any area (categories) of the plant such as production, logistics, quality, maintenance, etc.

Inside ZELL operators can consult at anytime the documents they need from the same Workcell; providing support for both better training, instruction to query information.

Module: Site Documents

Basic module for the digital management from the existing documentation on the factory

- Filing of all types of documents.
- Full life cycle management of documents and signatures to create, modify, edit and register his publication.
- Publishing and viewing documents from anywhere in the factory.
- Registration formations. Consultation of documents reads by an operator.
- Consultation on the number of saved views. Calculation of savings in consumption of paper and other consumables.
Module: Edition & Creation

Advanced module for automatic generation of documentation (Docs) and reduce design and creating time of all the documentation of the plant.

- Creating Documents associated with Workcells from defined templates customized in each implementation
- Editing Documents: add, modify and delete.
- Full life cycle management of the document.
- Automatic generation of duplicates for assignment to another Workcells.
- Updating real-time changes in the documentation.
- Playing Docs. Online display of any section (chapter) of a Doc in the Workcell.
- Automatically and continuously reproduction of a Doc.
- Export Docs: PDF generation for mail shipments, etc.

Increase engagement and participation of all plant staff. Interactive environment that facilitates participation and consultation

Visual language to enhance comprehension and retention of information. Simple and intuitive learning environment (Visual Management)

Easy system to create detailed descriptions

Centralizing all information in one system. Avoids duplicity and is customized for each terminal

Historical modifications and periods of each document

Date information at all times. Total traceability. System for quality audits (ISO)

Registration and control of readings Documents
DiViM is the solution to facilitate internal communication and publicize information to our employees and visitors. Any information in digital format so you can eliminate the need for printing paper, approaching our factory concepts "Green Factory.

It is based on the principles of Lean Manufacturing, under the criteria of Visual Management.

**Module: Information Dashboard**

Design and create your own content to be published in any of the terminals (TVs or tablets) managed by the system.

Manages the information displayed on every TV. Programme it independently and autonomously by each terminal.

It delivers information easily and quickly, communicating in online to all employees and visitors to the plant.

- Content creation environment with tools such MS_Paint.
- Template Management: record / edit / delete content templates.
- Template Programming: assignment to display (time intervals / daily / weekly/ monthly or single).
- Assigning templates to unique terminal or more TVs.
- Content broadcast on schedule.
- Users low and high management
Create your own templates based on criteria such as color based on themes or departments such as Production, HR information, news of the company or sector, etc.

**Module: Complete Information System**

Advanced module for publishing the same content broadcast on TVs and, in addition, multimedia files to have its own internal television channel with contents of the factory and company (corporate news, etc.) being consulted by the user from a terminal or PC tablet.

Ideal to replace the boards where the factory prints all sorts of graphics and tables with performance indicators (KPIs) for a digital system (zero paper) where the user can check the information that interests you specifically know

- Increase engagement and participation of all plant staff. Interactive environment that facilitates participation and consultation
- Visual language to enhance comprehension and retention of information. Simple and intuitive learning environment (Visual Management)
- Easy and intuitive system to create engaging content to the user
- Centralizing all information in one system. Avoiding duplication of information through various channels
- Historical publications. Traceability time each published content.
- Date information at all times. Total traceability. System for quality audits (ISO)
- Improves transmission of information of the company
ControLEER aims to bring together one software solution all aspects required by the manager to define the state of the plant and to analyze performance indicators (KPI) of industrial media as well as a tool to help him to implement a system for continuous improvement.

To have reliable information about the productivity and efficiency of operations and to analyze proactive rather than reactive is the first step to increase the competitiveness of the plant.

**Module: Production Controlling**

Module with tailored interfaces to needs and plant technologies for the correct registration of production track. The module is ready to feed itself with data concerning the estate and other data of Production Orders from different sources as:

- Radio frequency systems
- SCADA / MES systems
- Filling manually performed by the operator / manager to close the order or shift.

The module allows you to enter for each working day:

- Production Order information (start / end P.O. produced quantity (OK / NOK) and Resources)
- Information incidents and failures suffered
Module: KPIs

Module that provides all types of KPIs on operations and manufacturing resources available, individually or collectively. It incorporates different types of equations and calculation methods for determining indicators from information provided by the module Production Controlling.

The perfect tool for the manager and / or management staff to monitor the effectiveness of the plant, by monitoring the different indicators of activity, efficiency and productivity.

Managing the correct registration and completion of the documentation relating to production activity and having ratios plant performance board.

Full implementation of the module allows also determine all sorts of related failures (MTBF, MTTR) and the development of human resources (MOR / MOT) indicators. Integra necessary for analyzing and defining these Action Plans tools.
PROtime is the solution for Planning and Production Scheduling based on finite capacity (FCS), optimally sequencing production.

- **Infinite Capacity**: ignores the limitations of resources and does not take into account work in process or commitments of resources (MRP solutions).

- **Finite Capacity**: Based on the finite amount (fixed) resource capacity. Aims at increasing productivity by reducing idle time and machine set-ups and increasing resource saturation.

**CLOSED LOOP**
The system informs the IA (Inventory Control) on the completion of orders and thus update the entire system.
The solution is divided into 3 modules:

**MPS** - Planning (Master Production Schedule)

**FCS** - Programming finite capacity (Finite Capacity System)

**WLB** - Balancing of productive jobs (Work Load Balancing)

### Module: MPS

To do the MPS is the first step in planning production at manufacturing plants. This module aims to help, raise up the speed and automate the process of obtaining it thanks to providing tools for defining all kinds of needs and requirements.

- Demand Forecast
- Current orders
- Inventory
- Capacity limitations
- Security Levels
- Internal needs

The solution is ready to be multi-company, multi-factory, multi-line and integrates needed functionalities for the performance of MPS: definition of calendars, definition Sales Plan and editing all the particulars (extra shifts, product launches, etc.). Also it includes generating reports or full resource, organizations and products management among other features.
Module: FCS

The FCS Production Scheduling module is divided into 8 blocks ranging from procurement of materials and basic components to a Portal-site for customers and other for suppliers.

The module is equipped with calculation engines that determines and sequences production. Each one incorporates a different production policy further respects productive user restrictions and other changes to then perform a resequencing. The sequencing of production is shown in the form of interactive GANTT it includes lots of features. Some of them are:

- Viewing the status and progress of production
- Availability of Raw Materials and Components
- Zoom day / week / month
- Visualization of the evolution of stocks

As a result of sequencing, the system offers the forecast lack of materials as well as the forecast of shipments.
Module: WLB

The module aims to balance the tasks and / or activities of all the operators of the assembly line taking them from a file MS Excel or input from the interface of the solution.

The solution includes many options. Some of them are:
- Definition of full or partial days workers or industrial resources
- Definition of skills of operators
- Multi-operator tasks
- Different configurations for each shift.

- Reduced production times (lead-time). Increases delivery performance
- Procurement savings by efficient procurement of materials. Inventory reduction and keeps updated
- Improved control and monitoring of production. It increases the capacity of intervention by low production.
- Knowledge of the global state of the plant in real time. Complete feedback to the supply chain.
- Reduction of obsolescence. Inventory reduction and keeps updated
- Improved relations with customers and suppliers
- Improved preventive maintenance planning. It enables continuous process improvement.
- Resource optimization. It reduces costs with planning MOD. Programming and production resources respecting future.
Add-ons

The DLM-Digital Lean Manufacturing suite has 5 integrated solutions together, 11 (M) modules and 2 (A) add-ons (modules or common functionality that can be added to any of the solutions). They are:

Module: Internal Messaging

The module is an internal messaging system that provides an information channel for all kinds of newsletters, announcements, messages and factory warnings characterized as unidirectional, direct, real-time and with complete transparency and traceability.

- Messages generation by plant managers: communications, messages and warnings
- Mailings against operator
- Mailings against Workcell
- Shipments to groups of workers or Workcells
- Acknowledgement of "read it" or "read and understood it"
- Management historic messages with advanced searches

Module: Multimedia

The module is a set of multimedia features for using video (with or without audio) in streaming format to not cause delays or overloading into the network.

So that solutions as ZELL or DiViM can publish videos and broadcast it (but in no download online).