PRODUCTION

The production applications of CASYMIR allows you to produce by batches. Phase control ensures processing, monitoring and logging of the production, resulting in a definable specification and certification of the product and its manufacturing, all in numerous variants. Each production step for every product can be documented at any time and is therefore transparent.
The production area comprises the following functions:

- Batch management
- Demand analysis
- Process control, SOPs
- Recipe management
- Logging
- Purchases, orders
- Line planning
- Resource management
- Weighing system
- Labelling
- GHS support
- Workflow management

Batch Tracing

Thanks to the comprehensive logging of all movements comprising the relevant information, the Inventory Information System answers a series of questions in the twinkling of an eye, as the following example from PPS Batch Tracing illustrates:

- Which customer was this batch shipped to?
- When was the batch produced?
- Show the production log of the batch.
- Which raw material batches have been used for production?
- Who supplied said raw material?
- When was the raw material supplied?
- Show the protocol of the incoming goods inspection.
- For which other products has the same raw material batch been used?
- To which customers have the final products concerned already been shipped?

Demand analysis

Based on the incoming and outgoing quantities, statistics allows retrospective statements on how much material has been used for what purpose. Comparison of the periodical data enables requirement and trend calculations.

- Requirements estimations are calculated from the stock situation considering stock level, outstanding supplies, reservation, minimal stock and lot size.
- The calculation basis is as follows:
- Theoretical stock = stock + outstanding supplies – reservation

As soon as an article drops below the minimal stock, it is added to the order proposal. However, order proposals may also defined and configured on a customer order basis. They may also account for sub-quantities according to production jobs which have been marked for that purpose.
Order proposals also constitute a period-based evaluation of sales or article turnovers. They can be sorted by stock locations or packaging units.

PPS Basic Module

The PPS Basic Module is suitable for serial and individual production. Thanks to the implementable phase control and specification, it is especially suitable for:

- Chemical industry
- Pharmaceutical and cosmetics industry
- Industrial food production
- Paint and varnish manufacturing
- Plastics processing industry

PPS allows to operate the production processes in interaction with numerous other CASYMIR modules.

PPS is batch-oriented, i.e., batch and serial numbers can be registered and administrated via the article master.

CASYMIR Team Schweiz
casymir schweiz ag
Fabrikmattenweg 11, CH-4144 Arlesheim

CASYMIR Team Deutschland
SIGMATECH Informatik GmbH
Saarbrücker Str. 69, D-66359 Bous

Production and test specification

A production specification condenses all the data necessary for the production of semi-finished and finished products. In analogy, a test specification includes the data necessary for the testing and checking of external products.

All the elements of a production specification are saved as versions in the system. When this specification is used in the production of a batch, the system freezes the underlying specification version. Any modifications on used production specifications are blocked by the system. Therefore, if a modification is necessary, a new version is created as a copy of the last valid specification in a few simple steps. Before use, a new specification has to be signed and release by a GMP-compliant, 1 to 3-stage release procedure. According to the specific requirements of a company, the release procedure may be set to a multi-eyes principle by which 1 or 2 additional persons need to authorise release.

The header data of a production specification include e.g. the following data:

- Reference quantity: fix, variable or quantised (fixed-step)
- Minimum and maximum batch size
- Status, approval and release stamp
- Specification type (production specification, test specification)
- Various types of calculation parameters

Production specifications include the elements following below.

Production means

Production means include devices, machines, equipment, resources and other appliances for production which are not consumed during the process. The production means of a production specification stipulate the following:

- Type and number of the required production means or production means quantities
- Appliances such as e.g. containers or necessary measurement devices
- Hourly rates for the operating data collection
- Shift plans, capacity factors and special situation planning
- CIM data, machine parameters and programs
- Documentation references concerning application, operation, cleaning, etc.

Material bills / recipes

They specify the raw materials or parts from which the article is produced. These basics, in turn, are stored in the system as third-party or self-manufactured articles with version-specific production or test specifications.

The material bill includes:

- Type and quantity of the required raw material and other consumables
- Information on the production quantity calculation, calculation parametrisation
- Permissible tolerances for deviations from the target quantity
- Rounding rules
- Structuring in sections, e.g. pre-mixture, final blend
- Indications on links to the weighing systems
- Contingent items only needed optionally
- Weight and percent indications

Recipes can include primary and secondary packaging material, labels, transport packaging, test equipment and other specifications it these are managed by stocks.

Upon creation of a production order, the material requirements are registered and matched to the existing stock. Missing materials appear timely in the order proposal.

The system allows definition of interchangeable material classes, so that the effectively used material only needs to be determined upon registration of the production order.

A series of helpful editing functions enables the user to handle recipes in a convenient way, e.g.:

- For the production of agent concentrates: conversion to other concentrations
- Version-compatible, collective replacement of no longer available raw material items by replacement items
- Calculation of product ingredients from raw material data
- Addition of mixture weights for monitoring purposes on different production stages

Scheduling

Order scheduling allows interlink a series of dates to the persons responsible and the pending order. Thanks to this scheduling, an overview on the status of current orders within a department is always available.
The number of dates assigned to an order can be configured freely. For example, it is possible to specify to the minute the production, placement, shipping and the delivery of goods.

Processing specification

The processing specification stipulates how a product is produced from raw material using means of production. Processing specifications can be saved in the system with any level of detail. It consists in an ordered set of process steps:

- An order number stipulates the sequence of the procedure. It can be composed of sequential (to be

executed one following another) and parallel (to be executed simultaneously) partial processes.
- Production steps define the departments involved with partial processes.
- Document references provide the user with direct access to further existing documentation
- A description of work steps which can refer to material bill or means of production items
- Indications on the output control and the subsequent logging in of the production process in the module PPS Logging, such as permissible ranges, unambiguous value marking
- Further details, such as target time indications on means of production (for production and cost accounting)
- Material items can be allocated to single process steps for procurement purposes

Phase control

A production specification can be divided into typical phases, e.g.:
- Preparation: material provision, maintenance of production plant, etc.
- Production
- In-process analysis
- Filling, packaging
- Analysis
- QS release

The system overviews the production phases in the course of the production process. It blocks and opens new phases, informs the personnel on pending tasks, and directly prints analysis instructions. Phase control is freely definable according to your needs.

Product specification

A product specification defines contracted properties of a product in the system. Each production specification relates to a well-defined version of the production specification, since modifications thereof can also change the properties of the product. Nevertheless, the product specification can be modified independently of the version release and has an own release mechanism allowing add customer-specific or foreign language variants of the production specification.

The specification consists of a freely definable quantity of lines. The specified values can relate to measured values or analysis results. Certificate printing is always based on a product specification and can therefore display the specific analysis values of a production batch in various ways.

By-products

Some production processes result in valuable by-products. If these are recycled or sold, these by-products help to reduce the production costs of the main products. In order to account for this link within cost control, the quantity of by-products resulting from production can be stored in the production specification.

CIM data

It is possible to link CIM data for machine control with the manufacturing specification of an article. The CIM data is subject to version control as are the other parts of the manufacturing specification.

Administration functions

The production specification already allows to derive the statical article use certificate, indicating which recipes a particular raw material is used for. The dynamic batch use certificate is based on the batch-related stock outputs (material consumption) and input (finished goods).

By means of the article pre-calculation, a budget cost calculation can be made on the sole basis of the production specification. It is also possible to calculate the production costs of a product at any level of vertical integration, in an exploded form.

For daily use, the PPS module offers convenient features for GMP-compliant version administration (record changes), specification release, bulk mutations of specifications, production monitoring, batch release, certificate printing, batch tracing through to returns management and systematic complaint management.

Weighing system

The CASYMIR Weighing System is a module of CASYMIR's production segment. It is linked to the stock management, batch management, order system and PPS modules.

During the preparation of a production process, the weighing system can be used to assort the required raw material, intermediate and final products by allocating the batches saved in the system to their respective material and property definitions. The latter define which substance shall be drawn for production in which quantity and quality.

Incoming goods can be weighed in the course of their inspection, if the raw material packaging allows for it. In laboratories, measurements from laboratory balances can be included.

In order to perform weight managements, a balance is connected directly to a workstation. The CASYMIR Weighing System communicates with the balance and registers the effective net and tare weights for each measurement. These data are stored permanently in the ERP system allowing with further indications such as time stamp, user name and order number.

CASYMIR Order Processing is suited for use in production companies from different industries. Special support is provided for the following areas:

In the chemical and pharmaceutical industry for the automatic registration and filing of raw material consumption data ; GMP-compliant workflow can be guaranteed by the system.

In the food industry for running batch-oriented production.

Sequence control

In order to comply with the requirements of the chemical industry, the weighing procedure can be implemented following a strict protocol. For example, it is not possible to modify pre-defined target quantities. The procedure can only be completed if these pre-defined values have actually been weighed.

Production start via the PPS module generates a requisition document including all the relevant data on the article to be produced. This requisition note is one of the bases for the weighing procedure. Through the scanning of its bar code, the production specification data for the article are registered and checked for the batch and the production sequence.

Weighing process

The weighing process itself transmits, checks or generates the following data:

- Production job
- Article and batch number of raw material
- Tare of container or wrapping
- Weight of added raw material
- Monitoring of weight increase based on the production specification, considering admissible tolerances
- Adding of remarks and references
- Container labelling with, among other, indications on the article, the batch and the order the raw material was weighed for;
- At the end, the weighing process can be signed off and added to the production journal or the customer certificate for the article in question. It is documented who has weighed what and when and what its intended use is.

Integration

Through the link to the Stock Module, the respective article item is debited immediately after conclusion of the weighing process. Quantities remaining can be freely deducted. Naturally, if a minimum quantity has been defined, it is monitored.

Labelling management

Another strong point of the Stock Management Module are the extremely versatile labelling options. Not only upon entry, but in relation with all article movements, stickers, tags or other labellings can be produced in different versions. The article labelling includes information e.g. on when an item was supplied, produced or dispatched. Naturally, the module also supports bar codes according to the most diverse systems, quantities, serial numbers, regardless of whether the label should be printed on paper, plastic or foil, be lightfast, waterproof or chemical resistant. There are hardly any limit to the labelling system when it comes to the production of stickers or other marking procedures.

GHS support

What does GHS stand for? Globally Harmonized System. This United Nations labelling system was adapted for Europe as EC Regulation 1272/2008, implemented on January 20th 2009, replacing country-specific regulations. The GHS regulation is also sometimes referred to as 'CLP regulation' (Classification, Labelling and Packaging). Clearly, we come into contact with chemicals every day, sometimes easily perceptible by the pungent smell of a detergent, sometimes more discrete by the scent of a soap or as a stabiliser in a delicate tiramisu. Until now, the Swiss Federal Office of Public Health counts more than 140'000 registered chemical products!

Whether intended or not, chemicals have effects on human health and must therefore be rigorously checked already when stocked and processed.
Since the end of 2010, it has been possible to classify and label substances according to the GHS standard. Since December 1st 2012, this is mandatory. Mixtures (according to GHS terminology, the EU labelling calls them preparations) may be classified and labelled according to the new system, this has only been mandatory since June 1st 2015.

It is reassuring to know that CASYMIR and its GHS hazardous substance administration keeps you at the latest state of development and allows you to activate new features in a controlled setting. It used to be common to use separate software for the hazardous substance management and logging (who delivered the product or who was it sold to when), implying all the interface problems and data redundancy attached to isolations. CASYMIR and its GHS support covers the entire issue – even if standard change once more.

Symbols

The following symbols are included in the system:

- GHS Hazard Symbols

- GHS Protection Symbols
- UN Hazardous Materials Symbols

Statements

The following statements are included in the system:

- All GHS H or S statements in German, English and French (further languages on request)

Article assignment

Symbols and statements can be assigned to the articles in free combination. Statements may also be annotated placeholders to be completed for each languages. GHS symbols and statements can be viewed at any time in the article assignment and modified by authorized users.

Output

Printing of the symbols is in principle possible on any article document, particularly on the labels printed by CASYMIR (colour or B/W):

- on production instructions
- on requisition documents, packing slips
- on labels
- in the safety data sheet (additional module, not yet operative)

Evaluations

The following data extracts are available:

- Excerpt of all the GHS-relevant stock inventories

WorkFlow control

The WorkFlow module surrounds the other CASYMIR modules like a frame. Its task is to control and refine collaboration within the company. An innovative mechanism allows better control of the workflow by using CASYMIR.

Easily and effectively adaptable to modern continuous improvement processes, it enables the control and optimisation of work routines. WorkFlow actions are triggered by events both for production and administration workflows. Users can model any number of routines in the system and account for different degrees of complexity.

Event control

The core of the WorkFlow module consists in systemic events based on processes. Each event can be assigned any number of freely definable reactions, automatically triggered and controlled by the WorkFlow module. Any event treated by WorkFlow is assigned a unique event ID.

Here is a series of examples for events that can be handled by WorkFlow:

- Impending expiry date of articles within a batch
- Modification of an article status (e.g. from pending to delivered)
- Incident in a production plant
- Plant maintenance
- Registration / deletion of addresses
- Registration of a production specification
- Incoming / outgoing payments
- Deadline modifications
- User login to the system
- and many more

The number and type of definable events is unlimited.

Reactions & actions

If a given event takes place within the CASYMIR system, possible reactions or actions of the WorkFlow module may be:

- E-mail sending to any recipient
- Creation of task lists (ToDo lists)
- Creation of messages or approvals (e.g. for production steps or storage type)
- Information on the blocking of articles (e.g. if certain analytical or measurement values are exceeded)
- Start of a server-based application
- and many more

Event-relevant information is added as an argument in text form. This ensures unambiguous allocation of reactions/actions to the event in the system.

Task (ToDo) list

The versatility of the task list included in this module deserves particular mention. After login of a user, a task list generated by the system can be displayed. It is divided into individual tasks and group tasks. It is possible to assume certain or to delegate individual tasks from a group task. Depending on the configuration, a double click will lead the user to a point in the CASYMIR system where the task can be performed.

It is also possible to register unique or periodical check lists (serial tasks) to be performed by groups or individually. Within the WorkFlow module, different priorities and degrees of completion may be defined and set. Coloured markings enhance clarity and facilitate the use of the module.