

Kastor PI

Plant Intelligence

recording
producing
identification
documentation

What is Plant Intelligence?

PI stands for a new approach regarding MES-systems to optimise production processes by making process data visible and by making production sequences transparent on the basis of key data.

The main emphasis is put on online collection of data and on prompt data analysis. A PI-solution provides the various users in a company with the indicators promptly, clearly and location-independent.

Analysis of weak points

- Registration and filing of plant disturbances
- Analyses of the chronological course of disturbances
- Analysis of disturbances causing down-times
- Registration and analysis of down-times caused by external sources
- Analysis of weak points affects company rating according to the rules of Basel II

Preparation of key data to turn them into key performance indicators (KPIs)

Process-oriented manufacturing data (production data, availability, output, consumptions, etc.), Quality figures (such as process capability cp, cpk, cm, etc...) OEE-total efficiency calculation (profit calculation by connecting product quality, plant availability, and plant performance)

THE INNOVATION



Methods to measure productivity:

- Process-oriented measurable quantities are turned into process-oriented indicators
- Data from automation engineering are integrated in business data
- Similar data sources (like production lines) become comparable
- Current data and historical data can be compared with each other
- Comparison between target values and current statuses

Operating data and process data (MES data)

- Periods (time slices of the total lead time: set-up times, processing times, ...)
- Disturbances (due to machines, due to processes, due to external sources, causing shutdowns,...)
- Counter values (production progress, quality figures, utilisation ratios, stocks, ...)
- Status information (operating conditions, mode of operation, ...)

SAP connection

- Presentation of orders and order control
- Interface to merchandise management
- Interface to cost accounting and controlling

Manufacturing Scorecard

4 steps lead to permanent process control according to the Balanced Scorecard:

- Definition of strategic targets
- Determination of measurable key figures (e.g. stocks, waiting times, setup times, interruption times, service life, number of good batches, number of rejected items, etc.)
- Key data serve as comprehensible target figures for employees (e.g. utilization ratio, capacity used, OEE-index, etc.)
- Permanent process improvement measures are derived from the a.m. data

Heterogeneous company structures

Often, machines and equipment have different control systems, there is no networking of systems or important signals and data are not even determined due to missing sensor technology, due to non-existent I/O level) or inadequate bus systems.

Standards

Based on standard systems like GE Fanuc iFIX / iHistorian / InfoAgent, Wonderware InTouch / Industrial SQL Server or Siemens WinCC.

Excel is used as a reporting tool for already defined reports. A big macro library allows the user to use Excel as an efficient generator to write tailor-made reports.

Many possibilities of parameterization

- Signals, counters, troubles, texts, ...

Advice and service

- Against this background AZO CONTROLS
- analyses your equipment and systems landscape
- advises you on questions regarding the collection and transmission of necessary PDA-signals and numerical values (disturbances, status signals, counters, times, etc.)
- offers service regarding PLC-programming, electrical engineering and realisation as well as regarding switch cabinet construction, if required
- advises you on questions regarding system networking and implements them
- and optimises your process landscape with Kastor PI - components from decentralised data acquisition by means of graphic compliant CE-terminals to long-term filing of your PI-data in historian databases

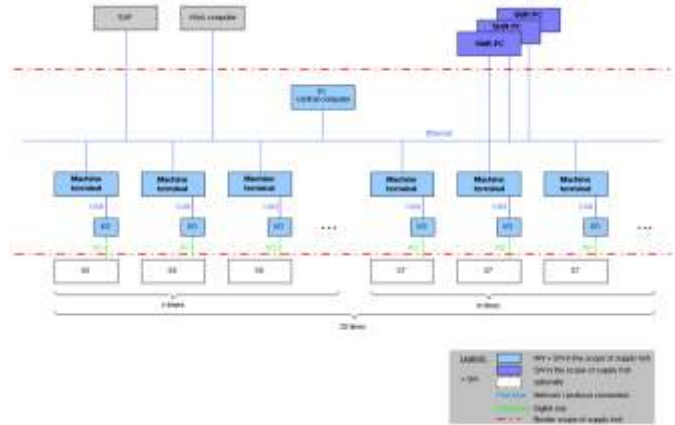
KASTOR PI function components

Kastor PI-AA Aquisition & Analysis

- Data acquisition out of the process
- Data preparation
- Data visualization
- Data transfer

Kastor PI-OM Order Management

- Order management
- Order control
- Order recipe
- Parameter sets for process equipment



Network overview

PIAA	Linien-Übersicht	15.04.2005 10:28:14	AZO.
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Line	Art	Auftrag	Status	Plan Datum	Auftrags-Start	Auftrags-Ende	Software	Erstellt	Erbracht
01	10704	497247	E	31.03.2005 00:00:00	14.04.2005 00:17:17		30	Pa	8
02	10204	475153	E	31.03.2005 00:00:00	14.04.2005 00:09:46		18	Pa	7
04	10704	498479	E	31.03.2005 00:00:00	14.04.2005 00:10:22		30	Pa	11
07	10704	509146	E	31.03.2005 00:00:00	14.04.2005 00:00:00		30	Pa	24
09	12027	370001	E	30.03.2005 00:00:00	14.03.2005 01:00:00	14.04.2005 07:23:17	30	Pa	30
24	10025	440477	E	30.03.2005 00:00:00	14.03.2005 01:30:30	14.04.2005 05:01:50	32	Pa	32
27	13220	90145	E	31.03.2005 00:00:00	14.04.2005 00:00:00		14	Pa	8
28	12423	38889	E	30.03.2005 00:00:00	14.04.2005 00:00:00		30	Pa	36
30	13010	251475	E	30.03.2005 00:00:00	14.04.2005 00:00:00		30	Pa	12
35	80400	462784	I	31.03.2005 00:00:00	14.04.2005 00:23:38		02	Pa	3
38	14810	440307	O	11.03.2005 00:00:00	14.04.2005 00:17:17		42	Pa	8
41	14010	464473	O	12.03.2005 00:00:00	14.04.2005 00:00:00		48	Pa	18
43	14411	182130	O	12.03.2005 00:00:00	14.04.2005 00:00:00		46	Pa	13
44	14801	464606	O	14.03.2005 00:00:00	14.04.2005 00:00:00		48	Pa	21
48	14801	477471	O	14.03.2005 00:00:00	14.04.2005 00:17:17		48	Pa	12
49	14801	464737	O	15.03.2005 00:00:00	14.04.2005 00:00:00		42	Pa	18
42	14502	414603	O	17.03.2005 00:00:00	14.04.2005 00:10:22		54	Pa	13
54	14800	464604	O	14.03.2005 00:00:00	14.04.2005 00:00:00		54	Pa	20
67	14800	464136	O	14.03.2005 00:00:00	14.04.2005 00:17:17		54	Pa	8
03	14500	411580	O	20.03.2005 00:00:00	14.04.2005 00:00:00		47	Pa	48



Example of a line overview with Kastor PI

Kastor PI-HL Host Link

- Data receiving from ERP
- Daten preparation and transfer
- Data back flushing to ERP
- Other data interfaces

Kastor PI-TT Tracking & Tracing

- Material- and product tracking
- Packaging material tracking
- Storage and archiving

Your benefits with Kastor PI

- Transparency about the full production process
- KPIs are showing the main parameters at a glance
- Production control and production monitoring without gaps from material income to packaging
- Error prevention using automated data flow
- Production optimization by weak point analysis



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