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# Application of information technology and systems for managing enterprises of metallurgy

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**Abstract:**

In this paper, we propose a comparative analysis used today at the enterprises of ferrous metallurgy of information systems (IS) strategic management. Since today is the introduction of well-functioning management systems to make informed strategic decisions that ultimately determines the success of the operation of the business entity in today's competitive environment.

## Introduction:

In the last few years the approach to enterprise management industry has undergone a qualitative change. First of all, this is due to a deeper understanding of the role of information technology in the implementation of administrative processes.

Abbreviations MRP-II, ERP, EAS and ERP-II, which a few years ago were understandable only to specialists or IT service automation, now familiar to most managers of domestic metallurgical enterprises.

With the development of the metallurgical production area becoming more popular modern automated administrative activity support system, so-called, ERP-systems (from Enterprise resources planning - Enterprise Resource). As a rule, the introduction of modern ERP-system in the company - a process that can take several years. Before the start of the implementation of the ERP-system, many metallurgical enterprises have to go through the phase of reorganizing its activities in accordance with business logic stored within the ERP-system. ERP-system - a system of metallurgical enterprise resource planning in all major areas of its activity.

Of particular importance for the dissemination of IP data played by the development of the theory and practice of the process approach to management. Functionality such systems are very diverse. Table 1 shows the main classes of IP management, depending on the areas (regions) automation.

Similar systems are used in the activity of the domestic iron and steel enterprises. As pointed out by columnist "Chief Information Officer" Polyakov, many metallurgical metallurgical enterprises use ERPi MES-system for the purpose of standardizing key business processes and ensure their effectiveness. [1] According to experts, currently in the steel industry is the most popular software products focused on automation and grassroots aims at reducing the company's costs. [2]

Current trends in the field of automation of metallurgical plants confirm these statements. In particular, at the conference "IT in Metallurgy: strategic advantage" held RSPM 14 November 2013, which was attended by representatives of "Eurasia", OAO "Chelyabinsk Tube Rolling Plant", OJSC "Zlatoust Metallurgical Plant", OJSC "Chelyabinsk Metallurgical plant ", were marked by the implementation of EC projects aimed at automation of mainly industrial, logistics and accounting functions [3, p. 102-105].

| Name | Automation Area | Examples Of Information Systems And Software Products |
|---|---|---|
| BI | Business Analytics | Oracle Bi, Qlikview, Sap Busnessobjects, Sap Netweaverbw, Ibm Cognos Bi |
| BPM | Management of business processes with | Sap netweaver bpmpaydax, ibm business process management<br>Sap sem-bcs, oracle bpm suite business process management suite |
| CRM | Customer Relationship management | Oracle siebel crm, sap crm, microsoftdy,amics crm, 1c<br>Управление торговлей взаимоотношений с клиентам |
| CPM | Enterprise performance management | Oracle hypenion emp, галактика erp, ms dynamics ax, ibm cognos 1c : консолидация8, sap (бюджетирование), prestina |
| EAM | Management enterprise asset | 1c : предприятие 8, тиор управление ремонтами и обслуживанием оборудования галактика eam, oracle enterprise asset management(eam) analytics, infor eam |
| ECM<br>ERP<br>FMS<br>HRM | Enterprise content management (electronic document circulation system)<br>Enterprise resource planning<br>Car fleet management<br>Personnel management авление персоналом | Docsvision, 1c : документооборот8, microsoft share point, naudoc, optima-workflow, paydor, oracle universal content management, sap ecm suite<br>Oracle e-bisiness suite, 1c : предприятие sap erp, microsoft dynamics ax, галактика erp, парус, sap, r/3<br>1c : предприятие 8, управление автотранспортом, oracle transportation management (otm), ifor autoconnect<br>1c : зарплата и управление персоналом8, галактика erp : контур управление персоналом, sap erp hcm, oracle e-bisiness suite human capital management (hcm) oracle hrms |
| ITSM<br>MES | Management of enterprise it-service<br>Production service management | Oracle enterprise asset management (eam) analytics, sap afaria, hp service manager (hpsm)<br>Malahit : mes, галактика amm (advanced manufacturing management), sap manufacturing execution (sap me), 1c : mes оперативное управление производством, mes control |
| PDM | Management of product data | 1c : предприятие 8.pdm управление инженерным данным, oracle c mro, парус-adem, ptc windchil pdm link |
| PLM<br>SCM | Product lifecycle management<br>Supply chain management | Siemens nx, tcs производство, infor plm, oracle agile product lifecycle management (plm), 1c : предприятие 8.pdm управление инженерными данными<br>Jda supply chain planner, infor scm wm , sap supply chain management (sap scm), галактика amim (advanced manufacturing management , oracle |

| | | |
|---|---|---|
| | | transportation management (otm) |
| SRM | Supplier relationship management | Sap srm (supplier Relationship management), maclait : SRM, oracle jd edwards enterprise one mobile Enterprise applications |
| TMS | Transport management | 1c : tms логистика управление перевозками, sap transportations management (sap tm), infor autoconnect, oracle transportation management (otm) |
| WMS | Warehouse management | 1c : логистика управление складом(1c :wms), infor scm wm, sap ewm (extended warehouse management), oracle e-bisiness suite inventory, sap inventory optimization |
| АСКУЭ | Control and accounting of energy resources | Матрикс, автоматизированная система коммерческого учета энергоресурсов, oracle utilities meter data management , барс.<br><br>Мониторинг, энергоэффективность, 1c : вдгб, аскуэ |
| СУБД | Data base management system | Sap hana(high performace analytic appliance), oracle database, ibminfosphere, imperva securesphere |
| СХД | Storage | Rs-datahouse, netapp fasx, sap netweaver business warehouse (sap bw), ibm xiv storage system, netapp fasx |

**Table 1 - Main types of modern automated control systems [4].**

Table 1 shows the distribution of projects for the introduction of automated control systems at metallurgical plants, grouped by area of automation. The allocation of projects was taken into account that a particular management system cannot always be attributed to a particular class. For example: SAP Multisource Scheduling system combines functionality ERPi EAMsistem; PayDox system that combines the functionality of BPM systems, ECM, etc. PMi [5].

On this basis, to consider priorities for the automation of certain administrative functions are not advisable in terms of the proportion of projects to implement a particular type of automated system in a common set of projects, but in terms of the proportion of automatable region in the total population in the areas of automated industry. Based on the data presented in Figure 1, it is possible to establish that, as of April 1, 2015 the largest share in the total population of implementations have systems and modules of ERP, ECM and HRM.

Thus, ERP-systems, accounting for 44% of all implants, on systems and ECMiHRM share units - 10% of the total number of implementations. The prevalence of the other ICs and modules can be considered as insignificant, as the share of these implementations in the total population is less than 10% separately.

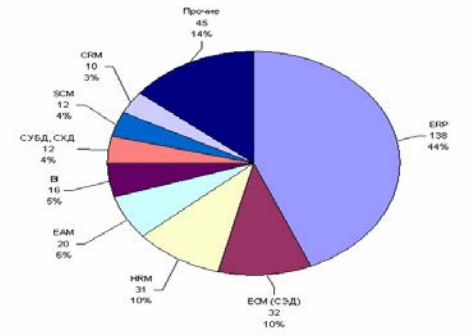


**Fig 2. Share distribution projects for the introduction of the automated control systems of metallurgical enterprises of ferrous metallurgy, depending on the automated areas as of 04.01.2015 [6]**

The introduction of information technology in the metallurgical enterprises continues to this day. So, at a press conference the director of the Fund of Pipe Industry Development (FRCC) I. Kale in 2013 on the problems and prospects of development of the Russian pipe industry, proposed the creation of statistical information portal for analysis and tracking revenues on the domestic market of foreign pipe products in order to increase awareness of the Russian manufacturers of the nature and extent of the activity of foreign competitors in the domestic market [5, c. 21].

In 2014 OJSC "MMK" was developed "Information Customer Service" mobile application for iPhone and iPad devices, able to provide customers with timely information on the implementation of orders and open access to the Internet catalog of metal [5, p. 34]. Based on these observations, it can be argued that such ways of improving information management software metallurgical enterprises will enhance their survival and their performance in a competitive environment. Based on the observed trends, it can be assumed that the introduction of information technology in the metallurgical enterprises in the long term will continue to exert a greater influence on their functioning and development.

Selection of automated information technology strategy is determined by the following factors:

- The functioning of the metallurgical enterprise or organization;

- The type of metallurgical enterprise or organization;

- Production and economic and other activities;

- Management model adopted by the organization or enterprise;

- New challenges in the management;

- Existing information infrastructure.

Many metallurgical enterprises with the help of complex ICs have already solved the problem of logistics management, maintenance warehouse, accounting and tax accounting, personnel management, payroll processing. Therefore, at the forefront began to leave the use of information technology to solve more complex problems, primarily related to production planning, taking into account in the production, analysis of production costs.

Today, the effective implementation and use of full-fledged single metallurgical enterprise resource management system can provide substantial and undeniable advantages within the functional organization of management, increasing the speed of production and quality of the steel plant in general.

The introduction of the ERP-system in the enterprise not only helps to increase the degree of automation of individual processes, but also to reengineer themselves these processes. As a result of the introduction of standardized, the vast majority of transactions, greatly increasing manageability organization increases its degree of transparency.

The software serves to automate the company, whether it is a widespread 1C: Warehouse or complex ERP-system having a multi-level territorial distribution. The software is used to record the arrival of warehouse operations, expense and travel and training data to reflect the completed warehouse operations on the accounts.

Thus, if we talk about the fact that the above software is a unified environment for automation of planning, accounting, control and analysis of all the major action, in the framework of a single steel plant. It should be noted those fundamental, strategic objectives that solve similar products of modern information technologies. Namely:

The timely and proper planning of production resources;

- Operational control plan steel production,
- Registration and analysis of the results of production activities of the enterprise, etc.

In addition, the activity of any of the metallurgical enterprise is carried out today in a fairly intense competition and unstable environment. Even among the largest companies are not uncommon loss positions held previously, and even termination of activities. To achieve effective management of a modern enterprise in the field of iron and steel - an extremely difficult task, however, is organized by the Office on the basis of application of information management technologies in the workflow; it is possible not only to solve current problems, but also to move to a qualitatively new level of performance as a whole.

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