

Dispatching material flows of technological installations

The purpose of creating an Automated System for Calculating the Balance of Payments (ASCBP) is to improve quality and transparency, as well as reducing the time interval for the preparation of the material balance by automating the functions of calculating the material balance.

General architecture ASCBP

As the basic element for constructing ASCBP software PI Systems firm OSIssoft is used, as well as the IFP/MB-B, IFP/PS, IFP/MDI-M, IFP/PAM, IFP/UC software companies of the «IndoSoft-UKRAINE» company.

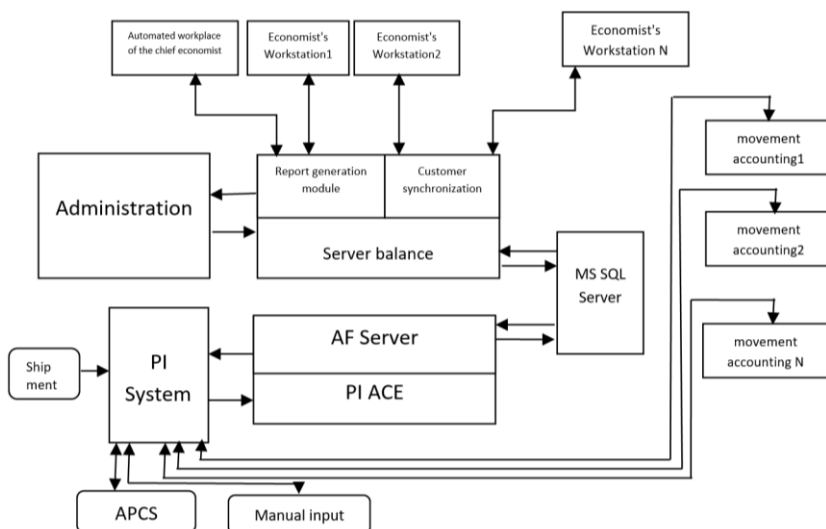


Fig. 1. General architecture ASCBP

The ASCBP system is designed as an open, distributed, multilevel integrated automated system with the ability to further expand and solve both managerial and production tasks in production processes.

Tasks that ASCBP solves

Automatic collection of data

PI OCI interfaces to APCS provide real-time data collection from APCS through standard data interchange protocols. With the fixation of the time of receipt of operational data and data transfer in standard format to the central server RI System

on the lines of TCP/IP. Real-time data transfer is carried out regardless of the type and structure of the APCS. Between the interface and APCS is the special software OPC server. Interfaces to the APCS and the OPC server are installed on the gateway computer at technological facilities, in close proximity to the APCS. In the event of a LAN failure, between the computer with the installed interface and the PI System, the interface continues to collect and buffer the data from the APCS and perform their automatic restoration when the network connection is restored.

Manual input of technological data on objects which do not equipped asutp

An application extension is used for manual input of IFP/MDI-M data.

Manual data entry provides the following functions:

- registration of technological parameters values;
- formation of the report "Material balance" on the technological object;
- time-limited input restrictions;
- tracking data entry boundaries;
- buffering at breakage of communication at the node of manual input;
- the ability to convert parameters to the entered value before sending to the PI

server.

Long-term data and reliable storage of real time data

The storage of information is carried out in the real-time database (PI System).

The real-time database at the software level provides.

- compression of data (approximation) before they are recorded in the PI server with the accuracy specified individually for each tag;
- adding, deleting, renaming and configuring tags in-line, without loss data;
- read / write speed in the archive - 100,000 operations per second;
- all real-time data and operational production information, just received through interfaces and manual input or stored in the archive, are accessible to users and external automated systems at any time in the "on-line" mode.

The PI System Server has a reliable and high-speed communication with data sources. Database software provides collection and processing of at least 1000,000 parameters and distribution of information to at least 1000 users at a time.

Processing and analysis of the values of the parameters of technological processes for approved algorithms and standards necessary for material balance summary

Information processing is performed by the PI System server and the RI ACE application, this application provides the following functions:

- execution of settlements on schedule and events;
- calculation of unchanged directly quantities and calculations by different formulas;
- multiple use of computational modules for the same type of computations with the imposition of context groups;
- automation of development and adjustment of computing modules;
- tracking errors in calculations;

System of data based management

MS SQL Server Database contains four databases.

The first database is formed for PI AF data. It contains all information about production models, has an object-oriented structure, allows you to describe technological objects within the hierarchical structure of the enterprise. Provides the construction of different hierarchies, in the context of the organizational structure of the enterprise, the structure of technological processes, functional tasks.

The second database stores the application expansion data for the calculation of the material balance. These data (somewhat modified, adapted to the needs of the IFP/MB-M for the calculation of the material balance) also contain information on production models, all data of the accounting periods, as well as additional data that provide the normal operation of the client for the calculation of the material balance.

The third database stores the application expansion data for production records. It provides data storage for transactions that are created by users in client locations.

The fourth PI Vision Database saves the settings and user profiles of the on-screen forms in the Microsoft SQL database. Definition of on-screen forms include such data as the name of the on-screen form, the owner of the on-screen form, the characters on the screen form, the user's permission, etc.

SQL Server Enterprise Manager, which is a component of MS SQL Server, is used to configure the SDBM.

Conclusion

An application extension for IFP / PA-M is used. Applied expansion of the accounting of the movement of raw materials and products provides the following functions:

- Operational accounting of raw materials receipt;
- Operational accounting of directions and flows of raw materials, semi-finished products and products from the factory;
- Operative accounting of the amount of raw materials, semi-finished products and products in the capacities of the plant;
- Registration of parameter values on tanks (in the absence of modern automation tools).

References

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