

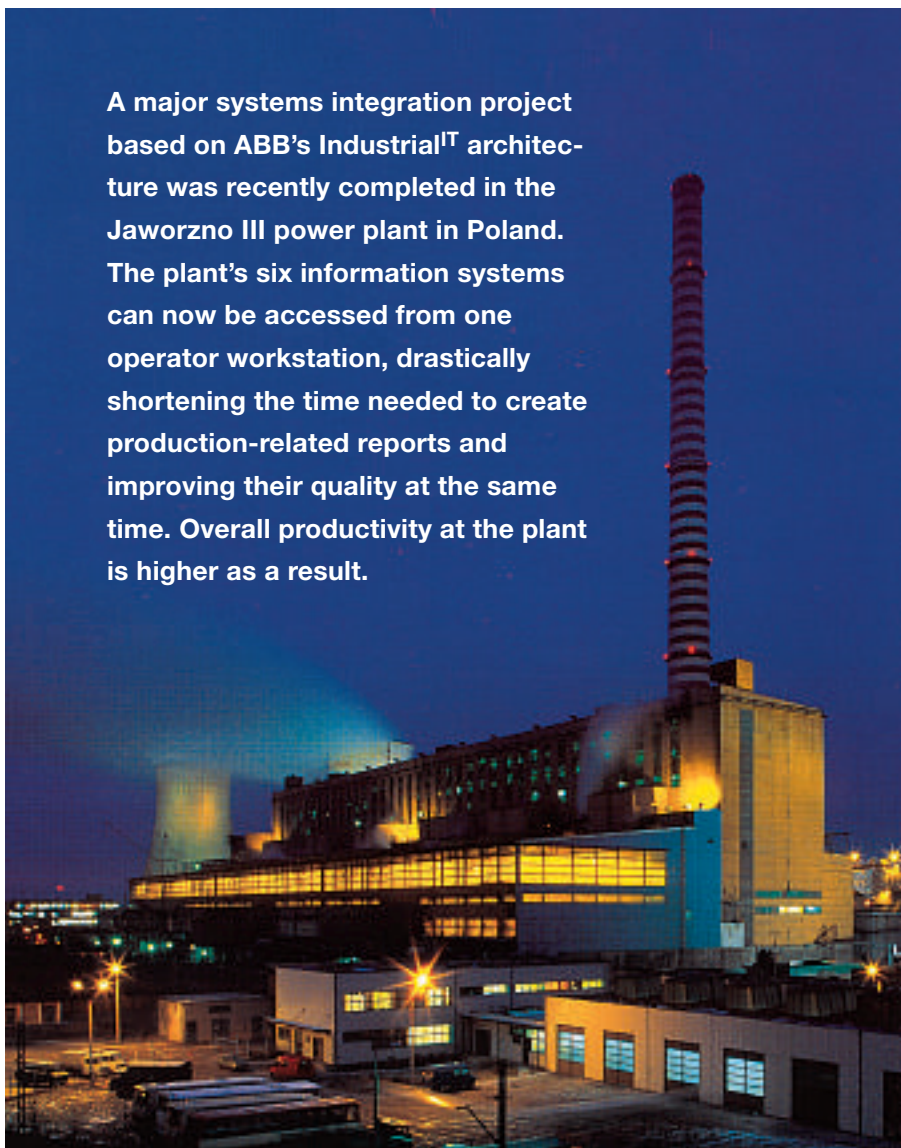


Systems integrated!

Industrial^{IT} streamlines operation of Polish power plant

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A major systems integration project based on ABB's Industrial^{IT} architecture was recently completed in the Jaworzno III power plant in Poland. The plant's six information systems can now be accessed from one operator workstation, drastically shortening the time needed to create production-related reports and improving their quality at the same time. Overall productivity at the plant is higher as a result.



PKE (Poludniowy Koncern Energetyczny) is Poland's largest power generation utility, supplying 17% (5055 MWe) of the domestic electricity market and 16% (2541 MWt) of the country's thermal power market. One of PKE's plants is Jaworzno III. This is made up of two power stations, one with six power units and the other with four 240-MW combined heat and power units. These stations, although independent, operate under a joint management and have common accounting, marketing, sales and supply structures.

Data sharing between sections has, until recently, been complex and difficult to manage. A computer network connected the departments, but varying standards and formats meant that the different systems were largely isolated. Where data had to be transferred, there was often no alternative to carrying floppy disks between departments or dictating variables by telephone. In order to provide detailed status reports, the controlling department operated an array of workstations running different systems for the sole purpose of collecting this diverse data.

ZSI project is launched

Such practices were not only inconvenient, but also impeded data flow and generated extra costs. Some of the consequences were:

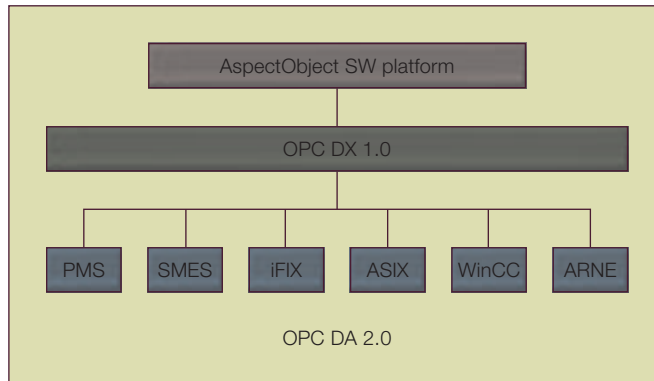
- Errors could occur in data transfer, raising the issue of data quality.
- System data were not immediately available to the controlling department, with the result that detailed status reports took several weeks to compile.
- The redundancy of data between systems increased database maintenance costs.
- Comparative reporting and analysis was unnecessarily complex and time-consuming.
- Non-standardized data exchange protocols increased IT maintenance and development costs.

To overcome these problems, PKE joined with ABB in launching a system integration project called ZSI (Zintegrowany System Informatyczny) in 2002. The project began with a comprehensive analysis of the current business practices and information flow. This provided a document detailing all the data sources, transformation algorithms and data transfer paths. After evaluating the results, it was determined that a system architecture based on ABB's AspectObject technology would provide most of the required functionality as well as a modular framework for any future extensions to the system that might be necessary.

A universal software technology as platform

As a first step toward integration based on AspectObject technology, data from the control systems were standardized using common parameters such as time stamps and resolutions. ZSI acquires data from 24 differ-

1 The AspectObject integration platform uses an OPC DX server as buffer in communicating with its control systems.



ent sources using the OPC data communication standard. Some of the systems concerned were already attached to OPC DA 2.0 servers (iFIX, WinCC, ASIX) whereas others had to be equipped with this feature (for example Procontrol PMS).

The AspectObject technology supports communication with these data sources through a gateway server implemented with OPC Foundation's latest standard: OPC DX1.0. This acts as a data buffer

between the AspectObject software platform and the different OPC data sources. Data not available on-line must be entered manually.

Data processing and visualization

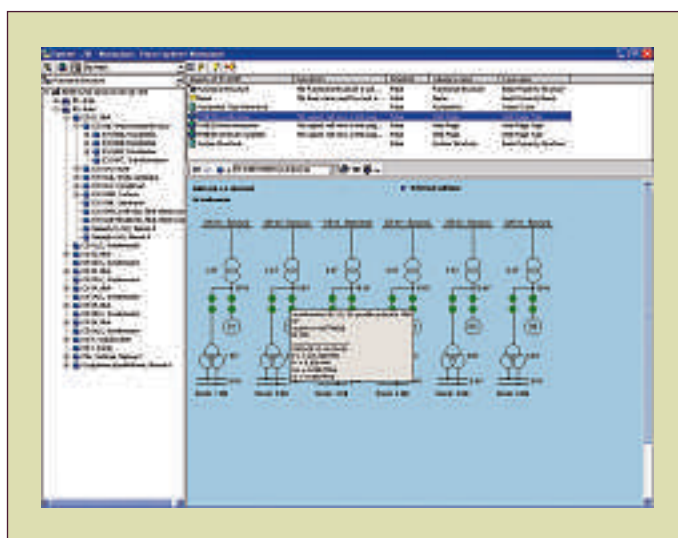
It is worth noting that, with AspectObject technology, all of the integrated systems retain their full functionality. ZSI requests data from its source systems using remote call functions. The data are returned in XML format and processed with MS Excel

for presentation. The Report System, a custom-built Aspect System module, facilitates this process by generating reports from received files and manually entered data.

Additional data calculations that cannot be performed by the control systems (eg, processing times, job counting) are implemented in the AspectObject software framework via a new Aspect System module called OCZPiZ. The generated reports are distributed to the appropriate users according to pre-defined access privileges.

Besides providing written reports, ZSI also provides many forms of data visualization. Requested variables can be charted and output written to documents in MS Office format as part of the basic functionality of the AspectObject platform. ZSI can additionally display the received data in the same modes and formats as used for its representation in the system of origin, facilitating monitoring and accessibility. ZSI also interfaces with external applications such as IFS Maintenance, SYNDIS or

2 Switchgear aspect in the SYNDIS application





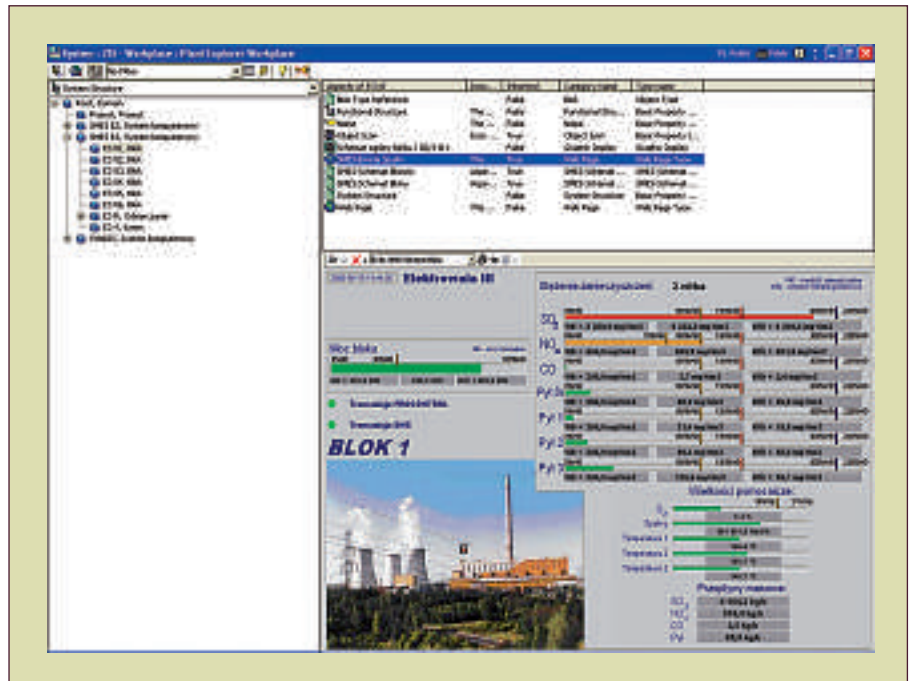
SMES, thereby offering the same 'look and feel'. These external applications can be used for aspect representations of such installations as switchgear **2** or generation units **3**.

Serving data to external clients

The AspectObject platform's ability to communicate via OPC is not only used to feed input into ZSI but can equally be used to serve output to other OPC-equipped systems. Maintenance teams can use this data to plan preventive maintenance using IFS Applications **4**. Equally, PKE headquarters in Katowice can access performance data with this mechanism.

Aspect Express software has been supplied to PKE to permit future customization and modification. Because AIP uses standards such as OPC, ZSI is an open system that can easily be extended to handle data from new compliant sources or to feed data to further clients.

3	Unit 1 emissions (SMES application)
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All-round benefits for PKE

The adoption of AspectObject technology has brought many benefits. Most notably:

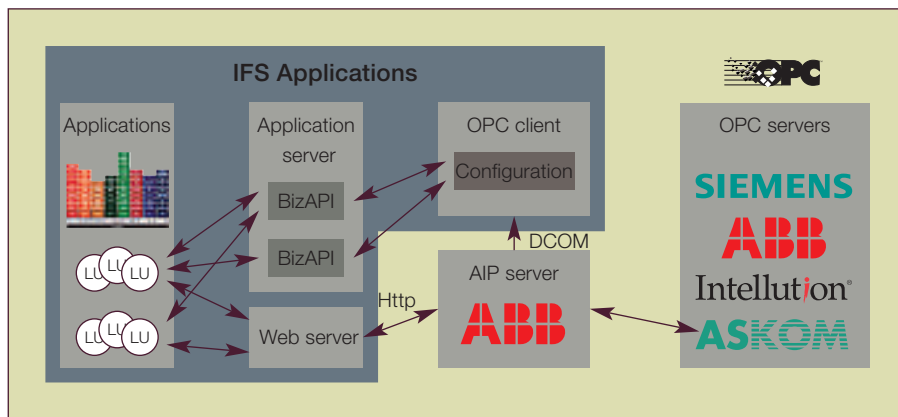
- Instant access to information from different systems and locations is greatly simplified.

- The faster and more efficient creation and distribution of reports helps accelerate analytical and decision-making processes.
- Better integration of systems is achieved and the implementation of

further integration is made possible without external help.

- The user can access all data available to ZSI from a single workstation.
- ZSI serves all functional data from a single source, optimizing workflows and improving safety.

4	Communication with IFS applications
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ZSI, based on the AspectObject software platform, has revolutionized data flow within the plant and also makes data available to clients that did not previously have such access. This not only raises responsiveness, but also improves service quality and resource optimization while cutting costs through reduction of wastage and redundancy.

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