



### The World's Biggest PROFIBUS Installation in Process Engineering

Field Device Tool (FDT) in Practice

**Client:** BASF  
**Location:** Ludwigshafen, Germany  
**Scope of Work:** PROFIBUS Installation



**ABB installed at BASF's site the biggest PROFIBUS system ever used in the field of process engineering throughout the world. This challenging automation project does not only imply the use of modern PROFIBUS technology, but is also the first practical realization of the new concept for integral engineering of field instruments...using the Field Device Tool (FDT).**

BASF at Ludwigshafen engaged ABB for automating a new large-size plant for the production of polymer dispersions. ABB's Symphony/Melody process control system and peripheral field instruments are exclusively connected via PROFIBUS. A total of 15,000 I/O points are connected to the system.

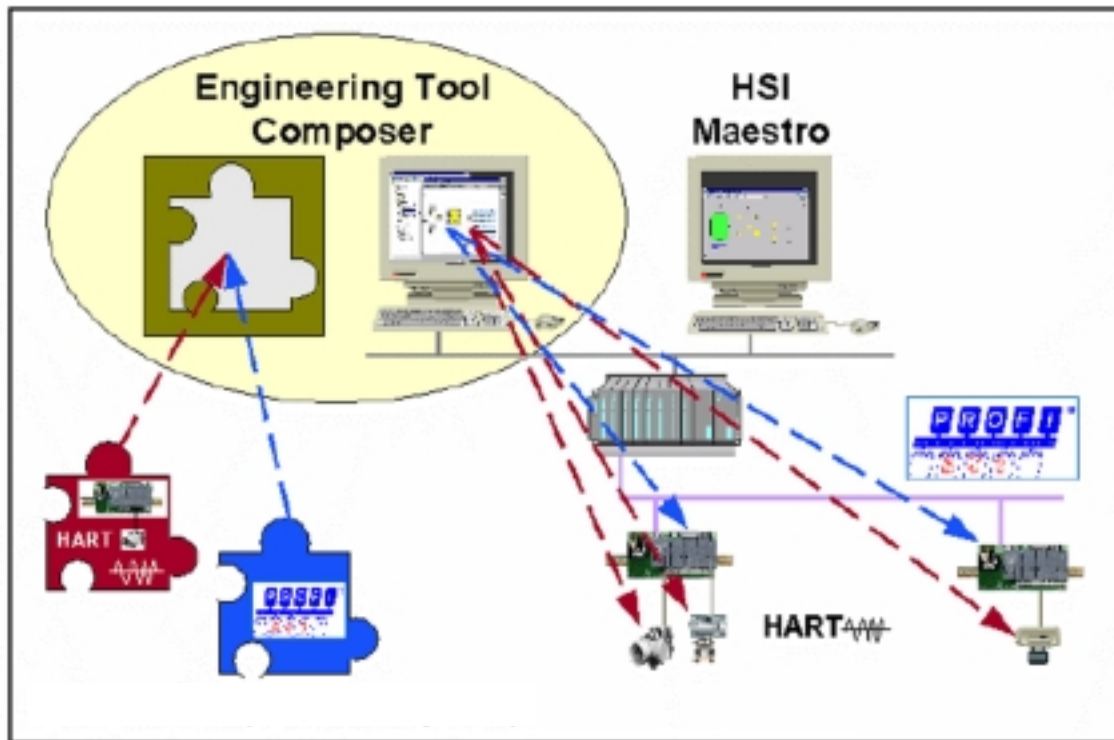
At the process level, the control system consists of 66 central Control<sup>IT</sup> controllers, realized in parts as redundancy units. The brand-new generation of Control<sup>IT</sup> CMC 60 modules allowing for connection of two redundant PROFIBUS DP lines is used. HART-configurable intelligent field instruments are coupled via remote I/O's in hazardous Zone I and Zone II areas. Using this Fieldbus technology considerably reduces the wiring effort. For example, the number of necessary routing units in cabinets is minimized. Important cost savings result from this, without the plant availability known from conventional technology being affected.

A primary goal of this project is to reduce the plant operating and reconfiguration cost. For this purpose, an effective recipe manager is used, and the Symphony system is coupled to the BASF in-house production planning and materials management system through standard integral elements. Another important aspect was to realize a central, consistent engineering concept for the entire plant. This applies especially to the configuration of all PROFIBUS lines and configuration

access to all Field<sup>III</sup> devices, remote I/O, and instruments from a central engineering unit. In order to meet these requirements, the new Field Device Tool (FDT) technology is used for the first time in this BASF project.

The FDT technique, developed by a workgroup attended by representatives of ABB and Siemens, both members of the ZVEI, aimed at finding a solution for configuring the field instruments and setting parameters from the engineering tool of a control system, no matter which communication protocol used. On one hand, the focus was on doing away with the need to provide the engineering tool with all instrument details. On the other hand, they wanted to relieve the instrument manufacturers from the duty to adapt the instruments to the respective process control system used. The result is an FDT specification defining interfaces on the basis of the Microsoft ActiveX/COM technology. With this, instrument applications can be integrated into engineering tools or any other configuration tools.

One of these instrument applications - the Device Type Manager (DTM) - holds the entire information of the instrument and can be called up from the engineering tool. The DTM comes along with its own user interface which is adapted to the relevant instrument. Through this user interface you can access all instrument functions, fully configure the instrument, and set all parameters. Also, the DTM saves its data in the central database of the process control system and communicates with the instrument in the field using the interfaces defined in the FDT specifications. Thus, the DTM does not need any information about the structure and the communication paths of the process control system. Once created, a DTM can be used in any environment as soon as the FDT infrastructure is available. Thanks to the use of the FDT component architecture it is for the first time possible to open the engineering tools for instruments from different manufacturers.



*Integrated Field Instrument Engineering using FDT*



ABB Inc.  
29801 Euclid Avenue  
Wickliffe, Ohio 44092  
Telephone: 440.585.8500  
Fax: 440.585.8656  
[www.abb.com/chemicals](http://www.abb.com/chemicals)