PROFI®
PROCESS FIELD BUS
BUS

PROFIBUS

for Process Automation

Open Solutions for the World of Automation

Complete Integration

Process and production-oriented sub-areas of a “hybrid” system are fully linked via PROFIBUS.

Seamless Expansion

Existing systems with 4-20 mA and HART technology are seamlessly integrated in PROFIBUS systems using the application profiles **“RIO for PA” and “HART on PROFIBUS”.**

Protective Functions Included

Devices with the **PROFIsafe** application profile operate on the same bus with the same communication profile, thereby replacing cost-intensive separate systems for safety-related tasks.

Broad Application

PROFIBUS is installed in all sectors of the process technology industry:
Chemicals, pharmaceuticals, cosmetics
Pulp, paper
Food and beverages, tobacco
Energy, water, wastewater
Oil and gas, refineries
Concrete, metals

Worldwide Support

PROFIBUS technology is used throughout the world, is constantly being expanded and features comprehensive support. With 25 national organizations, 30 competence centers and 7 test labs, PROFIBUS International (PI) ensures the highest degree of quality for products and services as well as support for all applications.

Process Automation, Primary Proces

Fieldbus requirements:
High speed, large data volumes, redundancy, hazardous and non-hazardous areas, supply via bus or a separate supply line

Solution: PROFIBUS communication with connection of DP devices and PA devices

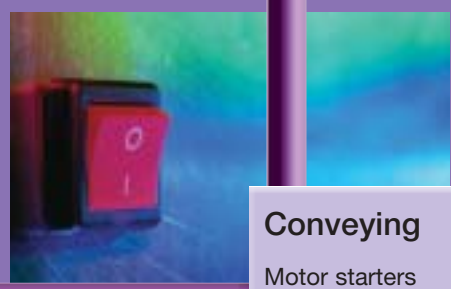
Mixing

Actuators
Transmitters for fill level and flow rate
Analysis devices
Motor starters

Inbound Logistics

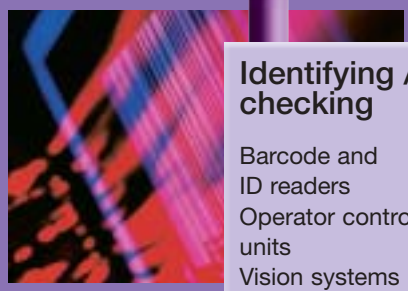
Requirements:
High speed, realtime capability, deterministic

Solution: PROFIBUS DP



Conveying

Motor starters
Drives
Weighing systems



Identifying / checking

Barcode and ID readers
Operator control units
Vision systems

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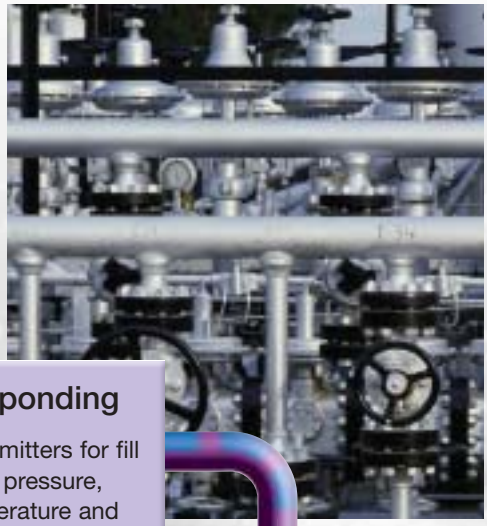
Process Automation, Secondary

Fieldbus requirements:
High speed, realtime capability, deterministic

Solution: PROFIBUS DP

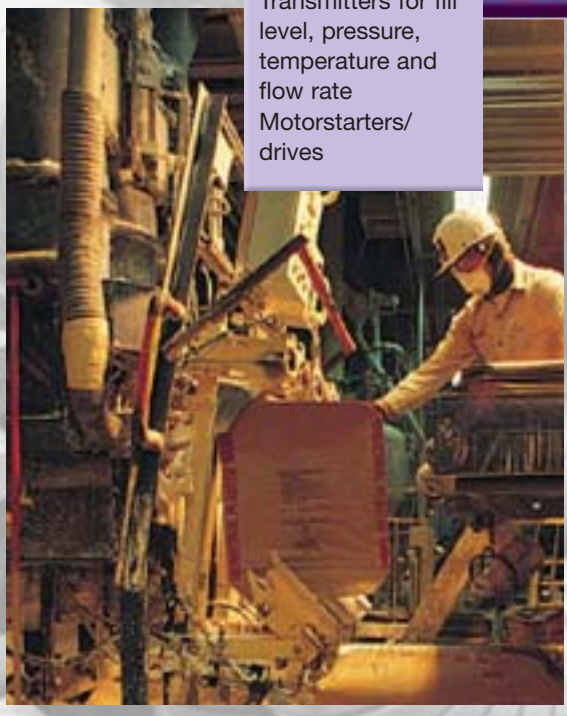


Responding

Transmitters for fill level, pressure, temperature and flow rate, analysis devices

Separating

Actuators
Transmitters for fill level, pressure, temperature and flow rate
Motorstarters/ drives



Filling / packaging

Actuators
Drives

Process

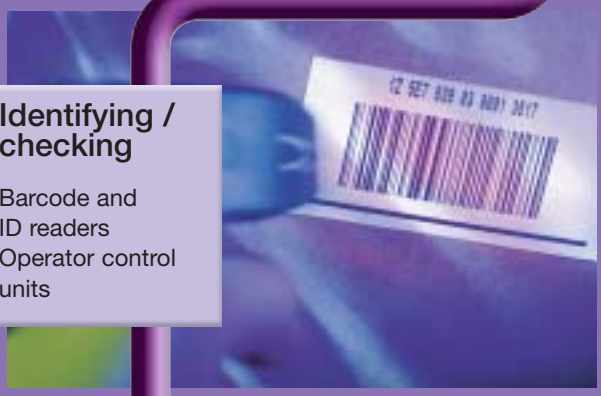
Outbound Logistics

Fieldbus requirements:
High speed, realtime capability, deterministic

Solution: PROFIBUS DP

Conveying/ Storage

Pressure transmitter
Temperature sensor
Drive engineering
Motor starter



Identifying / checking

Barcode and
ID readers
Operator control units

Interoperability

Application profiles contain the specifications of application-specific device characteristics whose compliance is mandatory for “profile devices” of a device class. This ensures interoperability and interchangeability of devices from different manufacturers on the bus which, in turn, allows for the “multivendor systems” expressly demanded by users.
The application profile for process devices is referred to as PA Devices. Among other things, it describes:

- The cyclical communication for user data
- The acyclical communication for parameterization, diagnostics and maintenance
- Special device diagnostics.

The implementation of the PA Devices profile in process devices is optional.

Application oriented

Terms such as PROFIBUS PA, PROFIdrive (application in drive engineering) or PROFIsafe (application in safety engineering) have become customary on the market to designate application-typical and frequently implemented versions of PROFIBUS.

In this context, **“PROFIBUS PA”** designates the use of devices with the MBP interface and the PA Devices application profile, coupled to PROFIBUS DP.

The communication platform (PROFIBUS DP protocol), which is identical for all applications, allows for integrated communication of PROFIBUS PA with PROFIdrive and PROFIsafe in the same system.

PROFIBUS communication with DP devices

PROFIBUS communication with DP and PA devices

Fieldbus Systems

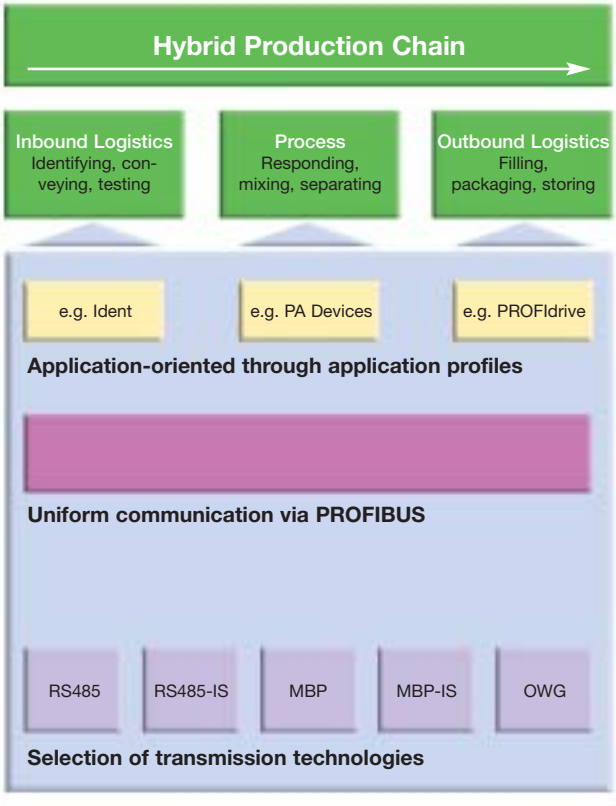
Networks which are used by the devices and machines of a production plant to digitally communicate with a central controller.
Fieldbus systems are fundamental elements of today's automation technology.

PROFIBUS

Worldwide the most successful fieldbus system and through its modular design, the only one that allows for unrestricted use in all areas of automation technology.

PROFIBUS in Process Automation

An extremely successful concept:
Unlike any other fieldbus, PROFIBUS can meet the requirements of the process industry with its "hybrid" structure of production chains that are generally made up of discrete and continuous processes. With its systemwide uniform communication and application-specific profiles, PROFIBUS continually meets all tasks within the system – *from inbound logistics via process automation to outbound logistics.*



The flexible solution of PROFIBUS for process automation

PROFIBUS automates all tasks in a process technology system with a single integrated bus.

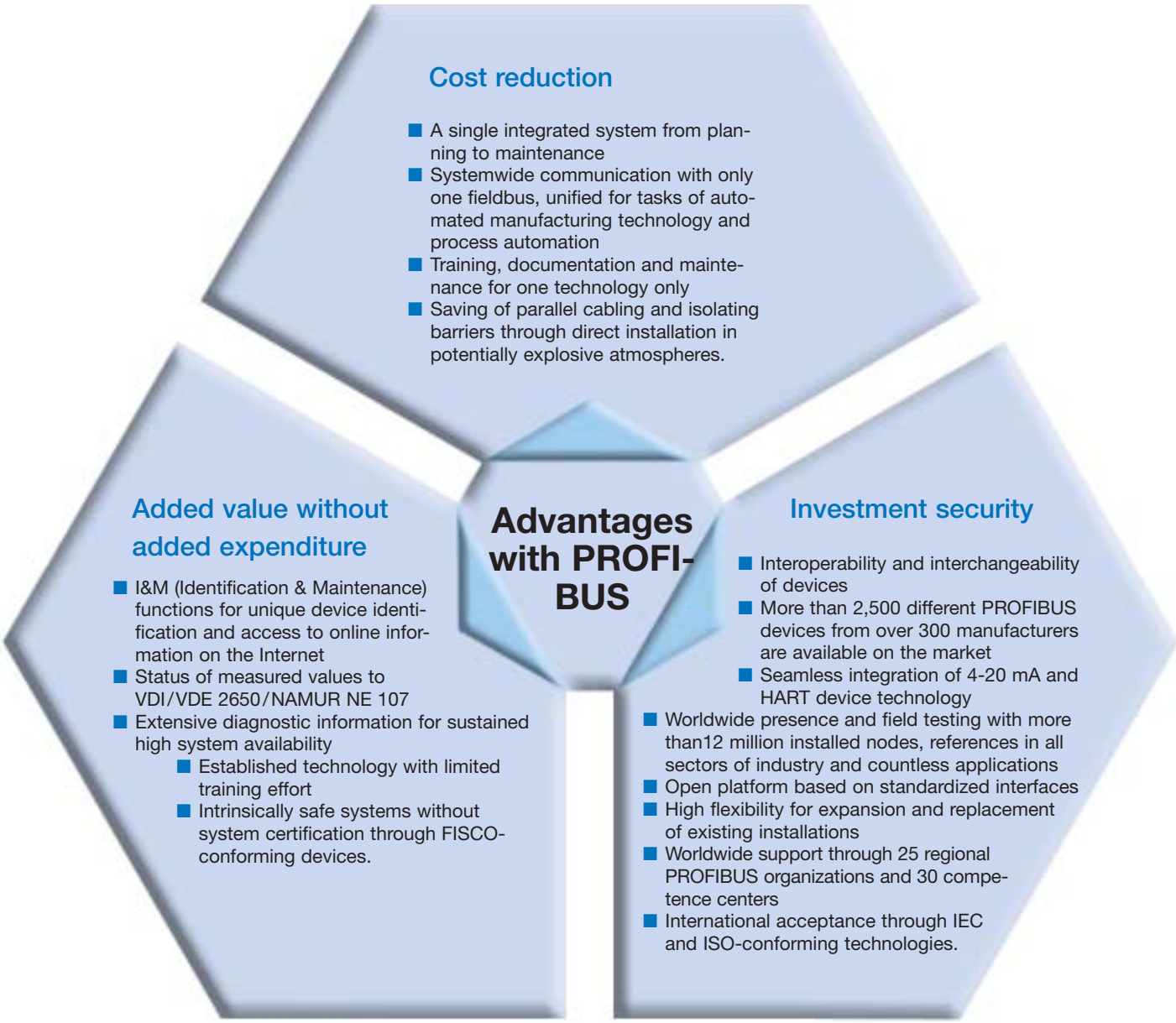
In more complex process devices, **application profiles** ensure the unification of typical device functionalities, e.g.
"PA Devices" profile for process devices
"PROFIdrive" profile for drives
"Ident" profile for barcode readers, etc.

The **communication** between all PROFIBUS devices is carried out uniformly via the PROFIBUS DP communication protocol.

ALL devices equipped with a PROFIBUS interface can be used, while several different **transmission technologies** can be selected. Preferably:

- RS485/RS485-IS for DP devices,
- MBP/MBP-IS f0r PA devices with power supply via the bus cable and intrinsically safe operation.

PROFI® PROCESS FIELD BUS BUS



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