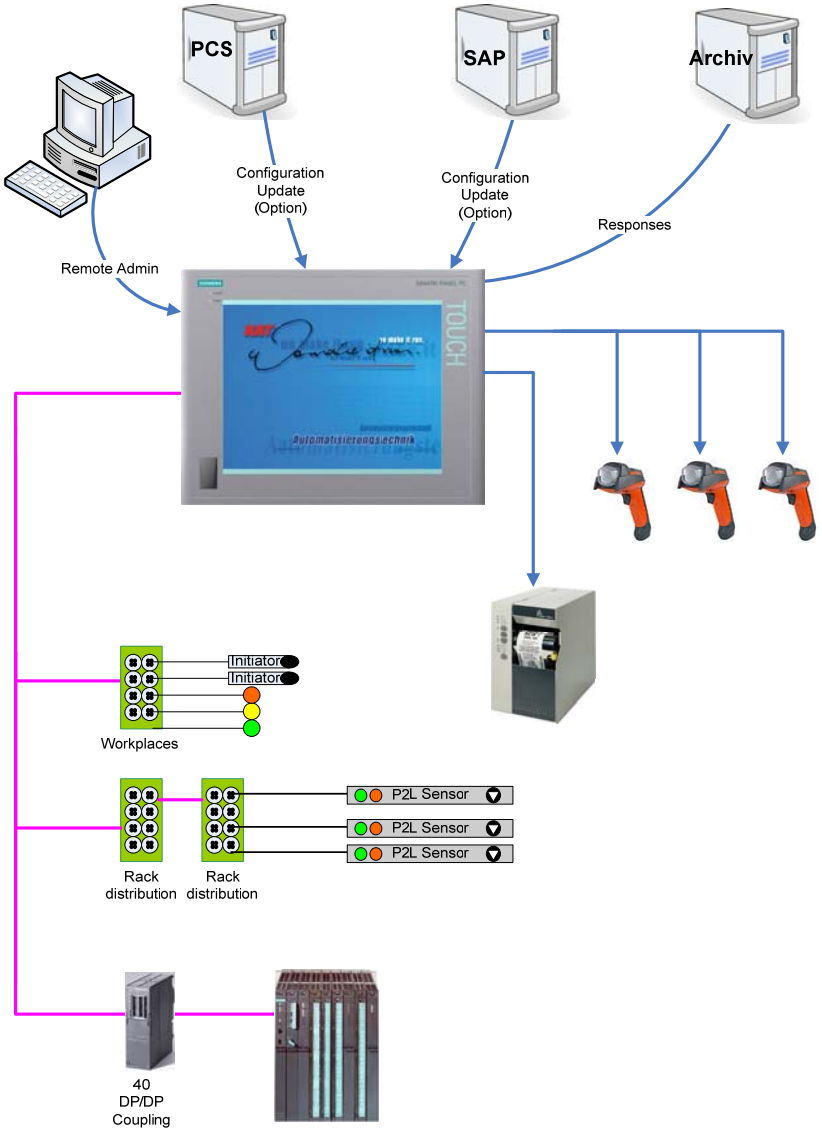
Application Report
Poka-Yoke Process Control For Complex Assembly and Zero Error Tolerance

Engines are products with a proliferation of variants that – if possible – need to be assembled 100% error free in the first run. In the Berlin plant of Daimler, a KAT Poka-Yoke system guides the workers to the correct parts and monitors their assembly.



With the **KATflow Poka-Yoke system**, complex assembly tasks distributed among several workstations can be managed and monitored to achieve a zero error quota.

The variant-dependent parts are signaled to the workers according to the **pick-to-light principle**. Colored lights show the right boxes and sensors track whether all boxes have been accessed.

At two pre-assembly stations, two components for engines are assembled that have up to **eighteen variants**.

In addition to the variants, the Poka-Yoke system monitors the necessary **tools** and **equipment**, such as power screwdrivers. The parts can be **identified** by scanning, and ID labels can be printed.

At one station the process uses the ID codes of the part suppliers, at the other station labels are printed for each new component.

Each variant can be divided into several **phases of construction** per each workstation, to control the assembly sequence. After the last step each component is released in a **final check**. All assembly steps are recorded for traceability, including the IDs of the parts.

The Poka-Yoke system can receive information about variants and orders from the **production host computer** via the network or (as in this installation) from the production line controller. The feed line memory is practically unlimited.

Due to the **decentralized field bus,** the system is flexible and quickly installed at all rack systems. New sensors are added to the configuration **without programming**.

All bus components and sensors are **standard products**, available from several manufacturers.

The software runs on every **standard PC with Profibus card**. It can also be used on panel PCs or box PCs in a control cabinet.

For normal operation, the display is not necessary, as the workers are solely guided by the light signals.

Via the network, the system can be administered by remote maintenance.

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