HNS AKS

Failure Monitoring System

Overview

The basic task of assembly line workers is doing the production or the assembling and checking the quality of the parts. During the assembly process, so during the production process the operators find different failures more or less influencing product quality or mainly causing direct waste.

These failures can be:

- failures of the parts arriving into the station and
- failures during machining or assembly process at the station.

The failure-detecting capability of the workers also significantly influences the quality of the delivered product.

The reasons influencing this capability can be:

- intentional mistakes (fraud, adulteration of facts for example because of convenience reasons),
- indirect mistakes (mistakes from distortion, rounding) and
- unintentional mistakes (limited to - 80-90% - fault-finding capability, mistakes caused by awkwardness or tiredness).

The producing process (continuous) control of blank and product makes possible the previous production phase detection of possible failures and the earliest separation of the faulty parts from production. The control is necessary by all production processes where the fully consistent product quality and the quality suitability can not be guaranteed, and where the possible losses due to the mistakes are multiple higher than the control costs.

Because of the unintentional mistakes such a system is necessary to be installed which is able to

- record the data of errors found by workers on the product (***Do not forward faulty product!***) and based on these data is able to
- drive control cards for failure rate changes and is able to automatically identify the deregulations and call the responsible staff in case of deregulations (Out of Control has been occurred).

Realization

We developed the **HNS AKS Failure Monitoring System** based on these requirements. A directly in production useable failure data-collecting and online failure monitoring system can be formed with the integration of the HNS AKS and the HNS SPC systems.

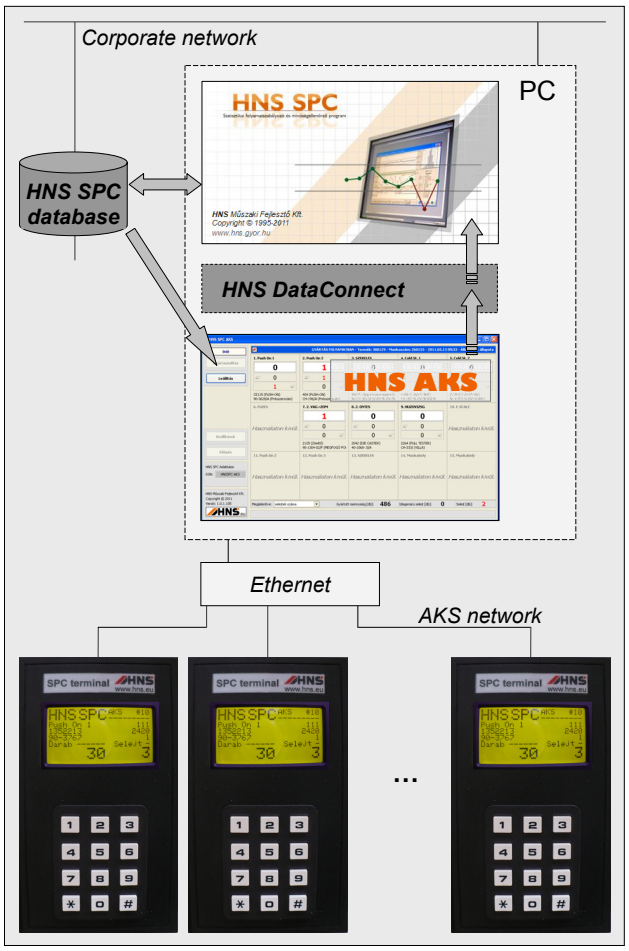
The HNS AKS Failure Monitoring System stands by the next three parts.

- The **SPC terminals** installed at different workstations and networked make data input and displaying tasks. The employees working on the workstations can record the data codes identifying the found failure on these terminals. The SPC terminals accept the piece counting sign of the given workstation and the SPC terminals accept signals of the automatically detected failures.
- The **HNS AKS program** expediently running on the working cell PC performs the server tasks necessary in the system. It means handling of SPC terminals, support of two-way connection with the HNS SPC system, handling of production administration (start and stop the production, production line configurations and production data), logging as well as visualizing of on-line failure data of the production.
- The basic data are there in the HNS SPC system, for example product ID's, definitions of variables and attributes, workstation data and process settings necessary to the operation of HNS AKS system; the HNS AKS system is able to directly reach HNS SPC system data.

HNS Technical Development Co. Ltd.
Hungary - 9027 Győr, Gesztenyefa 4.
Phone: +3696/506-930 ▪ Fax: +3696/506-931
E-mail: office@hns.eu ▪ Web: www.hns.eu, www.hns.eu/spc

Company registration number: 08-09-003222
HUF IBAN: HU82-10300002-33211972-48820019
EUR IBAN: HU75-10300002-33211972-48820019
TAX reg number: 102364923-2-08 ▪ VAT: HU10236493

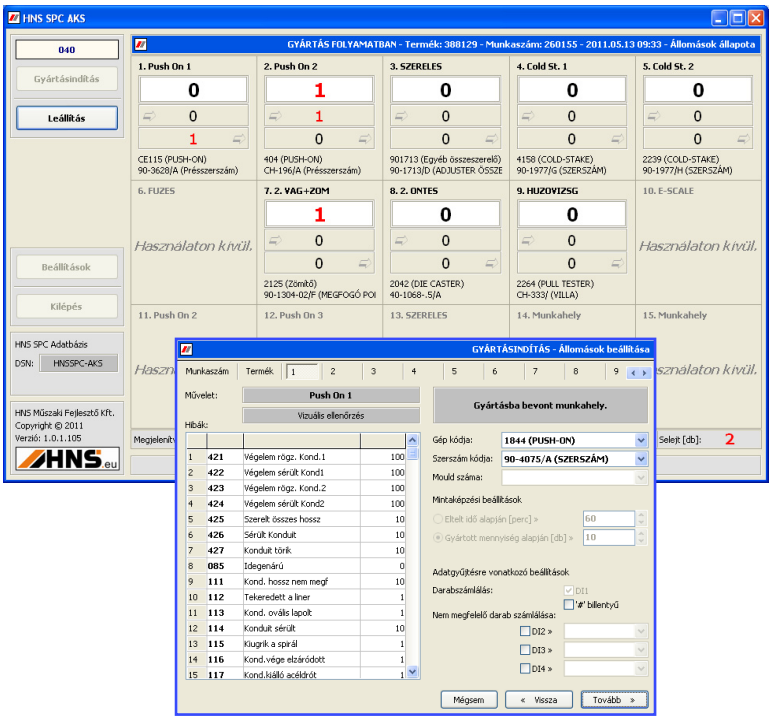
Main features of the HNS AKS system

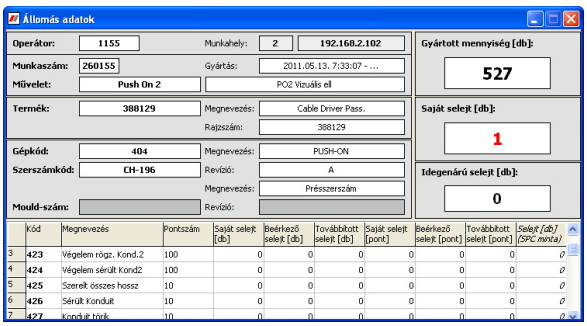


- Managing system configuration and work-numbers.
- Managing of product/machine/tool configuration at the production start (based on data of HNS SPC system).
- Production start, re-starting of interrupted production.
- Identification of the workers.
- Counting of the number of completed parts, number of wastes and failures for the workstations.
- Counting of the total number of completed parts, summarized number of wastes and failures.
- Counting of the forwarded, own and forwarded own failures.
- Counting of the failures of foreign parts.
- Possibility of errors weighting.
- Loading of tool and mould ID's from external tables.
- Connecting of part and good/bad part counting signals of production/assembly equipments with in-built controller (PLC).
- Visualization of data related to the production (work-number, product code, worker ID, etc.) at each workstation.
- Visualization of part number and number of failures at the workstations.
- The failure data can be forwarded from the HNS AKS system to the HNS SPC system on-line.
- The system is actually able to serving up to 15 workstations.
- Central visualization screen for displaying the production and failure data.
- Visualization of detailed data of the workstations on the central visualization screen.

The group leader is supported by easy usable information tools:

- tools and other production codes of the workstations,
- operators' ID,
- number of failures and weighted value of failures (incoming, own, forwarded own and failures of foreign parts),
- failures by codes,
- failures by working numbers.





The line and station worker's interest can be increased with usage of the HNS AKS system. Quick quality reports can be created from the failure data are recorded by the working numbers. The process control and the quality improvement got effective support from the attributive samples are sent automatically to the HNS SPC system.

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