

Quality Data Entry with Paper Forms and Scanning



There doesn't exist any other economical alternative to enter quality data than paper and scanning.

Typical applications are inspection charts filled out by the machine operator or notifications of machine break downs with duration and cause for monitoring the machine availability.

Up to now paper forms were practised by using the classical OMR technique (optical mark reader). This kind of data entering has a lot of disadvantages and is mostly out of use.

The advantages of paper forms

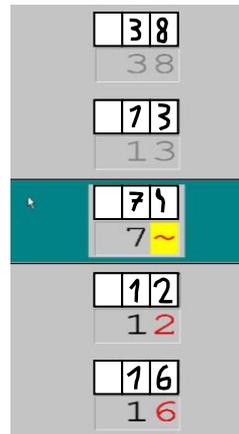
- there is no need for expensive investments for operating data terminals at all workstations
- in many cases there is no place to install terminals or industry PC's
- paper form can be designed in any form depending on the Q-information and the personal qualification
- to enter data on a paper form is much easier than to handle an operator terminal
- the use of a paper form is free from descriptions
- the paper form is a visual document for controlling the regular quality inspection

Possibilities of designing forms

- all information for the operation will be added automatically and specifically to the working place (machine no., part no. of running plant order etc.)
- fields for entering Q-data
 - bar coding, each field is filled out with one bar
 - marking with a cross;
 - entering numbers for counted failures; e.g. failures occurring during the day can first be counted by drawing strokes and then after work entered as numbers
 - letters; you shouldn't use letters for information that have to be identified uniquely. Mix ups may happen (I similar 1, 0 similar O, B similar 8 etc.)
 - text fields; a free area for hand written notes. This area is scanned and stored as BMP, JTI ect.. It makes sense to have these fields on the backside of the form. Any kind of interpretation is not possible

Scanning of forms

- scanning of all collected forms with a batch job. The scanner is equipped with a feeder and eventually able to scan front and backside in one step
- analysing of each scanned form by a pattern recognition program



- each data field is checked, whether the contents is correct (cross, only numerical, date etc.)

Each field will be analysed exactly

- if the pattern recognition is somewhat ambiguous the program recommends the value which fits best but the operator has to commit
- if the program is not able to identify the hand written symbol (mostly the operator is in a similar situation), he has to enter the correct figure

Initially the forms may be filled out too hasty. Show your operators the result and he will write better next time.

After a short training period the most forms will be read without any interruption.

Some problems may rise from dirty places.

Example inspection chart

- focus of analysis is the causative process
- each process has its own list of potential failures
- if more than one process is running on a machine, the failures of all processes are regarded

