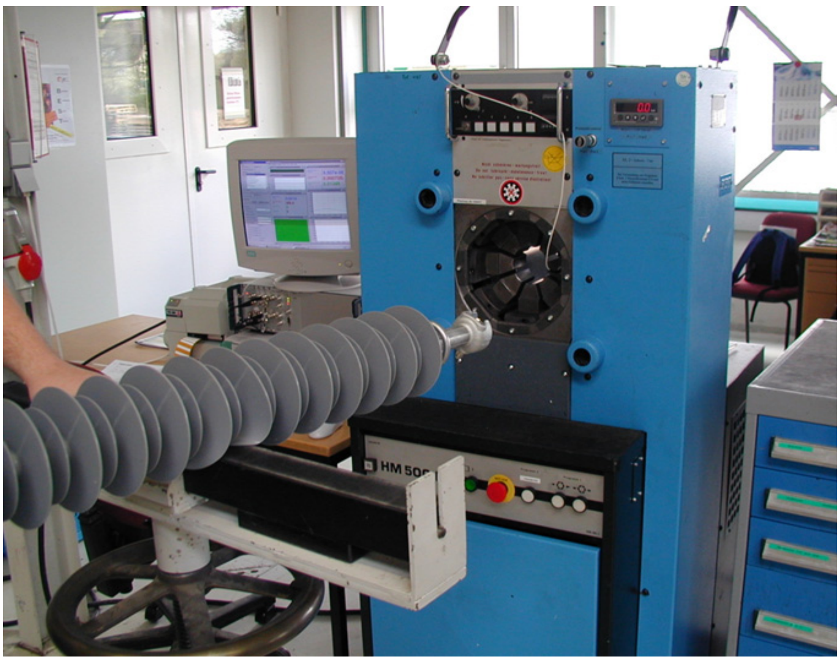
PROCESS MONITOR IMPACT

Vibration and Sound Analysis: plug, join, press, saw, punch safely



IMPACT controls fast working production machines like e.g. press, saw and punch. Machine sounds and vibrations are purposefully assessed by the help of vibration and sound analysis. Broken die, pre-damaged material, foreign body, polluted press set-ins etc. are recognized immediately and the machine is stopped.

IMPACT checks automatically executed assembly processes as well as material processing of components. Typical noises or breakage notification are recorded acoustically and assessed for quality. Thereby the user does not need to become expert in vibration measurement technology.

The task is identified by the fact that no decoupling of vibration parts from component and processing machine takes place. The method of resolution lies in the determination of statistical normal condition during the production or between the production cycles. Deviations from this refer to conspicuousness, which are interpreted as disturbance or error.

System solution

The measurement system consists of a structure borne noise sensor or a microphone, an ANOVIS-SRD-unit for signal recording and analysis software. An interface for machine control (START, STOP, DISTUR-BANCE, ADAPTION) is required. The assessment takes place on a Windows™-PC. Any operator control during the application is not required.

Drift adaption

The IMPACT-System has adaptive analysis abilities, so that it adjusts itself automatically to occurring process drift, caused e.g. through heating, uncritical wear and tear and slight cycle fluctuations. A manual readjustment of the system in operation is thereby not required.

An automatic discrimination of normal production drift (including permissible machine condition) including quality relevant events and changes to product and machine. The results from the basic parameterization are used for the drift recognition and for the automatic, computer supported compensation.

The drift adaption offers the chance, to identify comparatively "small" defects, since the currents status (vibration in current cycle) is only compared with its short term-average value.

Basic parameterization

The measurement system is once adapted for a machine by an expert. This includes the following tasks:

- connection to machine control
- selection of measuring points for vibration sensor or microphone
- setup of assessment features

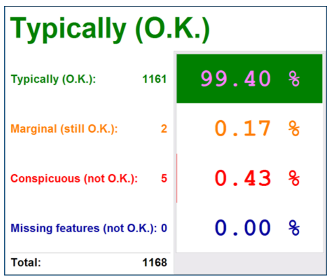
For this it is essential that some production lot is exemplarily recorded and analyzed. Error cases must not be compulsorily simulated.

"Formulas" have to be defined for the permissible operating condition. They define warning limits (still ok) and abnormality limits (not ok). Statistical process parameters are included in this formula.

System optimization

In order to obtain the best results, the measurement system is synchronized with the production cycle. The discrimination of various machine conditions is important since the vibration behaviour of machines can change with state functions like rotation speed, feed rate etc. Thus all defects are identified, which result in conspicuous vibration signals in the current process environment.

The measurement system delivers the result to the machine control. Especially the violation of the abnormality limits or warning limits is signalized, so that appropriate measures can be taken.



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