

# RQA 125/ATS

## Rotor Quality Analyzer



### Features

- Fully automatic testing and hand-ling of test rotors.
- 100% QC monitoring with short feed back loop in case of manufacturing problems.
- For integration to automated manufacturing lines.
- Facilitates inter-active SPC - In-process Monitoring and Correction.
- Quick payback on investment due to enormous cost savings.
- Easy set-up for different type of rotors to be tested.
- RQA Software including Statistics and Zoom package.

### Introduction

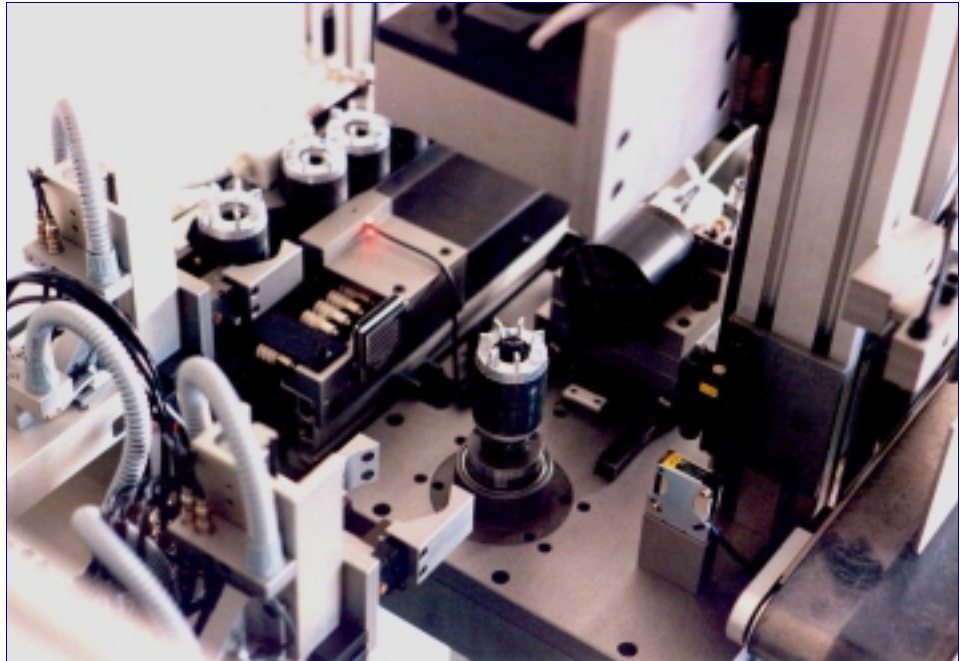
Computer controlled evaluation technique for rotor quality control in an industrial environment. This Fully-Automated system automatically feeds test rotors into the inductive and power measurement test cell with a 3-axis dual arm handling system. Once a rotor has been loaded into the test cell, all measurements and result evaluations are conducted, processed, evaluated, and stored for statistical evaluation. Good and bad rotors are automatically separated after the *Automatic Handling System (AHS)* removes the tested rotor from the test cell.

These testing procedures are used for the detection of the following quality problems:

- Broken or interrupted rotor bars as well as no connection to the short circuit rings.
- Missing material in the rotor bar (incomplete injection) or air enclosures (porosity) as well as poor connections to the end rings.
- Deviation of the rotor bar angle relevant to the axis (skew).
- Changes in the consistency of the aluminum alloy and/or the iron core.
- A short circuit between two or more rotor bars (soldering).
- Faults in the end rings.
- Resistance errors ( $R_2'$ ) in the rotor as a whole, and/or in the end rings.
- Reactance errors ( $X_2'$ ) in the magnetic conductivity of the rotor core.

## System Description

The RQA125/ATS Rotor Quality Analyzer is an automated tester for squirrel cache die cast rotors including feeding, handling and good/bad separation of rotors - designed for 100% QC testing in automated manufacturing lines. It is consisting of the automated test station and a 19" measuring and control cabinet. The automated test station combines all of the mechanical elements of the



inductive and power measurements and the 3-axis rotor handling system. Once parameter tolerances have been selected and mechanical settings made, this unit runs completely automatically without operator intervention. The feeding of rotors into the Automatic Handling System (AHS) is facilitated via a continuous slip grid conveyor and a single pass separation unit with built in rotor temperature measurement station. Rotors are removed via a regular conveyor belt where the reject rotors are automatically separated.

A user-friendly safety enclosure with access doors on either side guarantees for operator security. A control panel built into the front side of the enclosure allows for selection of automatic/manual mode and manual controls of the complete station with single step feature for set-up. The fully automated test station is specifically designed for testing rotors without shafts according to customer specifications. The required tooling needs to be clarified and quoted separately.

An electrical cabinet mounted in the frame of the test station is integrating all electrical supply and control components, PLC, variable frequency drive as well as interfacing to the measuring and control cabinet.

The Control Cabinet is containing an industrial PC, opto-isolated I/O modules, data acquisition card, power meter and all other required interfacing components. It is also housing the 15" VGA monitor and a fold out keyboard.

The computer is responsible for the accept/reject judgment of rotors according to a pre-programmed set of parameter tolerances. Computer controlled evaluation ensures absolute accuracy and consistency in both the measurement and evaluation process. The measuring and control unit is housed inside an industrial enclosure with an IP55 protection rating.



