

1.1.2. PARAMETER STORAGE FOR COMPLEX MAGNETIC PARTICLE TESTING MACHINES

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Stationary magnetic particle testing machines for surface crack detection are widely used to check safety-relevant components in automotive and aerospace industry and for maintenance purposes. Most often these testing machines utilise two separate magnetization aggregates in order to perform a combined test (also called swinging field or rotating field vector) for cracks in all orientations within one test cycle. Both magnetization aggregates can be adjusted independently from each other to produce optimum field distribution for complex geometries.

The test parameters are set within the electrical control of the testing machine (SPC). Until now it has been considered to be sufficient when test parameters could be adjusted with simple turn knobs. Hence simple and comprehensive operation and handling was considered as most important for the users.

But with increasing automation of the testing procedures also the testing machines become more and more complex, e.g. multiple contact machines with up to six contacts and respective magnetisation units. In order to compensate the complexity in operation, the electrical components for the electrical control have seen a fast development within the last years. Modern controllers, e.g. on the base of the Siemens S7-series, allow the use of small comfortable touch panels. Herewith the need for a comfortable operation and the increasing complexity of the testing machine can be brought in line.

Component ID, operator ID, cycle and magnetisation times, pneumatic and motorized movements in tech-in mode, language settings and the documentation of the test results in various manners are typical and relevant test parameters handled by the parameter storage unit.

Within the paper various examples of special systems are presented which are using the DEUTROFLUX MEMORY parameter storage:

- Machine with chain conveyor for automated component transport;
- Machine with multiple contacts and parameter control of all separate current and field circuit settings;
- Machine with automated monitoring of the test liquid, a newly patented unit for controlling the lifetime of the magnetic particle concentrate called FLUXA-Control;
- Machine for testing of railway axles with Ethernet-connection to the data bank of the customer.

