MAGWERKS™

The New Integrated System by Magwerks
21st Century Tracking Technology

INFORMATION BULLETIN

Do you inspect parts that represent a high degree of direct liability or that require inspection traceability?
Or are you subject the any of the following audits?

- ISO 9000
- QS 9000
- Aerospace / Military
- Your Customers team

If so, can you quickly & easily provide the following information, if asked?

- Which day and which shift were the parts in question tested.
- What inspector processed the parts in question.
- What machine was used in the inspection of the parts.
- Was the machine calibrated and if so, when.
- What was the good / bad part count.
- Of the good parts, how many were reworked.

Before the inspection began were the following checks made and documented?

- Bath concentration.
- Bath contamination (solids).
- Bath clarity. (liquids)
- Ketos ring test (at the proper amperages and waveform output).
- UV lighting intensity.
- White light infiltration.

Most importantly was the correct procedure used for the parts being inspected.

- Correct contact current.
- Correct coil current.
- Correct output waveform (AC, FWDC, HWDC).
- Correct sequence of operations.
- Correct number of vectors used at a given time. (multi-vector vs single vector processing)

If you are unsure as to the answers to any of the above questions, and you have a desire to own the latest traceability enhancing technology, then the Magwerks “IS” system may be for you!

The following is an overview of the new Magwerks “IS” system.

Upon power-up the operator is prompted to select either an automatic or manual operating mode.
In the manual mode the machine operates much like any other standard MPI machine, however, in the automatic mode there are many special features that sets this system apart from the rest.

There are three levels of security involved in this system; the first level is the “operator” level, the second is the “supervisor” level and the third is the “factory” level.

The operator level is for the daily operation of the machine and where the daily part selection and processing is performed. The machine functions that are avalible to the operator are things like selecting a preprogrammed part from the lookup table, entering the lot number for that part, entering the results of the daily process control data, an override for the autobath, preview of part parameters, enabling of automatic special fixtures, a demag override and printing of some reports.

The supervisor level is where the data for part names and procedures are setup, the operator accounts are setup and some machine functions are setup. Any supervisor level access is not available to the operator.

The basic sequence of operation in the automatic mode:

1. The operator logs in from the main menu and enters his unique pin number preventing false identity. The machine’s real time clocks time stamp this action and tie it to the machine’s serial number.
2. If desired by the supervisor, the machine will not process any parts until the following system performance tests have been performed and time stamped by the system:
    A. The Ketos test cycle is automatically run at the three predetermined settings by the supervisor. The automatic sequence of operation is started by a single depression of the automag foot pedal and is as follows:
        1. The central conductor with ring is clamped and demaged at a higher setting than it is magnetized (usually 2800 amps). This setting and waveform is supervisor selectable.
        2. The mag waveform is automatically set to DC. The machine pulls the predetermined 1st current value from the lookup table and mags the ring with two shots. The operator is prompted to input the number of lines seen into data storage via the touch screen.
        3. The machine pulls the predetermined 2nd current value from the lookup table and mags the ring with two shots. The operator is prompted to input the number of lines seen into data storage via the touch screen.
        4. The machine pulls the predetermined 3rd current value from the lookup table and mags the ring with two shots. The operator is prompted to input the number of lines seen into data storage via the touch screen.
        5. All of theses results and the associated magnetizing current levels are logged into memory and tied to the machine serial number, operator and time/date.
        6. The foot pedal is depressed again and the ring is demagnetized before it is put away.
        7. The ketos operation is then complete and the entire process has taken about 2 minutes.

    B. Particle and light data are then logged into the system and tied to the operator, machine & date.
        1. Concentration test values are logged into the system. Because of settling time required, the pop up reminder will be displayed to the operator after a predetermined time set by the supervisor.
        2. Pass/Fail conditions for contamination tests of both solid particulate and carrier contamination are logged into the system.
        3. Blacklight intensity values are logged into the system.
        4. Whitelight infiltration values are logged into the system.
        5. Whitelight source values are logged into the system.
        6. All bath adjustments are logged into the system, such as additions of carrier, particle, anti-foaming agent, wetting agent, rust inhibitor.
        7. The supervisor sets the accept/reject limits of these variables and has the ability to deactivate the machine in either, or both, the automatic and manual mode until the problem is corrected.

3. The operator then returns to the main menu to select the part to be processed. Using the “Part Menu” button, the operator makes a selection from the list of parts whose parameters are already in the data base.
4. The operator is given the option to further identify the part batch by heat code, lot number, die number, rework number or any other alpha-numeric delimiter setup by the supervisor.
5. All of the process control data is now tied to the operator, machine, date & time and now the part.
6. The operator is returned to the main screen for part processing.

Two extra inputs have also been programmed into the computer for optional electric eyes that can be installed onto conveyor systems, one on the good parts conveyor and one on the reject conveyor or chute. These two conveyors count the passing parts, totalizing each type and inserting the value into the data base that is tied to the part number, heat code (if desired), date, operator, number of current alarms, system performance tests and machine ID.

At the end of the shift the operator logs out and that time is recorded. At this time the data can be either viewed or printed for insertion into a permanent log. At this time up to 15 operators worth of data is able to be stored and printed by the system if desired.

If the remote data retrival option is installed this data is polled on a predetermined time period and logged into a Microsoft Access ® data base on the company's local area network server. In the event that defects are passed, anyone with network privilages, can instantly find out how many of a given part were processed, who processed them – on what machine or machines where they were checked, if the machine in calibration, and if the operator performed the daily systems checks, and if they passed. Additionally the parts can be further deliniated by heat code, steel supplier code or other revelant descriptor that was used. If multiple locations are processing the same parts and the data is being stored to a common data base the test location will also be known.

Since all of the variables are stored in the data base, operator sessions can be analized for the number of parts per minute processed to help gauge productivity.

Samples of both the "Part Run Analysis" and the "Operator Analysis" are shown along with session control data.

As you can see a program to replace standard MPI machinery with Magwerks *Integrates System* machines will enhance your quality control program as well as reduce both operator error and paper work!

Operator

Operator	Login	Logout	Session	Machine	Total	Alarm	PPM	Good PPM	Control Data
Andrew Kennedy									
	8/15/2001 15:42	8/16/2001 13:19	22 Hrs 37 mins	8675309	11	0	0.0	0.0	Ketos Test Failed, Black Light Low, White Light Source Low, Particle Concentration Bad, White Light Infiltration High, Carrier Contamination Failed
Mike **Simpson**									
	8/8/2001 9:55	8/8/2001 9:57	2 mins	8675309	3	0	1.5	1.5	Particle Concentration Bad, Particle Contamination High, Carrier Contamination Failed
	8/14/2001 13:23	8/14/2001 13:26	3 mins	8675309	8	1	2.7	2.3	Particle Contamination High
Greg Bartlett									
	8/4/2001 13:01	8/4/2001 13:03	2 mins	8675309	8	5	4.0	1.5	Particle Contamination High, Carrier Contamination Failed
	8/9/2001 13:17	8/9/2001 13:20	3 mins	8675309	6	1	2.0	1.7	Ketos Test Failed, Black Light Low, Particle Contamination High
Anita Ortez									
	8/10/2001 12:44	8/10/2001 12:48	4 mins	8675309	7	2	1.8	1.3	Good
	8/10/2001 12:48	8/10/2001 12:56	8 mins	8675309	12	4	1.5	1.0	Good
Jeff Smith									
	8/10/2001 10:42	8/10/2001 10:54	12 mins	8675309	16	10	1.3	0.5	Ketos Test Failed, Black Light Low, Particle Concentration Bad, Particle Contamination High

Part Runs

Part Name	Session Date	Operator	Process	Alarm	Machine #	Machine Last Calibrated	Session Control
Shaft 135							
Lot # B210							
	8/9/01	Greg Bartlett	3	1	8675309	11/24/00	Ketos Test Failed, Black Light Low, Particle Contamination High
Shaft 135 Lot# **B210** Total Processed: **3** Total Alarms: **1**							
Bolt 37973							
Lot # Nucore Steel							
	8/10/01	Ned Flanders	1	0	8675309	11/24/00	Ketos Test Failed, Black Light Low, White Light Source Low, Particle Concentration Bad, White Light Infiltration High, Carrier Contamination Failed
Bolt 37973 Lot# **Nucore Steel** Total Processed: **1** Total Alarms: **0**							
Cog 9781							
Lot # Heat 101							
	8/10/01	Ned Flanders	9	2	8675309	11/24/00	Ketos Test Failed, Particle Concentration Bad
Cog 9781 Lot# **Heat 101** Total Processed: **9** Total Alarms: **2**							