



**Job Number: 300XX**

**System Requirements Form**

Completed by: \_\_\_\_\_ Date: \_\_\_\_\_

Customer Representative: \_\_\_\_\_

This System Requirements form is a means of initiating a dialog with you, the customer, about the Magnaflux Quasar system you are considering. By working with your Business Manager on the answers to these questions, Magnaflux will better understand your application and your constraints in applying Magnaflux Quasar's Process Compensated Resonant Inspection (PCRI) to your process. That will enable us to propose the best solution to meet your NDT requirement at the lowest cost.

Company:		Primary Contact: Mail Stop: Telephone: EMail:	
Division:		Purchasing Contact: Mail Stop: Telephone: EMail:	
Location:		PLC Prog.Contact: Mail Stop: Telephone: EMail:	
Planned PO Date:		Request Availability:	

**Part Information**

Description of part(s): (After receipt of part design drawings, Magnaflux Quasar will determine feasibility and price of multiple part testing on single Test Heads.)

a. Name:	PN:	Run rate/hr:	Run rate/yr:
b. Name:	PN:	Run rate/hr:	Run rate/yr:
c. Name:	PN:	Run rate/hr:	Run rate/yr:
d. Name:	PN:	Run rate/hr:	Run rate/yr:

1. Describe the defects to be detected.

a. Type of defect	
b. Severity of defects (e.g., large crack or nodularity less than 80%)	
c. Method that will be used to identify and classify the defects for the bad parts in the Training Set	

2. A few representative parts are required to design the Custom Test Head and check for proper fit. These parts must be taken from the exact same point in the production process where the parts will be tested. Sample part dimensions should range from minimum to maximum. Delivery date is dependent on availability of these parts. When will these parts arrive at Quasar? \_\_\_\_\_  
Should these parts be returned to the customer? \_\_\_\_\_

3. Part drawings are required for Test Head design. CAD drawing files are strongly preferred and help in meeting shipment schedules. STEP or SLD are preferred formats; ACAP (DWG/DXF) and IGES are acceptable, but TIFF and PDF do not usually present sufficient detail.  
Will CAD drawings be made available to Quasar? YES  NO   
When will drawings be provided? \_\_\_\_\_

4. Drawings should represent parts in the condition in which they are to be tested. If not, please mark up drawings, explain, or attach sketch.

5. What part features are tightly controlled in dimension such that they can be used to accurately locate the part for test placement? Explain or attach sketch.

6. Is transducer placement restricted? YES  NO  If yes, attach drawing/sketch.

7. Are the parts presented to the Quasar Test Station in a specific orientation, including top/bottom, for acquisition and testing? YES  NO   
If yes, explain or attach drawing:

8. What is the approximate weight of the part? (If several part types are to be tested, give the weight of the heaviest part)

9. Is a pre-shipment demonstration test required as part of the acceptance? YES  NO   
 If so, when will parts arrive at Quasar for development of a demonstration Sorting Module?  
 \_\_\_\_\_

How many parts will be shipped for the demonstration test? \_\_\_\_\_

**Demonstration parts must be available 2 weeks before demonstration test. All shipping costs are the responsibility of the customer.**

<u>Shipping Contact</u>	<u>Phone Number</u>	<u>Email</u>

10. What is the desired throughput (parts per minute) at the point where the Quasar system will be installed?

What is the minimum acceptable throughput (ppm) at this point?

The table below presents general guidelines for estimating test duration. Typical test time is 3 to 5 seconds for parts under 2 kg. (larger parts such as control arms require 7 to 10 seconds) plus parts handling. Actual test time will depend on factors such as the weight of the part, amount of process variation and severity of defects. Note that a dominant element of total test duration may be the load and unload time. For this reason, a Dual Test Station combined with automatic material handling should be considered whenever the calculated throughput is marginal. Note that the “0” times below apply with a properly programmed and configured Dual Test Station.

**Quasar Test Timing Breakdown**

<b>Elements of the Test Cycle</b>	<b>Time (seconds)</b>
Load part on Test Head	0 to 2
Engage part to transducers	.5
– Measure temperature	.4 to 1.2
– Raise transducer plate	.5
Vibrate part to measure “n” resonant frequencies	.5 each
Accept or Reject based on Sorting Module algorithm	milliseconds
Disengage part	0.5
– Lower transducers	
Unload part	0 to 2
<b>Total</b>	<b>2 to 10 sec</b>

**Notes on Part Testing:**

- Parts must be tested dry, between 10 and 55 degrees centigrade.
- Parts cannot be tested with gates or excess flash attached.

11. Has the customer received and signed the Quasar 4000 Training Set Document?  
YES  NO

**System Configuration**

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12. System Model

- Quasar 4100 Nondestructive Test System  Quantity
  - Heavy Duty Test Station  Quantity
- Quasar 4200 Dual Nondestructive Test System  Quantity
  - Dual Test Stations on Separate Bases  Quantity
  - Heavy Duty Dual Test Station  Quantity
  - Heavy Duty Dual Test Stations on Separate Bases  Quantity
  -
- Quasar 4050 Laboratory System  Quantity
  - Air Lift Test Station  Quantity
  - Heavy Lift Manual Test Station  Quantity
- Stand-alone Test Station
  - Single Station  Quantity
  - Dual Station  Quantity
- Standard Test Station nominal dimensions:  
Standard Test Station dimensions: 16" W x 24" L x 42" H  
(Standard Dual Test Station same as above.)  
Heavy Duty Test Station dimensions: 24" W x 36" L x 36" H  
(Heavy Duty Dual Test Station same as above.)

Is there a special height or special ergonomic requirement for the Test Station? If so, specify or attach sketch. (Special requirements may impact price and schedule.)	
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13. Standard systems operate on 110V, 60 HZ, 5 AMP, AC power. If this is not available at the site, please describe the power source:

14. Standard systems operate between 10 and 55 degrees C, humidity between 10% and 90%. Is this the environment in your facility? If not, please describe the extreme ranges:

15. The Standard Test Station is designed to isolate and damp vibration from the floor or from nearby equipment in a "typical" factory setting. A foundry or a forging plant typically has some equipment that imparts a significant amount of energy to the floor or air (e.g., presses, shaker tables, grinders, induction coils, air knives), which are not considered "typical." This kind of environment requires the Quasar Heavy Duty Test Station or other special engineering to isolate the Test Station from these noise sources. (A good indicator that this is a potential problem is the proximity of heavy equipment and/or floor vibration.) Is the proposed Quasar system exposed to high levels of vibration or ambient noise? YES  NO

If YES, please describe \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

17. The standard Quasar system is delivered with a twelve (12) foot cable set that connects the Workstation to the Test Station. This cable must be of adequate length to reach between these units on the production floor, including any radius bends to avoid obstacles or other equipment. Is this standard cable length adequate? YES  NO

If a longer cable set is required, what length should be supplied? \_\_\_\_\_

18. Are there equipment specifications (e.g., electrical, safety, environmental, ergonomic or component vendor?) that must be met by the Quasar system at the customer's facility? Is a copy of the specification attached? YES  NO

**System Options**

19. Standard Quasar system color is gray. Special colors are available at additional cost. Requested Special Paint code #: \_\_\_\_\_  
 Note: Special colors add 1 week (minimum) to schedule.

20. The Quasar operator must correctly dispose of each part based on the test results. The standard configuration provides two indications; an accept (green)/reject (red) indicator on the monitor and a flashing red reject light mounted on the Test Station. Several additional options are available to guide the operator if desired.

The Error Proofing Package is designed to reduce the possibility that improper part disposition by a human operator will cause defective parts to be returned to the accepted good parts stream. This option can include 1) a PLC controlled chute that diverts "accepted" and "rejected" parts to the proper disposal location, and/or 2) a part marker that stamps accepted parts so they are readily identified downstream of the inspection point. A light guard or curtain may be used to protect the operator when the part marker is in use.

Are any of these options desired?

a. Flashing red/yellow/green tower light (Red-Part Fail, Yellow-System Fault, Green-Part Pass)	Quote	YES <input type="checkbox"/>	NO <input type="checkbox"/>
b. Reject sensor for customer-provided reject chute	Quote	YES <input type="checkbox"/>	NO <input type="checkbox"/>
c. Error Proofing Package to control part disposition	Quote	YES <input type="checkbox"/>	NO <input type="checkbox"/>

If the Error Proofing Package is to be quoted, is part marking desired? YES  NO

If so, what type of part marker is requested (paint, pin, stamp?)

21. Is there a specified PLC vendor that must be used on the Quasar system?

- Allen Bradley (standard)
- Siemens (additional cost and lead time)
- Other (Vendor Name: \_\_\_\_\_) (additional cost and lead time)

22. Transducers and thermocouples are consumable or wear items, in that they have a limited useful life dependent on the method of loading, the parts tested, system maintenance, and proper adjustment of the test timing. A Consumable Spares package will be quoted.

23. Spare parts kits are recommended. (You may request a Recommended Spares List from your Business Manager.)

Should spares be included in the quote and if so, what Level of Spares?

Level 1       Level 2       Level 3       None

(The basic spares level may be provided by the Quasar 4050 Laboratory System, which should be specified in item 12. above.)

***If the system material handling is to be automated, the section below should be completed.***

### **Automation Information**

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24. Who is being considered to provide the material handling system?

Quasar       Customer       3<sup>rd</sup> Party

Note: If Quasar is being considered to provide the automation, a separate **Automation Requirements Form** should be completed.

25. If a company other than Quasar is providing the automation, please identify the company and individual who will be responsible for system integration or to perform the final adjustments in programming and timing to make the systems function with your production line as an integrated unit.

Company name:	
Contact name:	
Supervisor name:	
Address:	
Phone:	
E-mail:	

26. The parts handling method should be consistent with Magnaflux Quasar's Parts Handling Interface Manual, provided separately on request. Briefly describe the automation method:

27. What I/O must Quasar provide for conveyors, robots, etc.? Please describe

## Training

29. Quasar provides training during system startup for up to 3 people. **It is important that the individual(s) designated for training on Quasar system operation and maintenance be solely dedicated to this training during this period, much of which is part and process-specific.**

- Identify expected attendees by name and title:

_____	_____
_____	_____
_____	_____

- Start up and training support requires a maximum of two concurrent weeks, during which training, equipment start up review, and sort development is performed.

<b>Additional Notes</b>

<b>SYSTEM REQUIREMENTS FORM COMPLETED:</b>
Mx QUASAR Field (initials) _____ DATE _____
CUSTOMER (initials) _____ DATE _____
<b>SYSTEM REQUIREMENTS FORM REVIEWED &amp; ACCEPTED:</b>
Mx QUASAR ABQ (initials) _____ DATE _____