

Welcome

Welcome to this edition of the **SMMT Industry Forum (IF) ISO TS16949 newsletter**. This regular publication is aimed to keep readers up to date with developments with **ISO/TS16949** and **SMMT IF services**.

Feel free to distribute to other interested parties. Any comments and suggestions for future editions would be welcomed, addressed to:
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Measurement Systems Analysis: Destructive Testing

According to ISO/TS16949 Annex A, “the evaluation measurement techniques, the sample size and frequency, and control method should be defined in the control plan”.

Let’s consider the requirement 7.6.1 Measurement System Analysis in ISO/TS16949 “Statistical studies shall be conducted to analyse the variation present in each type of measuring and test equipment system. This requirement shall apply to measurement systems specified in the control plan”.

Most organizations can effectively demonstrate compliance with this requirement when the parts used for the study can be measured a number of times, but many organizations struggle when the parts have to be destroyed as part of the process (i.e. when checking physical properties).

Organizations state that it is too difficult or impossible to conduct MSA studies, because the part is destroyed, the measurements are not repeatable and therefore a gauge R and R study cannot be undertaken.

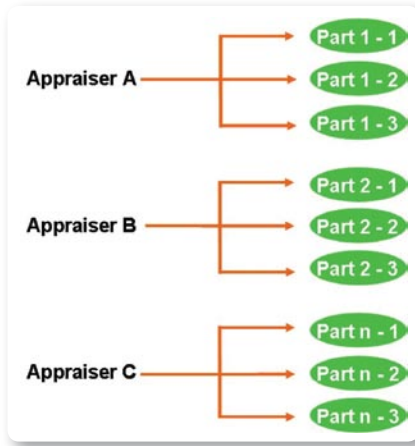
In the AIAG MSA reference manual, 3rd edition, Chapter IV section A gives some guidance for stability and variability studies, however many people have fed back that this is very theoretical and gives no real practical examples.

After a lot of searching I finally came across a reference manual that gives lots of practical examples of Measurement System Analysis for destructive testing. The book, written by Mario Perez-Wilson, is titled ‘Gauge R and R studies for destructive and nondestructive testing’ ISBN 1-883237-19-X, Publisher: ASC Press. Let’s look at some different types of measuring system that destruct the part:

- Destructive weld test
- Destructive test on surface treatment
- Tensile testing
- Hardness testing
- Salt spray testing
- Fatigue tests
- Impact tests

To be confident in the measurement results from these measuring systems, we need to understand how much of the variation is from the manufacturing process / material, and how much is from variation in the measurement system.

To undertake a gauge R and R study for a variable gauge, where readings can be repeated, the “crossed” method study is used. In this method a number of appraisers (normally 3) measure parts, normally 10, a number of times (2 or 3).

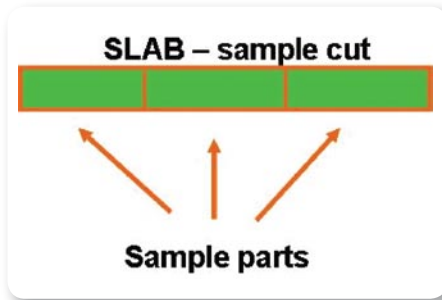


For destructive test systems we cannot use this method, a “nested” method study needs to be used.

The key factor in this type of study is how the samples/parts for the study are selected and randomly assigned to the appraisers involved in the study.

Let’s look at an example

To verify the mechanical properties of aluminium, an organization’s control plan requires destructive testing of a sample once per shift. Three operators are qualified to use the tensile test equipment. There have been a number of instances of customer returns due, according to the customer, to out of specification material being shipped. The organization decides to undertake a MSA study. They select an ingot of material produced from one cast, and section the slab into nine pieces, randomly assign three slabs to each operator, and then section each slab into three, giving 9 test samples per operator.

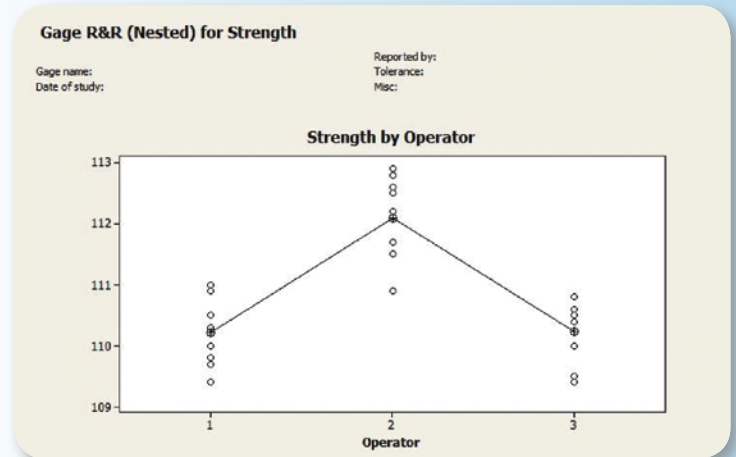
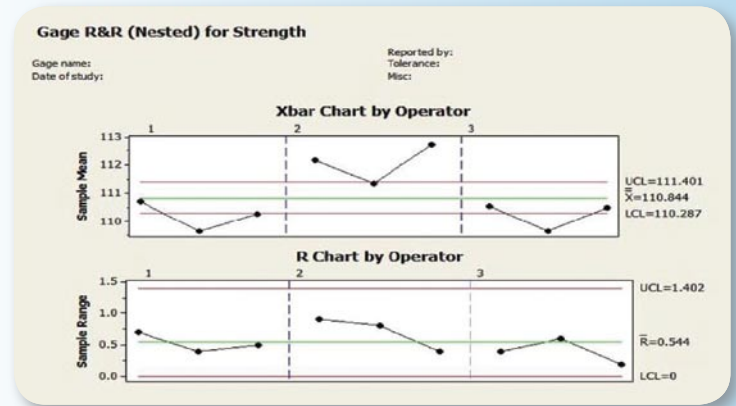


The raw data is then collected and entered into a software package (this example was done in Minitab). The nested

Slab	Operator	Run Order	Strength
1	1	1	110.3
1	1	2	111.1
1	1	3	110.3
2	1	4	109.4
2	1	5	109.3
2	1	6	109.7
3	1	7	110.5
3	1	8	110.3
3	1	9	110
4	2	10	112.6
4	2	11	111.7
4	2	12	112.2
5	2	13	110.9
5	2	14	111.7
5	2	15	111.5
6	2	16	112.3
6	2	17	112.5
6	2	18	112.8
7	3	19	110.4
7	3	20	110.6
7	3	21	110.5
8	3	22	110
8	3	23	109.4
8	3	24	109.5
9	3	25	110.6
9	3	26	110.4
9	3	27	110.5

study method of calculation was selected, the results produced and analysed.

The X-bar R chart shows all points within control for the range chart, and most points out of the control limits of the X-bar chart (which is good as it indicates the measuring system has adequate discrimination).



Analysing the strength by operator this clearly shows that Operator 2 is reading higher than operator 1 and 3.

This gave an unacceptable result of 78% R and R, of which the major contribution can from Appraiser Variation (reproducibility).

This led the organization to focus on the operator training, and the consistency of test method. Once the re-training was undertaken, the study was repeated using another slab of material and an acceptable gauge R and R was achieved. More importantly incidents of out of specification material shipped to the customer reduced.

In Conclusion

It is not acceptable to ignore MSA for destructive measuring systems that are referenced on the control plan. For a study to be successful, the selection of the samples is key to ensure homogeneity. In some cases the only way this can be achieved is by purchasing certified material with similar properties to that of the normal material tested, to undertake the study.

Challenging Times

We are currently faced with the most challenging trading conditions many of us can ever remember, but there has never been a better time for manufacturers and service providers to make the best use of the tools in ISO/TS16949.

Now is the time to stop, think and take stock. We must look at how to build on the lessons of previous years and reflect on our mistakes and successes with the aim of generating multi-disciplinary opportunities for improvement. By establishing SMART (specific, measurable, achievable, relevant and timed) objectives and targets, and effectively communicating them to the workforce, this will help keep a sense of purpose and direction, and focus on Quality.

So, what should an organizations top management team focus on?

One of the key requirements in ISO/TS16949 is management review, which specifically requires an organization to review “changes that could affect the quality management system”.

Unfortunately, in this period of down sizing, decisions on organisational changes are sometimes made without firstly considering the consequences. If management review is used effectively this would help ensure that, despite change, processes still have clear ownership, responsibilities and authorities are clearly defined, and effectively communicated. Too often organizations risk

losing certification, which can be costly when trying to maintain existing business and win new business.

Another point is to keep your certification body informed of any changes in employee numbers, changes in shift patterns, and organization structure, as this may have an impact on audit days and scheduling of surveillance visits.

Finally, keep your internal audit process active. In times of change, employee motivation can drop and have a direct impact on quality. So it is essential to continue audit to ensure that all the required process controls are in place and being adhered to. Remember the audit frequency can be amended based on the “status and importance of the activity”, but it is not acceptable not to do audits.

In Conclusion

To maintain existing business, and win new business, it is essential to focus on quality and customer satisfaction, and maintaining ISO/TS16949 is a key tool in helping achieved this.

Thank you to Bob Hughes, Quality Manager, WHS Tools Limited, for his contribution to this article.

Focus on Skills

Forward looking organizations are utilizing down time to further develop skills of employees and SMMT Industry Forum continues to see a high demand for open and in-house training programmes.

SMMT IF can develop specific training programmes to meet an organizations specific need, including flexibility in course start/finish times, and agendas.

To discuss any specific training needs you have contact Jenna Porch on 0121 717 6614, or visit our website www.industryforum.co.uk.

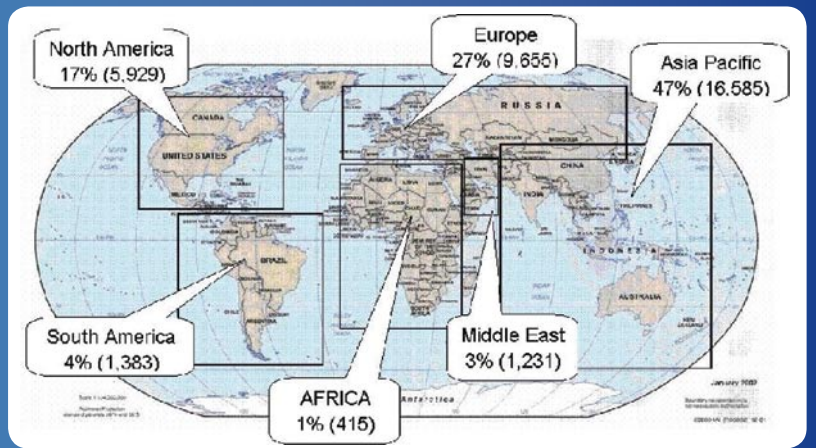
We continue to develop our global presence and we know have relationships with partners in India and Turkey. For more details visit our website.



ISO/TS16949 Status

China by far has the most registrations, with 10144, followed by the USA with 4239.

It is likely there will be limited growth in the total number of registrations in 2009, with any growth in certain countries like India and China, cancelled out by market shrinkage in other regions.



ISO9001: 2008

ISO9001: 2008 was finally issued in December 2008. Organizations have two years to make any changes needed to their quality management system. It is likely the transition will be undertaken by the certification body on a normal surveillance or recertification visit.

The plan is that ISO/TS16949 will be updated to align it with ISO9001: 2008 and will be reissued in the second quarter of 2009. Again there would be a two year transition period from the date of issue.

ISO/TS16949 Network Groups

For some years SMMT IF has facilitated ISO/TS16949 network groups in the Midlands and the North West of England. The purpose of the groups has been to bring together like minded organizations that are certified to ISO/TS16949, and want to share experiences to help them in their continual improvement efforts. Typically networks are made up of 10 organizations, and meetings are held twice per year at network member premises. We are now planning to spread this concept to other parts of the UK.

If you are interested in participating please contact Paul Hardiman at:
paul.hardiman@industryforum.co.uk

The cost is £250 +VAT per annum per organization, which includes the two meetings per year and SMMT IF facilitation of sharing information during the year.

IATF Auditor Guide to ISO/TS16949

The IATF Auditor Guide to ISO/TS16949 represents a consolidation of automotive audit best practice and represents the IATF automotive process approach to auditing through the complete audit cycle. It is structured to provide both knowledge and application competency criteria against each stage of the audit process. The guide was previously issued to IATF 3rd Party Certification Body Auditors to address weakness seen through the IATF witness audit process.

The IATF has now decided to make this document available to support organizations in addressing the competency requirements of auditors, which the IATF have seen as a weakness within the current scheme.

The IATF Auditor Guide to ISO/TS16949 will be available from May priced at £15. To order, contact SMMT Publications on 0207 344 9210, e-mail publications@smtt.co.uk, or you can visit the website.

Error in ISO/TS16949 Newsletter - November 2008

Please note in our Newsletter dated November 2008 on Page 3 we stated that the recertification visit should be scheduled by the certification body 3 years from the date of the stage 2, or last recertification audit +/- 3 Months. This should have read +0/-3 Months. Apologies for the miscommunication.