



Analog Cluster Instruments with Stepper Motor (Family MW2000)

Customer Communication

Wire Peel of Tin (Sn)

Summary

Wire Peel of Tin (Sn) – Stepper Motor (MW2000)

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Issue Description

1. Peel of tin (Sn) surface at contact wire (connection of stepper motor to PCB and inside stepper motor)
2. Suspicious "Contact Wire" delivered from sub-suppliers Stenzhorn and coating company Edelhoff.



Stepper motor



Contact wire

Data

- Production dates **from October 12 to 25, 2016** (stepper motor production MW2000) are suspect.
- Quantity of produced suspect **Stepper Motors**:

Continental inter company (ICO World Wide) 2.9 Million pcs

Based on statistical data of sort results, and failure mode analysis, the cluster **failure rate is predicted to be 0.7ppm**

Involved Continental Suppliers

1. **Supplier Stenzhorn** (Velbert, GER): nickel(Ni)/tin(Sn) coated part delivered to Babenhausen for stepper motor
2. **Sub-Supplier Edelhoff** (Iserlohn, GER): is doing the nickel(Ni)/tin(Sn) coating
3. **Sub-Supplier** for raw wire **Wieland** (Ulm, Germany)

Cause

- External supplier sent to Continental one batch of nok flat-wire material. Potential root cause: Abnormality of galvanic layer stack between nickel and tin layer.
- Nok flat-wire was partly consumed at Babenhausen plant for stepper motor production.
- Issue was identified at stepper motor assembly line.
- Supplier was informed about the issue.

Affected Plants (Continental)

Guadalajara, Timisoara, Babenhausen, Brandys, Rubi, Wuhu

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RISK

- Potential risk of:
 - Pointer malfunction → blocking motor (blocking particle).
 - Pointer malfunction → contact problem board to stepper.
 - Malfunctions → short on cluster-PCB (by peeled off particles).
- Babenhausen sorted out of 600,000 blocked Stepper Motors. 59 nok as of November 4.
-> sorting is ongoing.
- **No failed** stepper motors in final assembly lines cluster instruments at Continental found.

ACTION/ MEASURES

- Affected suspect stepper motor deliveries are identified and communicated to all Continental locations.
- Blocking of suspect stepper motors within Babenhausen plant was performed. Sorting activities for risk evaluation are ongoing.
- Blocking of suspect stepper motors world wide is initiated.
- SQM and Process Technology are currently present at supplier for investigations on root cause.
- EDX analysis is running.
- Identification of affected cluster instruments - world wide – will be provided by the delivering plant of assembled clusters.
- Environmental and functional testing is underway, no issues found to-date.

Image of failure mode



Conclusion

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Assumption

Based on the risk analysis we assume a very low risk regarding functional influence of the problem related to Instrument Panel Clusters.

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Thank you for your attention