Questions for Autoliv – 10/09/08

Weld failure

• Which parts are failing most?

• Why are they failing?

   Good question. Weld is insufficient (laser). Porosity – sometimes leak doesn’t show up for days to weeks

• How do you determine/conclude a failed part?

   Visual inspection (80% efficient)
   Leak check

• Are the failures random or do they show a pattern?
  o Ex: X failure over Y amount of time
  o Ex: Right after the weld or farther down the assembly line

• Are there any patterns found here?

• Is the welding process the cause of the failure or the quality of the material?

   Weld fails due to cleanliness/contaminants &/or weld processes

Parts & Cleanliness

• How clean are the received parts?

   Dirty! The cleanliness isn’t checked or defined. Some parts that are supposed to be “clean” (i.e. cleaned by supplier) always fail.

• How do you determine their cleanliness?

   Does the weld pass the leak test or not. Leaker goal = 60% reduction from current numbers. There isn’t an actual test/standard of cleanliness

• Are parts cleaned again after receiving them from the vendor?

   All critical parts are cleaned in the Autoliv facility. Burst discs, however, are not. The “appear” to be clean.

• How many companies supply parts?

   Many many companies
• Which company’s parts fail the most and what kind of failure?

_This information isn’t really known or monitored._

• Can we get statistical information on part failure (which company they come from, how they failed, how they were cleaned, etc)?

_N/A_

• How are parts handled and stored once they arrive at Autoliv?

_Totes are washed quarterly – after cleaned they don’t sit for more than 24 hours, totes turn over very quickly._

• What is your conventional part numbering system?

_Barcodes_

• Is this something we should adopt in our work and documentation or just stick to our own?

_Use serial # given on parts to keep communication with Autoliv simple. We can add our own modifications to make certain information clear e.g. what day this part failed/was made, etc._

• Do you have certain quality control for parts?

_No. They assume parts are clean after wash is complete. There is no standard for cleanliness. Wash may be totally spent but there is no verification._

**Housekeeping Questions**

• How often does Autoliv want to be updated with our progress?

_Weekly at our conference calls/meetings_

• Do you use Microsoft Office 2007 in case we need to send any documents?

_No they do not…send compatible documents_

• What type of information is confidential?

_Any documents Autoliv sends us. Any documents we produce should be allowed on website. Mark can always confirm._
• More specifically, what should we eliminate from the website?

  *Pictures they send us, proprietary documents they send us.*

• What is the specific problem definition?
  - Lets define 2 parts and/or weld types to analyze to narrow our project scope
  - We would like to compare our statistical analysis with Autoliv’s
    - Reasons for failure and why, from which vendors, etc.

  *Just look at laser weld.*
  *Cleanliness defined by levels of scrap - vital to determine if wash is spent or not.*
  *How to monitor wash chemistry*
  *pH?*
  *Wash machine: Epic Clean Basket Washer*

**Resistance Welding**

• What is the adhesive shelf life?

• What is the maximum temperature the adhesive encounters?

• How is the adhesive handled?
  - Come to room temperature, environment, contamination, expiration date