

## ATD Harmonization Meeting - ATD Brand Consolidation Task Group EuroSID-2, ES2RE, Phase-in Discussions

June 21<sup>st</sup>, 2011

6:00am- 9:30pm EST

Humanetics Headquarters in Plymouth, Michigan

Attachments: Complete Voting Record  
EuroSID-2 Attribute Slides

16 members attended in person and via *WebEx*.

### *In Person:*

Jack Jensen (General Motors)  
Joe McFadden (VRTC)  
Michael Jarouche (Humanetics)  
Paul Depinet (Humanetics)  
Michael Beebe (Humanetics)  
Joe Bastian (Humanetics)  
Mark Brown (Humanetics)

### *Via WebEx:*

Marvin Hatchett (IIHS)  
Mitsutoshi Masuda (Toyota) (JAMA)  
Hiroyuki Asada (Mitsubishi)  
Akihiko Akiyama (Honda)  
Akito Sakai (Nissan)  
Leo Ferdinand (Porsche) (ACEA)  
N. Rangarajan (GESAC)  
Yuji Okuda (Humanetics)  
Hollie Pietsch (Ford)

*\*Voting members or their designees must attend the meetings in order to cast a vote on that day's topics.*

*\*One single member of JAMA and ACEA represents all four voting members of each group.*

### **Introductions**

Introductions of members in person and via *WebEx* were conducted.

### **This Meeting's Agenda**

Review EuroSID-2 and ES-2RE  
Begin phase-in strategy discussion  
Tasks for next meeting

### **Recap of the EuroSID-2 Overview from the May 12<sup>th</sup> Meeting**

Mike Beebe presented a review of the brief EuroSID-2 (ES-2) discussion held during the May 12<sup>th</sup> harmonization meeting. Included were population breakdowns, the overall attributes, and the general comments voiced in May. At issue are some member's certification difficulties with the rubber neck and lumbar, the manufacturing challenges of the abdomen, the availability of the Ureol component in some of the polyurethane plastic parts, the head skin thickness, and the head assembly weights.

## **ES-2 and RE Head**

Mike Beebe reviewed the attribute slides for the ES-2 head. The prominent difference between the brands is the ability to adjust the weight and CG on the final assembly.

Joe Bastian stated that the FTSS brand head skin is heavier and that the FTSS brand skull does not use added ballast to make adjustments. For this reason, the original TNO head is problematic in consistently meeting the assembly weight and CG of both the ES-2 and NHTSA RE version.

The TNO head assembly drawing has a broad weight specification. The TNO head skin drawing has a weight spec but no thickness dimensions. FTSS incorporated their 50<sup>th</sup> male head skin and is able to meet the overall head weight of the ES-2 without ballasting. The Denton brand head skin is lighter and uses ballast in the skull to adjust the weight when needed.

When NHTSA created the RE version of the ES-2 they narrowed the weight specification and tolerance of the head assembly. Producing a TNO designed ES-2 head assembly that will meet the weight and CG requirements of both versions has proved problematic. Likely, many TNO based ES-2 versions already in the field will not meet the RE specification and are not designed to be adjusted using ballast. The Denton brand head assembly with the skull ballast will allow for the adjustments needed to meet the tighter RE spec and can be used consistently for both versions of the ATD.

Joe Bastian pointed out that the final weight and CG of the FTSS brand RE head assembly using the TNO based spec is not known in manufacturing until the final assembly step. This has been problematic for the brand and has resulted in higher rejection rates for sellable RE product. This also presents a problem for users who later replace head skins and do not reaffirm the weight and CG of their heads. Joe asserted that it makes sense to have the flexibility to readjust the weight and CG, and for this reason the Denton brand head assembly should be considered.

The current Denton 50<sup>th</sup> male head skin used on both Denton brand ES-2 versions does not have the squared off chin as called out on the NHTSA RE drawing. The Denton version has a new mold for the 50<sup>th</sup> head skin that conforms to the RE drawing but has yet to be put into service.

To allow the FTSS brand head to consistently meet both versions' specs, Joe suggested a review by engineering to determine if some manufacturing adjustments could be made to the skull for ballasting.

Humanetics will investigate options for the FTSS brand head assembly and provide the conclusions and a proposal for the next meeting. The final vote was suspended pending these results.

## **ES-2 and RE Neck**

Mike Beebe reviewed the attribute slides for the ES-2 style neck assembly. Overall both the FTSS and the Denton brand are the same. There are no known interchangeability issues brought forth by the meeting attendees. Joe Bastian stated that the FTSS brand neck is manufactured in Europe, but is being brought over to the U.S. plant. Any tooling or formulation issues are unknown until the transfer is complete.

Jack stated that the GM lab has had an easier time passing the neck certification test using the Denton brand rubber neck. The reasons are unknown, but GM purchases Denton brand necks and lumbar for their FTSS brand ATDs.

During the May harmonization meeting, Brian Grenke stated that the EuroNCAP standard specifies only the blue banded durometer of neck buffer for certification. Both the FTSS and Denton brand offer three distinct durometers of neck buffers designated by red, yellow and blue. After some research, it was confirmed that the NHTSA and EC regulations allow for any of the three durometers in certification. Only the EuroNCAP procedures call out the blue version exclusively. The group is not sure of the rationale for the EuroNCAP spec, but since the blue durometer is the stiffest, it was suggested that a sturdier neck assembly could take up more of the load and possibly increase durability.

During manufacture, both brands of necks target the middle of the certification corridor using the yellow durometer neck buffer when possible. The group concluded that there is no reason to decide on this issue or require only blue durometer neck buffers.

A vote was taken. The Denton brand neck assembly was recommended. *Please review the Voting Record attachment.*

### **ES-2 and RE Upper Torso**

Mike Beebe started the discussion of the upper torso with a review of the thorax, shoulder and upper arm attributes.

Some durability issues were brought up with the FTSS brand foam skin covering. The FTSS foam skin on the shoulder pads, ribs, and pelvis plugs is seen by some as less durable than the Denton brand. Leo Ferdinand stated that users see damage to the foam skin after a couple of tests. Yuji Okuda asked if the Denton skin covering is thicker and if it affects certification. There is no data available showing any affect on certification using the Denton brand skin covering.

Mike Beebe suggested that Humanetics review the FTSS foam skin covering and see if it's possible to give it the durability of the Denton skin while preserving the stiffness characteristics of the FTSS brand. This will require a collection and comparison of force/deflection data on sample parts with each brand of skin.

Hollie Pietsch shared Ford's experience with the Denton brand's internally molded arm bones cracking at the top near the attachment during sled testing.

Mike Beebe informed the Task Group that Ureol, a component of the polyurethane material used in the manufacture of the FTSS brand iliac wings, clavicles, and clavicle cord holders is no longer available due to new restrictions by the European REACH regulatory body. The material will change to the Denton brand thermal set plastic currently being used for those parts.

A vote was taken. The FTSS brand Upper Torso assembly with Denton brand foam skin covering was recommended. *Please review the Voting Record attachment.*

## ES-2 and RE Lower Torso

The lower torso attribute charts were reviewed, highlighting the main issues between the FTSS and Denton brands.

Previous discussions focused on the long delivery times and certification inconsistencies of the abdomens. The manufacturability of the abdomens is hindered because the design specifies a long obsolete foam composition. The FTSS and Denton brands have both experienced high scrap rates and certification challenges. Humanetics will continue to explore ways to produce abdomens with greater efficiency and reproducibility.

The iliac wing material is affected by the same problem as the other Ureol based products. As stated during the thorax review, the Ureol brand polyurethane hardening agent has been banned by the European REACH regulation body because of environmental concerns. Subsequently, all wings will be manufactured using the Denton brand thermal set plastic.

Some users including GM and Nissan stated that they have an easier time passing the lumbar certification test using the Denton brand rubber lumbar.

The pelvis plugs use the same foam skin material found on the ribs and the shoulder. The group decided that it would be beneficial to use the same skin covering on all of the Conform foam parts including the pelvis plugs.

A vote was taken. The FTSS brand lower torso with the Denton brand lumbar and foam skin covering for the pelvis plugs was recommended. *Please review the Voting Record attachment.*

## ES-2 and RE Leg Assemblies

The ES-2 ATDs primarily use the lower leg assemblies of the Hybrid 2 50<sup>th</sup> male. The only difference is that the molded upper thighs are filled with solid urethane rather than foam. No brand differences between the legs were acknowledged. With all things being equal, it was concluded that the population of the dominant brand should be considered.

A vote was taken. FTSS brand legs were recommended. *Please review the Voting Record attachment.*

## The Harmonization Task Group Recommended EuroSID-2 and ES-2RE:

<i>DN = Denton Brand FTSS = FT Brand</i>	Head	Neck	Upper Torso	Lower Torso	Legs & Feet	Arm	Comments
<b>EuroSID-2, ES-2RE*</b>	**	DN	FTSS	FTSS	FTSS	FTSS	<i>DN lumbar, DN foam skin covering.</i>
*Harmonized Vinyl and CAPPS brand shoes. **Pending							

## Phase-in Strategy Discussion

The majority of both brands of ATD components is already interchangeable and will have no effect on use. Currently, these types of parts may only be identifiable by their metal surface coating or the shade of the vinyl flesh. The major discussion points have included the head, pelvis, and the chest jacket components. How to communicate customer direction on backward compatibility, component choice, and timelines for the manufacture and sale of harmonized ATDs is forefront to these discussions.

Mike Beebe began by presenting slides showing the summary of tasks associated with the phase-in requirements of harmonized ATDs and components. Most of these tasks are manufacturing process adjustments internal to Humanetics. External documentation for customers, inventory availability, and test lab protocols are also part of the task items list.

The length of time that specific brand components will be carried in the Humanetics inventory and the current shelf life practice of tested components were discussed. Currently, FTSS brand certified parts must be shipped within 45 days or re-certified. Denton brand parts are allotted a 6-month window before they must be sold or re-tested. These timeframes may be customer specific for each brand and must be reviewed as a business decision on the part of Humanetics. Further discussion of these topics may be necessary.

Mike presented a draft chart of dummy specific phase-in dates beginning with the 95<sup>th</sup> Large Male. For example, the proposal suggests that any spare part or full dummy order received for the 95<sup>th</sup> after October 1<sup>st</sup> would be fulfilled with the harmonized product. Each month thereafter, a new ATD is added to the schedule based primarily on the order in which they were reviewed by the task group.

Yuji Okuda asked if the certification data for the first harmonized dummy would be available for review. Mike answered that the proposed plan included a distribution of the cert data and a comparison with the historical data of each brand.

Hollie voiced concern over NHTSA's acceptance of the recommended 5<sup>th</sup> female harmonized jacket design and the proposed phase-in timing. Mike's proposal places the production of the harmonized small female into February of next year to allow time for NHTSA's expected incorporation of the jacket.

In response to Mike's request for feedback, Jack pointed out that the direction provided by this group should not imply that labs must immediately replace good parts before their life cycle is up. Going forward, it is the individual choice of each lab whether they wish to acquire harmonized parts sooner than needed. Jack suggested a matrix that outlines the immediate and long term effects on each brand and what parts are available before and after the published dates of phase-in.

The documentation produced to guide users on each harmonized ATD was debated. Effectively wording and summarizing the changes is important to avoid confusion and misinterpretation. Several types of sales tools and technical bulletins will be considered. The group agreed that it is important not to surprise any of the customers who were not involved in the harmonization meetings.

Joe Bastian asked if there would be any concern from customers who start to replace parts on their ATDs with the brown vinyl skin. Mike pointed out that labs already have dummies with mixtures of skin colors including older brown parts produced by other manufacturers.

Marvin Hatchett asked that the group try to produce the matrix of phase-in dates as soon as possible to allow for effective planning. The group agreed that this was an important part of the phase-in strategy. An updated proposal will be presented at the next meeting.

### Tasks for the Next Meeting

- Report on the investigation into ballasting the FTSS brand ES-2 head
- Rework phase-in charts

### Next Meeting Re-Scheduled

Because of conflicts in schedules during the summer months, the Task Group has decided to combine the July and August harmonization meetings into a single meeting to be held on Tuesday, August 2<sup>nd</sup>.

### August 2<sup>nd</sup> Meeting Agenda

ES2 and ESRE head assembly completion  
Continue phase-in discussions  
Begin child ATD reviews  
Tasks for next meeting

*\*Please comment on the previous meeting minutes during the beginning of each meeting.*

### The current harmonization schedule

**January 13<sup>th</sup>** – HYIII 95<sup>th</sup> Large Male  
**February 10<sup>th</sup>** – HYII 10YO Child  
**March 14<sup>th</sup>** – HYIII 50<sup>th</sup> Male  
**April 21<sup>st</sup> / April 28<sup>th</sup>** – HYIII 50<sup>th</sup> Male  
**May 12<sup>th</sup>** – 5<sup>th</sup> Small Female/50<sup>th</sup> Male  
**June 21<sup>st</sup>** – EuroSID-2, Phase-in Discussions  
**July** – No Meeting  
**Aug 2<sup>nd</sup>** – HYIII 6YO / 3YO Child, Phase-in Discussions  
**Sept 8<sup>th</sup>** – CRABI/SID/FMH/Misc.

*Meetings are generally held the 2<sup>nd</sup> Thursday of each month barring any conflicts. Locations to be determined.*

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