

ATD Harmonization Meeting - ATD Brand Consolidation Task Group FMH, Phase-in Timeline, Small Female Chest Jacket, Customer Meetings

Oct 24th, 2011

6:00am- 10:00am EST

Humanetics Headquarters in Plymouth, Michigan

Attachments: Complete Voting Record

15 members attended in person and via *WebEx*.

In Person:

Jack Jensen (General Motors)
Jerome Ng (Ford)
Steve Rouhana (Ford)
Michael Jarouche (Humanetics)
Paul Depinet (Humanetics)
Michael Beebe (Humanetics)
Joe Bastian (Humanetics)
Mark Brown (Humanetics)

Via WebEx:

Brian Grenke (Chrysler)
Yuji Okuda (Humanetics Japan)
Akihiko Akiyama (Honda)
Akito Sakai (Nissan)
Hiroyuki Asada (Mitsubishi)
Leo Ferdinand (Porsche) (ACEA)
Joe McFadden (VRTC)

**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

- Ford Rib & Head Skin Testing Update
- 50th Phase-in Timeline
- Small Female Chest Jacket
- 50th Free Motion Headform
- Regional Customer Meetings
- Closing Comments

Ford Rib and Head Skin Test Update

Ford is in the process of testing two 50th rib sets manufactured with new damping material from a new supplier. Jerome Ng from Ford stated that the testing is complete but the data has not been fully analyzed. He didn't see any dramatic differences in the preliminary results, but will meet internally and let the group know when the final results will be available.

Mike Beebe stated that Humanetics has officially exhausted the last of the current rib damping material and has transitioned to the new batches in regular production. An SAE HIII meeting may be called soon

to discuss and present the Ford data.

Steve Rouhana of Ford reported that they have completed a round of curtain and frontal airbag tests on the Denton, FTSS, and the harmonized versions of the 5th female head skins. The goal is to ascertain if any frictional differences or characteristics can be observed. The analysis of the data has not been completed but could be presented in conjunction with the rib data at a future SAE meeting.

Jack asked if Steve thought there was anything in the test results that could change the group's previous decision on the head skins.

Steve admitted it was hard to say, but he said preliminary results look to be within statistical variations.

Paul reminded the group that any test must be repeatable and reproducible for it to be useful in analyzing the head skins and asked that the age of the samples used in the tests be recorded.

Jack stated that GM provided the brand specific skins for the Ford testing and they were unused and about a year or two old.

Mike said the harmonized head skin was manufactured within the previous few months and was unused.

50th Phase-in Timeline

Michael Jarouche presented a preliminary HIII 50th harmonization timeline for the sales and delivery of new spare parts and complete dummies. Tentatively, the individual 50th vinyl components would ship first, with fully harmonized dummies available at the end of the phase-in period in July. The proposal could start producing harmonized brown vinyl parts by the middle of November, even if the bones molded into the parts may not be completely harmonized.

Both Jack and Steve questioned the use of brown vinyl if a part is not fully harmonized. The use of brown vinyl should indicate a fully harmonized component. The group agreed that we don't want customer confusion and that only fully harmonized parts get brown vinyl.

Since the production of spare parts would happen sooner than the fully harmonized dummies, a question was presented to the group if multi colored vinyl parts could be used on a new complete dummy?

Some members thought multiple skin colors on a complete dummy were not a problem as long as the individual brown vinyl components were harmonized. Others believed the skin should all be all one color and the brown should signify a completely harmonized dummy.

Mike Beebe stated that the internal concern is managing the process within production. Some parts may be harmonized in a month, and some may take 6 months. A mix of components could happen until each dummy's parts are 100 percent harmonized in manufacturing. Until certain molds are duplicated, there may be capacity issues with keeping all 3 versions going simultaneously.

Within this scenario if a customer buys a new 50th dummy today, it could be a mix of multi colored flesh parts when it is ready for delivery. Leo Ferdinand stated that he believed the European customers would not be happy with this proposition. Getting new brown vinyl spare parts would be acceptable to put on existing ATDs, but a new complete dummy should be all one skin color.

Mr. Asada agreed with Leo's comments and believes Japanese customers will not like a new dummy delivered with a mix of vinyl skin colors. The new dummies should be delivered harmonized or be brand specific until the complete harmonized dummy is ready for shipment.

Steve pointed out that they clothe their dummies, so getting a color mix was not an issue for them as long as each individual part is homogeneous. He reiterated that brown vinyl has to at least indicate a fully harmonized component.

On the timeline, Michael proposed that all full dummy orders entered after February 1, 2012 will be manufactured and delivered as complete harmonized ATDs.

Steve questioned if that would be enough time to communicate the harmonization to all customers, especially those in the Asian territories that may not have regional meetings until January. He pointed out that it could take some companies months to get purchase orders approved, and finding out about this in November or December may not give them enough time to decide if they want to make some final orders for brand specific parts.

Mike interjected that all we are really talking about is vinyl color. We've already commonized the skeletal parts, rubber parts, and foam.

Jack commented that in the big picture, there shouldn't be any problem in waiting a few months. Realistically, labs could take 10 years before every part has been replaced due to wear and age. We must remember that we will be no worse off than we are today.

The group agreed that pushing out the schedule a few months would be acceptable. Michael said he will update the timeline.

HIII 5th Small Female Chest Jacket

A JAMA request has been entered into the minutes as sent in an email from Mr. Masuda of Toyota, JAMA Dummy Tech WG Chairman, and JAMA Dummy Harmonized WG member.

By after 2012 March, JAMA formally requested Humanetics to continue to manufacture OLD FTSS and OLD Denton H3-5F Chest Jacket. This "OLD" means before harmonized Jacket.

Reason and Background

1. JAMA has been announced Humanetics will start manufacturing only "Harmonized" Chest Jacket. Which means Humanetics will no longer manufacture both OLD chest jackets after 2012 March.

2. OEMs can select FTSS or Denton H3-5F dummy when they have Compliance Test or NCAP testing at test facility. SAE harmonized chest jacket cannot use at the moment. Because they are "Fail" result due

to NHTSA cal testing This was reported last ESV paper. <http://www-nrd.nhtsa.dot.gov/pdf/esv/esv22/22ESV-000334.pdf> JAMA need to know.

3. After 2012 March, Humanetics start Harmonized Chest Jacket for both brand, they will pass Torso Flexion Test by NHTSA pointed out. JAMA expected NHTSA will use the jacket to compliance test and NCAP. But NHTSA has not been indicate exact date of start Harmonized jacket.
-end-

Mr. Asada from Mitsubishi also made a request to have a reasonable phase-in period due to NHTSA's use of the old jackets and the Auto Alliance's letter to NHTSA dated January 2006 specifying the option of using either an FTSS or Denton jacket. (Note: The Auto Alliance's letter is not part of any NHTSA regulation or rule)

Mr. Asada's email request as entered into the minutes:

1. Jacket phase in time line

-Background

Regarding current compliance test and NCAP test for AF05, Alliance has issued following letter to NHTSA to adopt manufacturer option to use whether Denton brand or FTSS brand in 2006 Jan. Then, NHTSA has agreed to use this option from 2006 May.

-Request

We are basically support to harmonize the Jacket, however, we would like to request reasonable phase in time period for this Jacket due to above issue. After harmonize the Jacket, it is difficult to adopt our current production cars quickly, which were developed with old Jacket, and they have possibility to be conducted compliance test and NCAP test by NHTSA. Therefore, we would like ask to keep current manufacture option for current production and development vehicle compliance and NCAP tests. We also ask Humanetics to keep old jacket service parts, at least former FTSS, within reasonable time period.

2. Question about Jacket correction status

According to the attached NHTSA ESV paper, common jacket has Torso flexion resistance by modified chest flesh interaction with pelvis flesh. Further work on the jacket is needed to address the shortcomings evidenced by the torso flexion test results. We would like to know current status of this correction. The countermeasure should be reflect to production version parts. <http://www-nrd.nhtsa.dot.gov/pdf/esv/esv22/22ESV-000334.pdf>

-end-

Mike Beebe stated that an SAE meeting has been scheduled to finish the J document on the harmonized chest jacket. They will review with the Auto Alliance if a petition is required. New jackets will be produced to pass the torso flexion corridors and they'll have to align any petition with NHTSA's use of the new harmonized jacket. No cars have been developed yet using the harmonized jacket.

Michael pointed out that NHTSA typically gives 5-7 year phase-in periods, so even if the jacket was accepted today, we may need to manufacture all versions for years to come.

Mike suggested that NHTSA should begin using the new jacket immediately for the simple reason that it still meets the federalized drawings better and is closest to the specifications.

Paul pointed out that there are really 5 versions of the 5th female jacket produced by Humanetics: FTSS, Denton, harmonized Denton and harmonized FTSS soft and stiff versions. We should try to eliminate 2 of these and only offer 3 versions.

Joe Bastian stated that only a few of the FTSS harmonized stiff versions were made as part of a tuning experiment. And the Denton and FTSS harmonized molds are identical, so most customers won't see a difference between those two. With this in mind, we should only offer the FTSS, the Denton, and the Harmonized versions.

Michael asked which jacket(s) should be supplied with new harmonized dummies in the near future. Should we allow customers to specify? The group's consensus was to hold the previous harmonization decision to use only the harmonized jacket on all new dummies. The old versions of the jackets should be offered as spare parts.

Joe McFadden stated that the purpose of the new jacket was to reduce variation and that VRTC is looking forward to using it once torso testing is validated with it. He also stated that rulemaking would not be necessary for the new jacket since it meets the drawing package already (and better than the current versions). NHTSA rules do not favor any particular manufacturer of jackets or dummies. As stated previously, NHTSA does however ask manufacturers which 5th female jacket they use in testing their vehicles.

50th Free Motion Headform

Mike presented a population slide comparing FTSS brand head forms and head skins with the Denton brand as requested in the October 4th meeting. The charts show an overwhelming difference in sales numbers favoring the FTSS brand.

Mike next presented an FMH sample head skin sliced in three separate ways in order to measure the skin thickness. An FTSS head skin and a Denton brand skin were cut vertically on the skin's centerline. The thickness in this area measured .502" for the FTSS and .471" for the Denton brand. The thickness specification is .441 +/- .03. Other horizontal cuts above the eyebrows on and off the centerline produced measurements within specification for both brands.

Both head skins were checked for fit on each brand of skull with no problems detected. The Denton mold is newer and in better condition and is preferred by Humanetics manufacturing.

Chrysler made a comment that they believed the FTSS brand FMH head skin was tuned with a special vinyl formulation to make it more durable. No records or evidence could be found within Humanetics to support this claim.

A vote was taken. The Denton brand FMH headform was recommended with the votes collected today. JAMA asked to submit their votes at a later date. *Please review the Voting Record attachment.*

The Harmonization Task Group recommended 50th Free Motion Headform:

| <i>DN = Denton Brand FTSS = FT Brand</i> | Head | Neck | Upper Torso | Lower Torso | Legs & Feet | Arms & Hand | Comments |
|--|------|------|-------------|-------------|-------------|-------------|----------|
| 50th Free Motion Headform | DN | | | | | | |

Regional Customer Meetings

The first regional customer communication meeting discussing the harmonization results will be held on Tuesday, Nov 8th during lunch recess at this year’s STAPP conference in Dearborn, Michigan. This meeting is primarily to introduce the North American customers to the harmonization of the dummies.

Leo Ferdinand proposed a possible December 7th date for a similar European meeting and Yuji Okuda is talking with JSAE about a mid-January date for the Japanese region. These as well as other global meeting dates will be finalized in the near future.

Closing Comments

Michael thanked all of the members of the Harmonization Task Group for their yearlong dedication in reviewing and making the ATD harmonization recommendations. Since the group was so productive, he asked if it were possible to maintain these meetings for future technical reviews and communication of products on the horizon. The concept would be to preserve a technical advisory group to discuss changes and advances in new dummies and materials in the pipeline. The group would also monitor the harmonization progress over the next year. Meetings could be held quarterly or as desired.

The members in attendance agreed keeping the group active would be beneficial as long as it was a purely technical advisory group, didn’t overlap other working group’s agendas, or discuss regulatory topics.

A future meeting agenda will be discussed and scheduled accordingly.

The current harmonization schedule

- January 13th** – HYIII 95th Large Male
- February 10th** – HYIII 10YO Child
- March 14th** – HYIII 50th Male
- April 21st / April 28th** – HYIII 50th Male
- May 12th** – 5th Small Female/50th Male
- June 21st** – EuroSID-2, Phase-in Discussions
- July** – No Meeting
- August 2nd** - 3YO Child, Phase-in Discussions
- September 8th** - HYIII 6YO/Updates to Previous Work/Phase-in Discussions
- October 4th** - HYIII 6YO/CRABI/Phase-in Discussions
- October 24th** - FMH/Phase-in Discussions/Misc.

Meetings are generally held the 2nd Thursday of each month barring any conflicts. Locations to be determined.

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

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