**APC project meeting – May 8, 2012**

Ford Research & Advanced Engineering, Dearborn, MI

13:00 – 15:00

**Meeting participants:**

Amino: John Cass, Trent Maki

Ford: Sergey Golovashchenko, Scott Dawson

U Windsor: Daniel Green

**Meeting minutes:**

Daniel provided a quick overview of the proposed industrial trials taking place at Amino: the 1st series consisting of Amino’s conventional hydromechanical drawing process to form the dash panel, the 2nd series consisting of an enhanced hydromechanical drawing process followed by a separate EHF process and the 3rd series consisting of EHF fully integrated into the hydromechanical drawing process.

The 1st series of trials (completed in Dec.2011/Jan. 2012) could not successfully produce a defect-free dash panel from DP600 or aluminum; only the mild steel could be successfully formed. Furthermore, Amino’s process does not actively control the fluid pressure: the closing of the die with a constant volume of water creates a very low pressure build-up, but this is not sufficient to form the dash panel.

Ford has therefore spent considerable effort with extensive numerical simulations to redesign the lower section of this die. Sergey presented drawings of the proposed 3-piece punch: a central punch with large radii that acts as a pre-forming tool and 2 outside punches with gainer pockets that complete the forming process. Ford will also build another tool (funded by DOE) which will be used to restrike the part previously hydromechanically drawn as well as to electro-hydraulically form the dash panel to its final shape. Ford would like to complete the building of the 3-piece punch as well as build the 2nd tool so that DP600 parts can be successfully formed by December 2012; the aluminum parts would be formed in 2013. It was pointed out that the parts that would be hydromechanically drawn at Amino in this modified die would require laser trimming prior to being shipped to Dearborn for EHF.

A discussion ensued on the sheet materials that would be selected for this project, and it was agreed that 1.5 mm DP600 steel is the first interest for Ford and that 1.5 mm AA5182-O sheets would be the 2nd choice of material. The size and quantity of blanks that will be required for this APC project were reviewed and confirmed. ArcelorMittal has offered to supply a sufficient quantity of DP600 sheet material, and both Ford and Amino agreed that Novelis would be the best company to supply the AA5182, due to superior quality (uniformity of properties and thickness, consistency of surface roughness, etc.) compared to other NA suppliers.