

# Japanese automotive industry embraces CFX-5

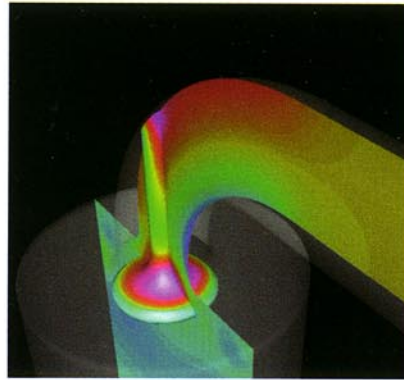
by David Edgar, AEA Technology, Japan

NOVEMBER 5TH 1997 saw Japan's biggest CFD event of the year, the Japan Automobile Association (JAA) CFD Meeting in Tokyo. More than 170 members representing all of the main Japanese auto companies and their suppliers attended the meeting.

Prior to the event, we successfully used CFX-5 to solve the three benchmark problems specified in advance; one external car aerodynamics case and two engine valves. JAA supplied hexahedral meshes for each of these, but re-meshing with hybrid elements gave better results, especially for the valves.

The complexity of the car geometry, which included details underneath of the engine block and suspension, allowed us to demonstrate the power of the new CFX-5 mesh generator, developed together with GE Corporate R&D, which automatically creates high-quality hybrid meshes. With prismatic elements near to the surface producing accurate solutions in the boundary layer, and tetrahedra efficiently filling the bulk of the domain, the hybrid mesh produced good aerodynamics results.

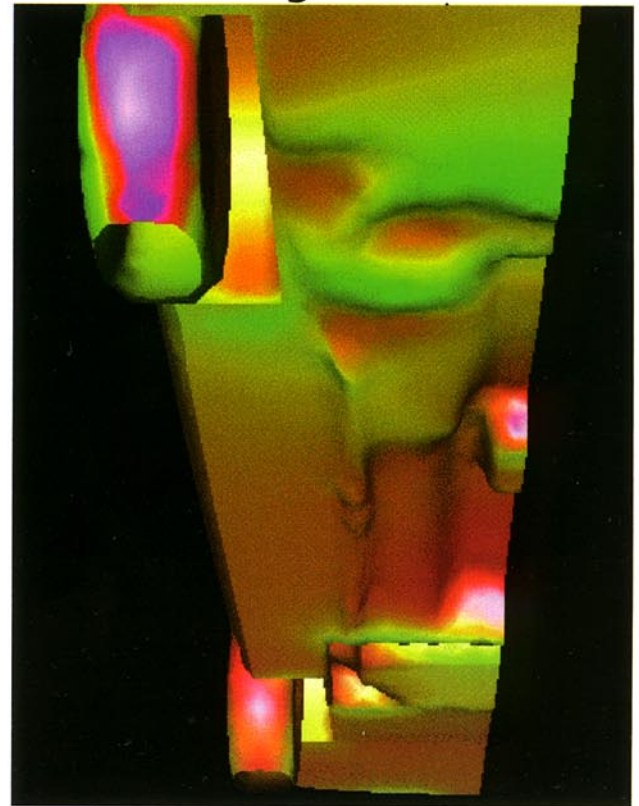
A live demonstration of CFX-5 during the meeting made a big impact,



Pressure distribution on one of the JAA valves

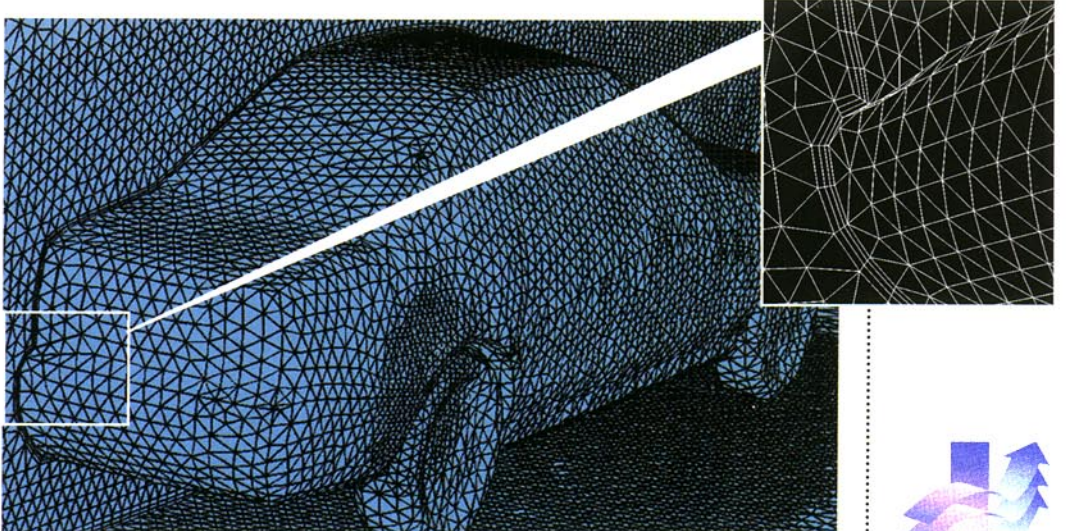
and drove home the message that this software marks a new step in the evolution of CFD. It was reassuring that all of the auto companies questioned predicted a rise in the use of CFD in shortening design cycles, and that their number one priority for future code development is auto-meshing.

As a follow up to the JAA event, in January AEA Technology KK, in conjunction with SGI Japan, ran a series of CFX seminars in Tokyo and Osaka. Split into two half-day sessions, the meetings focused on the solution of automotive engineering problems with

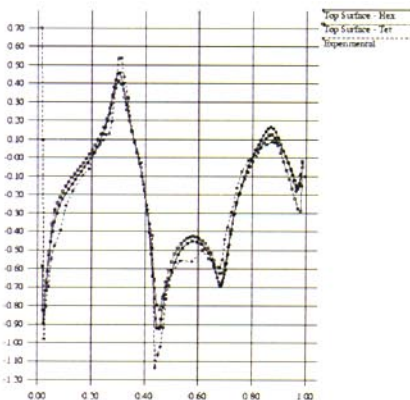


Pressure contours on the underside of the JAA car

CFX-5, with companies including Toyota, Nissan and Honda in attendance. Toshihiko Kuriyama of Daihatsu Motors gave a keynote speech on the use of CFX-5 within Daihatsu, and its potential to revolutionize automotive CFD. Demonstrations of the forthcoming CFX-5.2 were very well received.



CFX-5 hybrid mesh of the car; the enlargement shows the prismatic elements on the car surface



Profiles of surface pressure coefficient on the centerline of the JAA car

