The Next Generation of Air Cargo Container from Envirotainer

Envirotainer is the pioneer and leader in the development of active temperature-controlled air transportation solutions for pharmaceuticals and other temperature sensitive goods. It currently has a global rental fleet of over 3,500 active temperature control containers.

To maintain its leading position in thisspecialist area the company implementeda major project to develop the next generationof container that with an internal cargovolume of 6.38 m3 (224.2 ft3) would be acapable of handling larger shipments – fiveEuro or four US pallets. Key requirementsof the new container were excellent thermalperformance, high structural integrity andgood impact resistance.
Following a four year development program,Envirotainer has launched its newRAP e2 container. This container representsa step change not only in terms ofperformance but also in the way that thecontainer is manufactured.
Diab engineers have been workingclosely with the Envirotainer developmentteam throughout the duration of the projectproviding materials and technical support.At the outset it was decided that sandwichcomposites based on Diab structural coresas opposed to the ‘traditional’ aluminum/polyurethane foam construction would offerimproved thermal, structural and impact/damage performance.
With the decision to move to a sandwichcomposite design, the Envirotainer engineersdeveloped a VARTM (vacuum assisted resintransfer molding) manufacturing processthat would allow the efficient series productionof the containers while at the same timemaximizing the properties of the sandwichcomposites. In particular the process

thatEnvirotainer has developed has allowed it toachieve high fiber fractions. Normally this isnot the case with VARTM type processes.
With this process, matched rigid andflexible molds are used to create the twosandwich components that make up eachcontainer in a single shot. A particular featureof the Envirotainer VARTM system isthat they have been able to achieve squareinternal corners to maximize cargo capacity.Usually for this type of process mold releaseangles would be necessary.
Full scale tests on the container have shownthat it can withstand more than 23 ton staticload on its roof.
In addition the new container offers almosttwice the insulation value of an aluminum/PUR equivalent container. This reducesthe size of the battery pack for the temperaturecontrol system. In the case of the RAP e2the interior temperature can be maintained atconstant temperature (from -20 to +40 °C [-13to +104 °F]) throughout the container's journey(minimum of 35 hours).
Envirotainer also expects the RAP e2 tooffer a higher resistance to damage than previouscontainers particularly in terms of sizeand propagation. However, in the event ofaccidental damage, the Envirotainer team hasdeveloped a repair scheme that only requiresminimal composite/sandwich knowledge.
www.envirotainer.com