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Next month in Brazil, a domestic regulation for the transportation of dangerous goods comes into effect, requiring that packaging for products such as solvent-based paints complies with practices recommended by the United Nations.

These practices involve tests that call for greater resistance by packaging to impacts and to increases in internal pressure.

For paints and other solvent-based chemical products, to obtain the UN homologation, filled cans must survive a drop from a height of 1.20 metres.

Brazilian three-piece canmaker Brasilata set out to develop a solution and was inspired by a principle similar to that used by the automobile industry that employs bumpers to absorb impact (*The Canmaker*, July 2003).

Company chief executive Antonio Teixeira explains, "The free fall test is particularly critical for the 18-litre square can, especially when the packaging drops on a corner, which may cause the seam to break."

The standard solution is a combination of the reinforcement of the double seam with a triple seam, and a thicker gauge tinplate.

"But the triple seam option demands investments in new seamers and redesign of the productive processes, which also increases tinplate usage," he says.

The solution developed by Brasilata's technical department was designed to relieve part of the stress applied to the seam during impact by enabling higher deformation of the body which absorbs the energy of a drop, thereby reducing stress on the seam.

Greater impact resistance was achieved by the use of beads on the body which work as energy absorbers. The deformation protects the seams and prevents leakages.

"In other words, the resistance of the package to the drop impact was paradoxically achieved by the reduction in the resistance of the body of the can in order to protect its weakest portion," says Teixeira.

Brasilata worked with the Federal University of Rio Grande do Sul to determine the ideal profile and number of beads. "Sawtooth-type

UN solution

beads provided the best results for impact and the greatest reduction in stress in the seam region.”

To examine the drop behaviour with different types of profiles and number of beads, and since the problem involves large displacements and permanent deformation of the container, non-linear finite element analysis methods were used, and Brasilata employed software from US-based Ansys.

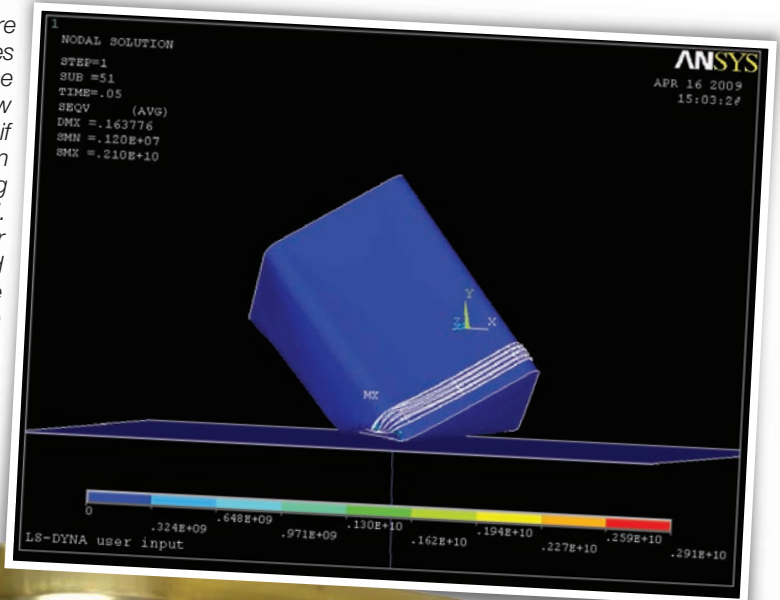
Square general line cans are popular in Japan, China, Korea, Germany and Brazil. Brasilata is now looking to license this solution to canmakers in other countries.

The new design also allows to down-gauge the can body to 0.30mm compared from the 0.34mm gauge of a triple-seamed can.

“This is innovation for times of crisis. It is innovation that reduces costs,” says Teixeira.

One of the entries for the Cans of the Year Awards 2009 was developed in Brazil to meet specifications set by the United Nations. Mónica Higuera reports

Brasilata's 18-litre can features beadings at the top which allow it to deform it if there is an impact by being dropped. The canmaker employed non-linear finite element software by Ansys for the simulation



* The Cans of the Year Awards, backed by *The Canmaker* magazine, have since 1996 provided a showcase for the best that the world's canmakers have to offer to brand managers.

Entry to the Cans of the Year Awards 2009 is free-of-charge, with the Awards being presented at a Gala Dinner alongside The Canmaker Summit in Dubai on the evening of 28 October. Entry deadline is 17 July.

For more details visit www.spgevents.com

