



# HVAC Carrier for Cab and Saloon models with extra strength and space saving

## The Challenge

The design challenge for Ferrartis was to improve the structural integrity of an existing storage frame for train air conditioning units and to be able to stack the frames 5 units high. Due to the difference in size of the conditioning units for a train cab and a saloon carriage, two sizes of frames would be required.

## The Solution

The design solution that was decided on by Ferrartis was to increase the material wall thickness of the frame to provide extra strength for the unit and to allow each frame to be stacked up to 5 high. To aid the handling of the conditioning units by fork lift full width tubes were added to ensure safe lifting and further increased the strength of the frame.

Space Saving / Utilisation

Safety Improvements

Cost Reductions

Environmental Savings

Asset Protection

## The Result

The resulting frame was of a much stronger construction than the original, can be lifted more easily and safely by a fork lift and the stack of five high frames has no deflection when loaded with the air conditioning units.

The modified frames saved significant amount of space in the manufacturing and warehouse facilities and provided additional protection to the product during transit.



**SAVING OF  
STORAGE SPACE**



**REDUCTION IN  
WAREHOUSE COSTS**



**IMPROVEMENT  
IN PROTECTION  
PROVIDED**

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