

Standards of coach passenger comfort have improved dramatically in recent years to the extent that the air-conditioned luxury cruisers of yesteryear are now the workhorses of long haul cross-country routes and chartered away-days. On board kitchen and washroom facilities, previously something of an afterthought, are now an integral facility in modern coach design, as important to the finished vehicle as the reclining seats and the coffee machine.

Today's discerning coach travellers demand exacting levels of comfort and cleanliness, but given the necessarily confined area inside a coach, such standards are by no means easy to achieve. Often the demands of packing in enough comfy passenger seats (with sufficient legroom) mean that such kitchen and washroom space that can be found tends to be lumped together with other essential features such as emergency stairwells and refrigeration units. This only serves to compound the task for those whose job it is to squeeze all these facilities into the space provided.



Shades Technics – specialists in coach interior fixtures

Hardly surprising, then, that there should be companies dedicated to such specialist tasks. One such organisation is Hertford, UK based Shades Technics, which has been manufacturing supplementary coach furniture for 24 years. Over that time, designs have become more and more sophisticated – in line with the general improvements in coach comfort and style – but the basic requirements have remained the same: pack in as many useful facilities into as small a footprint as possible.

“We are effectively shoehorning a full plumbing and electrical engineering project into a space somewhat smaller than a standard phonebox,” says Lindsay Patmore, Design Engineer at Shades Technics. “We work closely with coach manufacturers and travel operators, but it is always hard to know exactly what space we are going to have to play with. No two jobs are ever the same.”

Dimensions change right up to the last minute

Shades manufactures its toilet cubicles out of fibreglass: the lightness and versatility of the material make it ideal. Hygiene demands that there be no nooks and crannies and plenty of easy-to-clean surfaces. This is achieved by constructing the units from as few individual elements as possible: no joins between panels means no crevices where bacteria can hide. But the fewer the number of components making up a cubicle, the more complex the tooling around which the fibreglass must be constructed. Each blank mould is labour-intensively handmade so when the designers commit to final tooling there can be no room for any errors.

Unfortunately, as Lindsay explains, those commissioning the products from Shades are not always sensitive to such concerns. “Once we submit engineering drawings to our mouldmakers, it's really too late to make any changes,” he says. “But because we are working on our designs at the same time as any number of other contractors, it is not uncommon for some of the dimensional specifications to change at any point right up to the last minute. We have to be flexible enough to accept such changes without missing our tight deadlines.”

ZW3D Overdrive to the rescue

In order to address this issue, Shades has recently implemented a new design strategy based on ZW3D Overdrive™, the innovative CAD/CAM system from ZWSOFT. Not only is ZW3D's powerful hybrid Overdrive modelling kernel packed with the kind of surfacing capabilities that Shades needs for its smoothly contoured designs, it also incorporates a comprehensive history feature that is the key to the ability to take shifting specifications on the chin.



Lindsay Patmore explains: “With ZW3D Overdrive we can begin building a digital model of our design as soon as we have worked out the basic layout. We don’t need to add detailed dimensions until they have been finalised and we can always step back through a design if something fundamental changes. This ensures that when we do need to commit to a detailed engineering drawing, we can do so quickly and without fear of complications.”

This ability to step back through a design – ZW3D Overdrive allows users access to the complete set of design operations – also insulates Shades against the vagaries of rules and regulations. “We sometimes have to react quite quickly if a safety

standard changes,” explains Patmore. “Sometimes it can be something as mundane as whether a fridge door opens to the left or the right. On other occasions problems can be more serious. In any event the ability to step back and make changes early in the design process means that work is seldom wasted and we can quickly commit to tooling when the time comes.”

Luxury coach for British football team

Shades tested its new design system to the fore recently when it was asked to help kit out a new luxury coach to be used by football teams. “The levels of comfort demanded by today’s pampered football stars mean that the coaches used to take them to and from the ground on match day are among the most luxurious vehicles on the market,” says Patmore. “We have been working with specialist coach-fitters for some time now and were recently asked to design an entire kitchen unit for the back of a coach.”

The design of luxury team coaches is not constrained in the same way as that of more commercial vehicles. Fewer seats means more space for tables and other comfort features, some designed for the specific needs of footballers: one Shades innovation is a table that can be lowered to allow players to rest their injured legs. But space constraints still exist – the overall dimensions of coaches are basically the same – so it is no mean feat to cram in an entire kitchen space, complete with microwave oven and multiple refrigeration units, into the back of a bus.

“Once again we were under heavy time pressure: everyone wants their designs produced yesterday,” says Patmore. “And as usual final dimensions took a while to obtain. Thanks to ZW3D, though, we were able to stay on schedule even when we had to make a significant adjustment to the specification.”

“We’ve only been using ZW3D, for a few months but already it has transformed the way we work,” he adds. “The football coach kitchen is now typical of the way we work through a project. Whereas before we would start with an extensive series of sketches, now we even work on concepts in 3D. We can come up with quite detailed schemes – which we can easily render when we need to communicate our ideas to the customer – confident that we can step back through from wherever we’ve got to and fill in the precise details when we know them. In this case we had to make alterations to accommodate a rear light cluster. Without ZW3D, these types of modifications would have set us back weeks.”