

City Bus Concepts



e-Traction

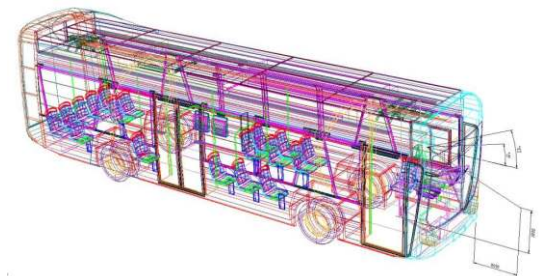
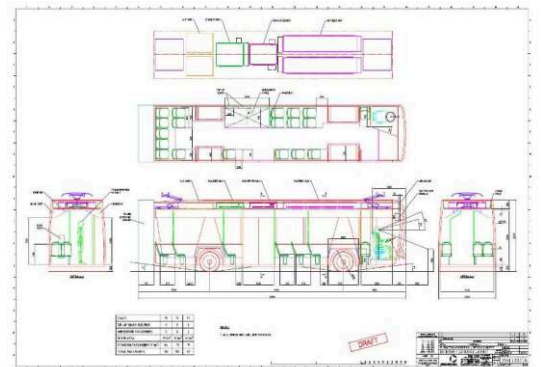
e-Traction

Composite-Bodied Electric Bus

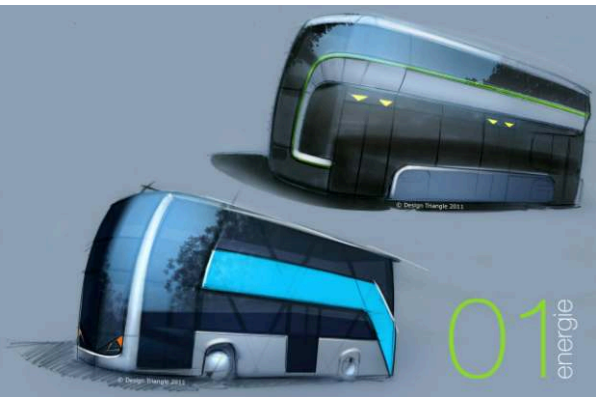
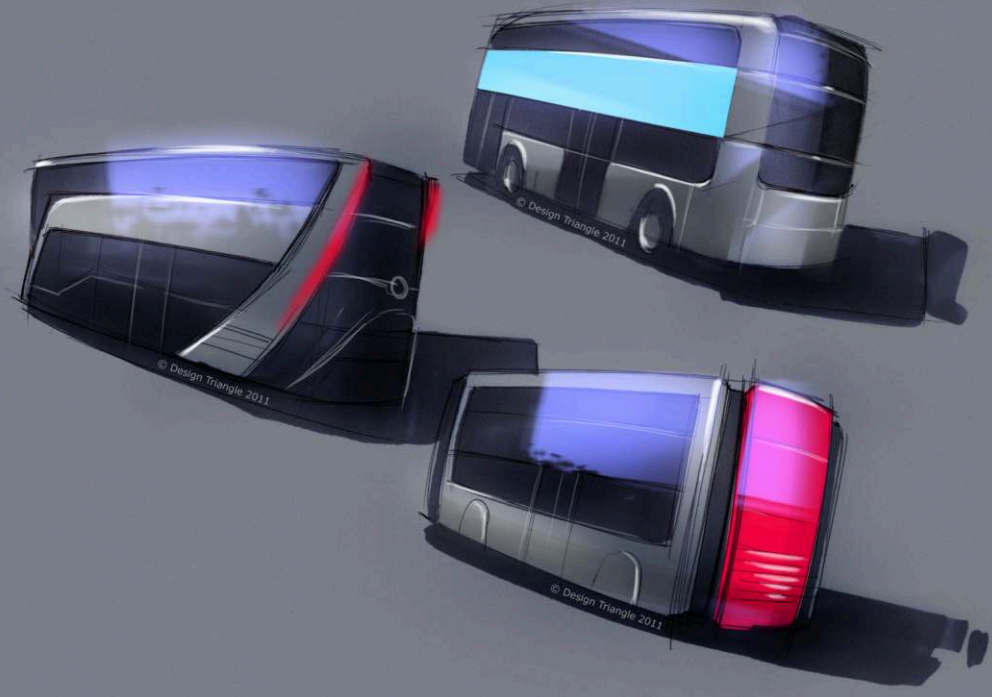
e-Traction Europe BV asked Design Triangle to develop a new composite-bodied electric bus using their wheel motor technology.

Design Triangle created new concept designs for the new 12 metre city bus, using advanced composite construction. The concept was initially developed as 2D layout drawings, subsequently developed into 3D CAD models, photo-realistic rendered images, photomontages and a video animation.

The e-Traction Electric CityBus is currently under development in the Netherlands.

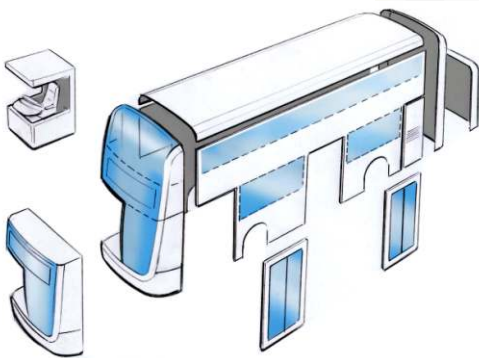


alexander



Alexander Dennis

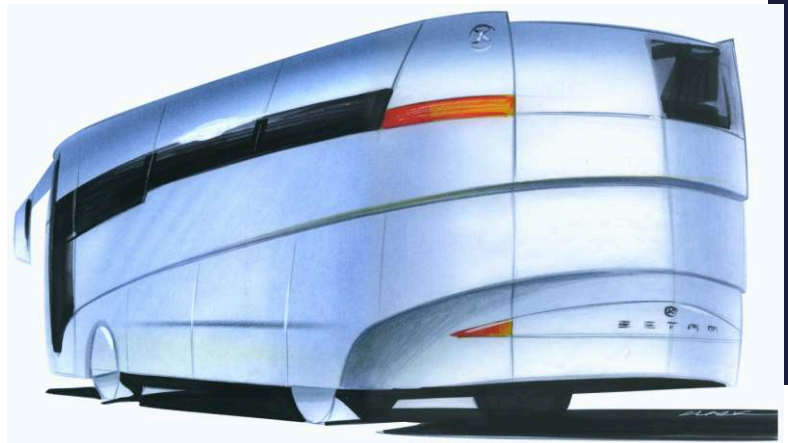
Alexander Dennis Ltd invited Design Triangle to propose initial concepts for a new double-deck / single-deck bus range, introducing a new 3D brand identity and styling, manufacturing efficiency and range commonality.



Setra

superstar

Evobus



Evobus Mercedes-Benz Setra

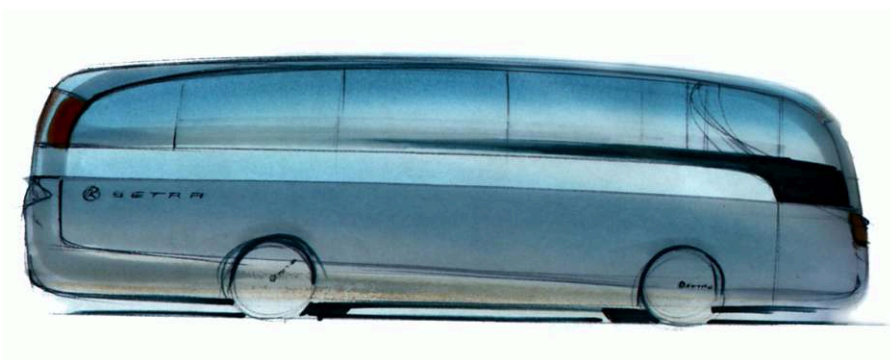
Luxury coach exterior concepts

Design Triangle produced advanced styling concepts for the luxury coach brand Setra.

Various elements from these proposals were subsequently incorporated into production models by Setra's in house design team.



Design detailing



Setra
Setra
Setra
Setra
Setra

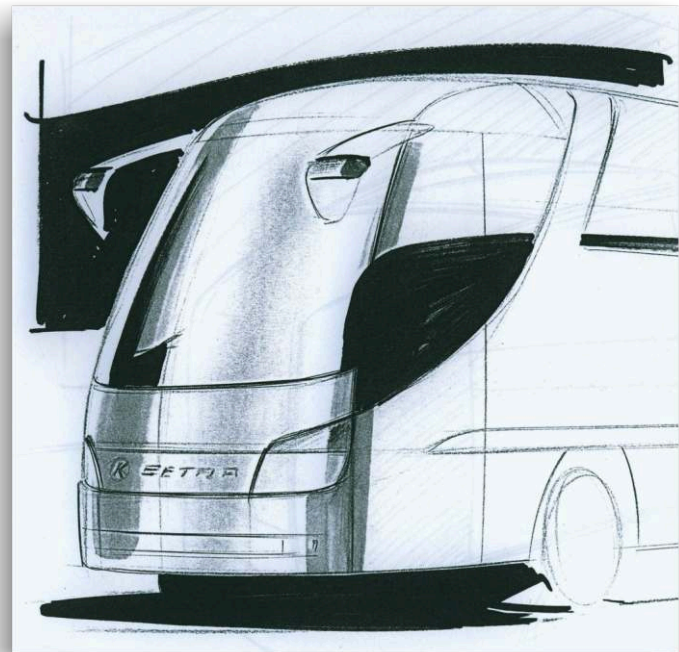
This sketch programme was used by Setra to explore new design language for what was to become the Setra TopClass family. Moving away from established styling cues isolating the drivers cab from the saloon, to a more 'emotional and 'flowing high speed aesthetic.

Design study areas included:

- exterior forms and development of new styling cues and surface treatments that reflected the Setra luxury brand values
- driver's workstation, console design and definition of personal space
- new design language for integrated mirrors
- wheeltrims
- lamp clusters
- exploring styling themes such as 'aero' 'emotion' and 'captains of the road'

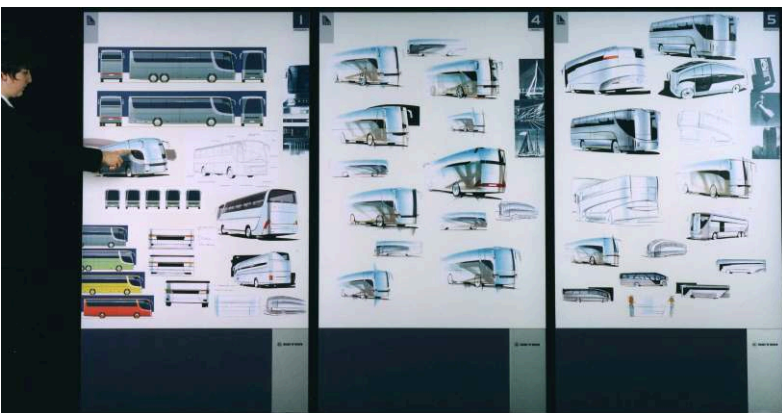


Production design



Selected design sketch

Director level sketch design presentation



DESIGN TRIANGLE



APTS – Phileas

Very Light Weight Electronically Guided Hybrid Bus

Background to the project

Design Triangle were asked to assist a consortium of Fokker Special Products and Stork RMO with the design of trams for Amsterdam. These Velocity trams were based on an innovative super low weight and low cost bonded composite sandwich construction.

A licence to this innovative body construction was sold to APTS-BOVA and used for an electronically guided hybrid bus project for Eindhoven.

Project brief

Design Triangle was asked to assist APTS and the town of Eindhoven with design and design management of this bus.

Design Triangle designed the interiors of the Eindhoven buses; the exterior was produced by an APTS in house designer.

When APTS went on the international market with this innovative bus, Design Triangle designed a new version for the bus front exterior. Consequently, APTS sold 25 buses to Douai in France and 50 to Turkey.

Project objectives

To create an exterior and interior design for this guided bus which made it look as much as possible like a tram, to blend with an existing tram system.

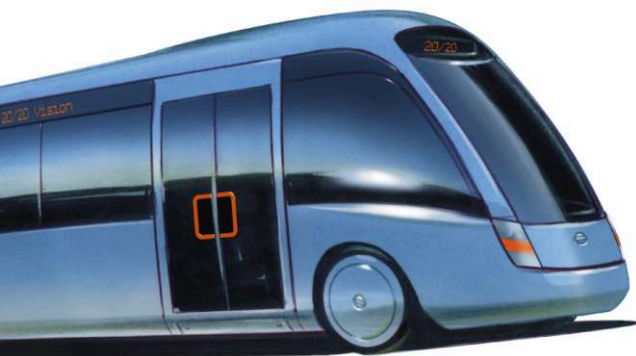
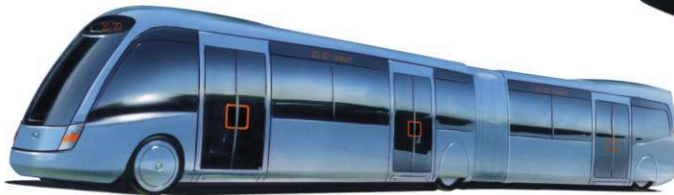
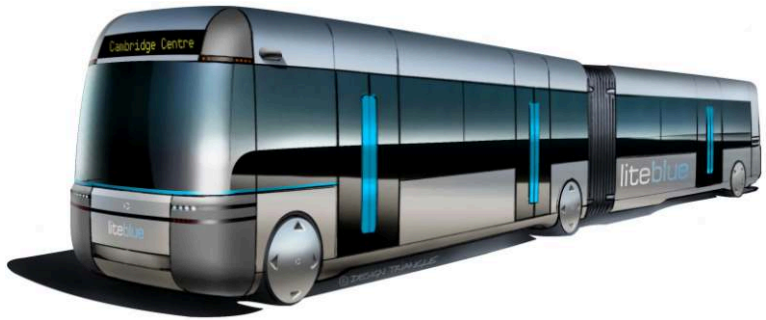
APTS
ORLEANS

Methodology

- tender design
- design and engineering development
- design management – Bus Eindhoven
- exterior bus front concepts
- exterior design development

Business benefits

The new front end design was one of the reasons why Douai placed the order with APTS.





GVVU Bus

Design consultancy and livery design for new double articulated Van Hool Buses

Design Triangle created a unique livery for the new articulated vehicles. The aim was to visually reduce the perceived length of these vehicles in order to gain public acceptance.

The livery design was considered so successful that it has now been applied to the entire GVVU vehicle fleet performing a key role for the GVVU brand.

Design Triangle have also advised GVVU on colour and trim specification and detail design of OEM interior components including - seats, handrails, draughtscreens, ceilings etc



Bus

Marshall SPV



Marshall SPV

Marshall C32-C37 bus front and exterior facelift

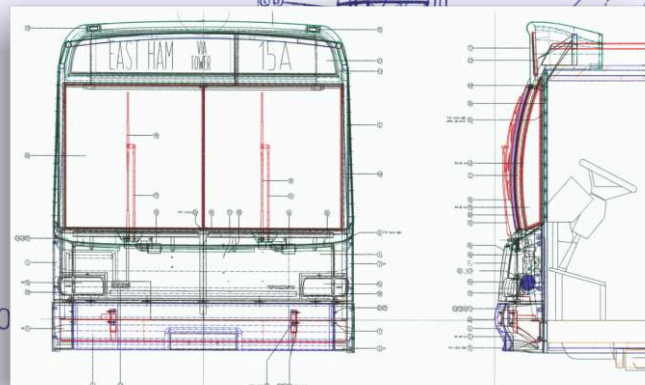
Marshall SPV asked Design Triangle to restyle the front of the Carlyle Dart midibus to achieve a more attractive appearance and an enlarged destination display. Marshall applied various constraints, including that the heavily curved Carlyle windscreen glass had to be retained.

Design Triangle produced concept designs to achieve a contemporary and friendly appearance whilst respecting the constraints. Changes to the front-end framework were also kept to a minimum.

The new front end consisted of a number of GRP mouldings, designed for ease of assembly combined with ease of replacement in case of damage. Off-the-shelf lamps were used, to avoid tooling costs.

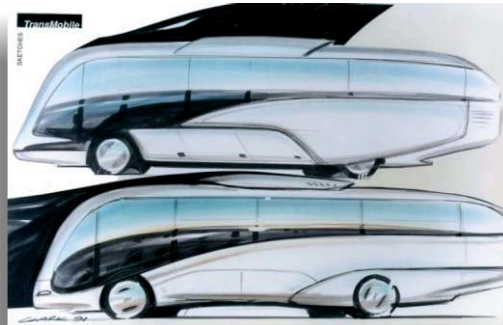
Design Triangle produced the new design

and developed it through to manufacturing drawings of the framework and mouldings, all assembly drawings, subassembly drawings and bills of materials.



VIEW ON NEAR SIDE

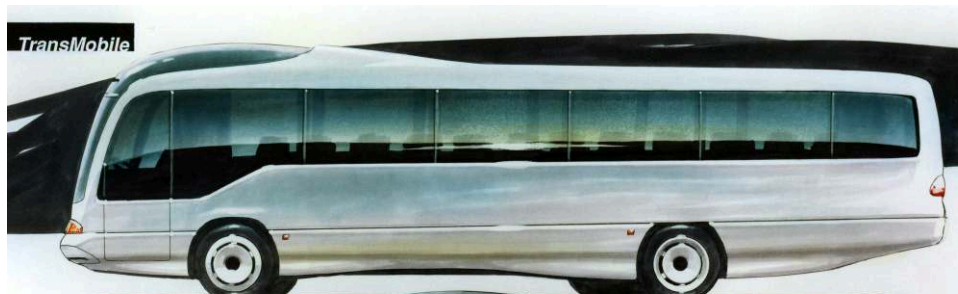
STARTUP



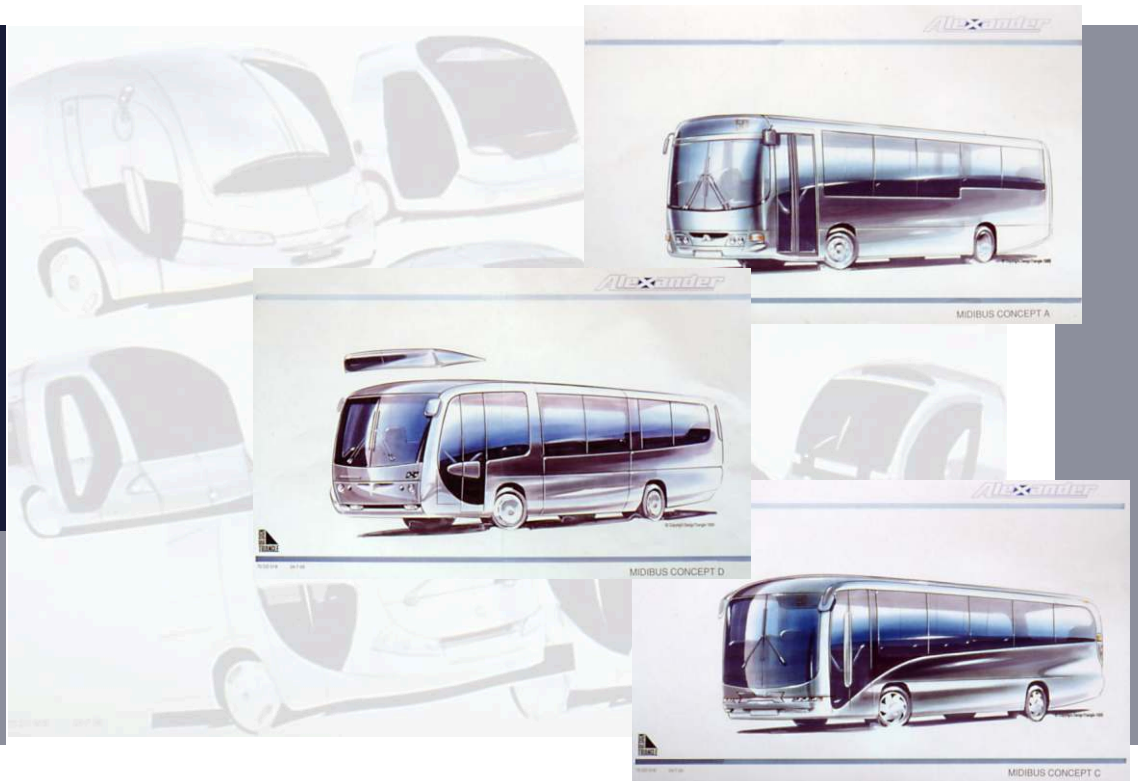
TDC Vehicle Engineering Transmobil Bus

The designs had to look modern, despite the high ground clearance chassis, but had to use simple manufacturing techniques.

TDC Vehicle Engineering (Pvt) Limited of Karachi asked Design Triangle to prepare concept designs for a new bus range to be based on existing conventional chassis frames.



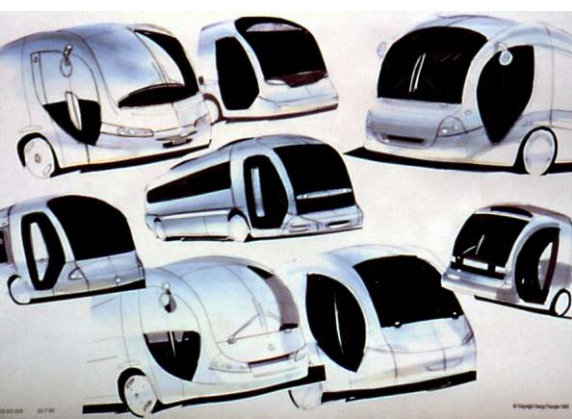
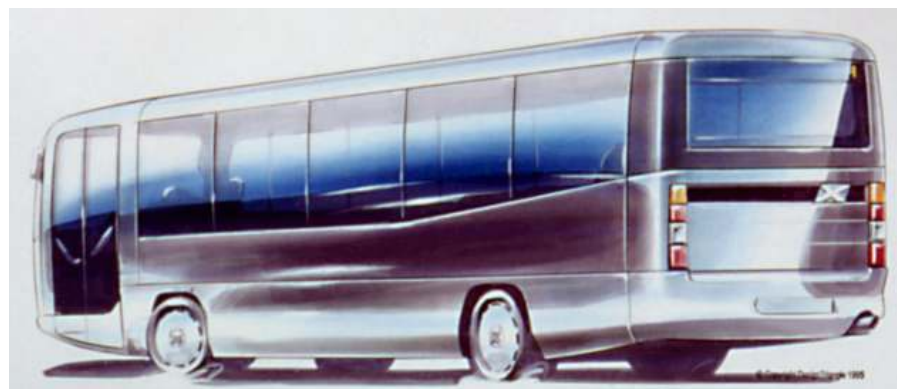
Alexander

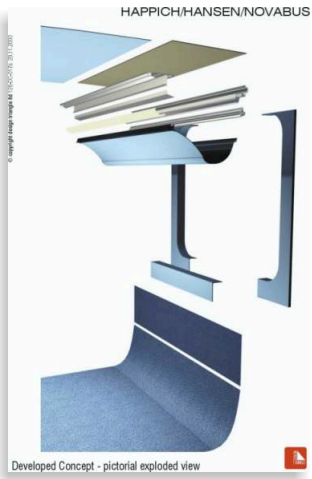
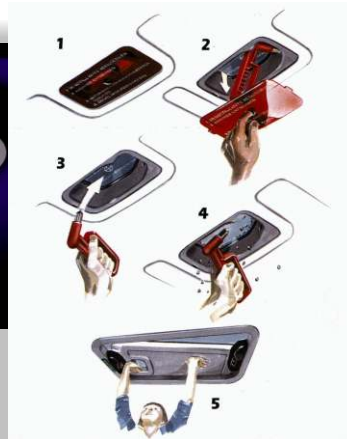


Alexander
Midibus exterior concepts

The aim was to build a set of distinctly recognisable 'Alexander' styling features whilst maintaining levels of modularity.

Design Triangle produced a number of tender design proposals for the Alexander Midibus.



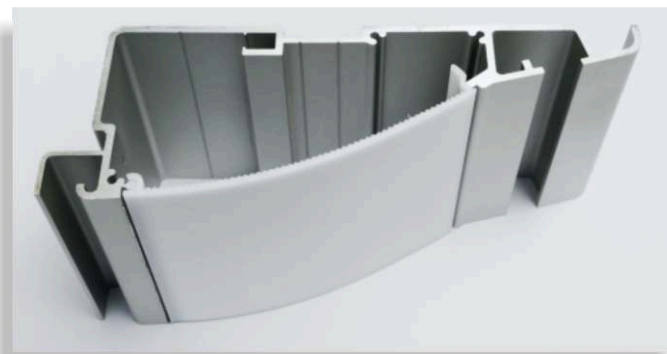


Bus components

Design Triangle have designed a wide range of components for bus and coach, including

- Esteban Ergos coach seat range
- Esteban Civic bus seat range
- Esteban Ciclo bus seat range
- Happich escape exit roof hatch range
- Happich modular ceiling systems
- Invertec ceiling lighting units
- Overton modular door system
- Mercedes Benz seat recline components
- Kässbohrer Setra seat slide components

Design Triangle's team of industrial designers, engineers and ergonomists ensure that our designs are innovative and attractive, yet practical to manufacture and in service.



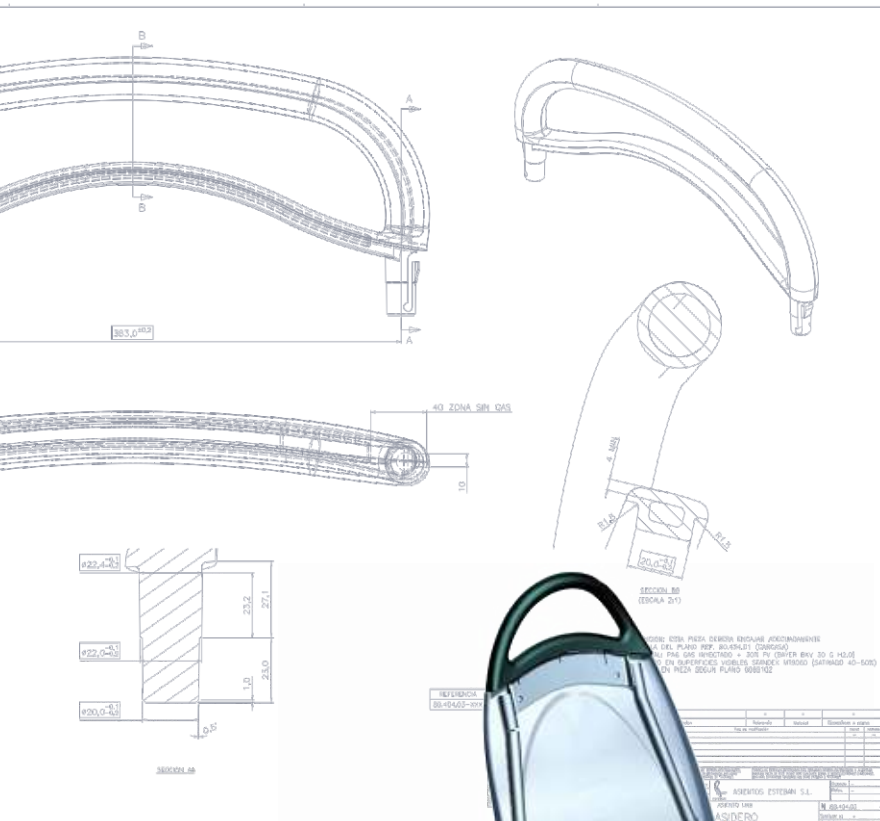
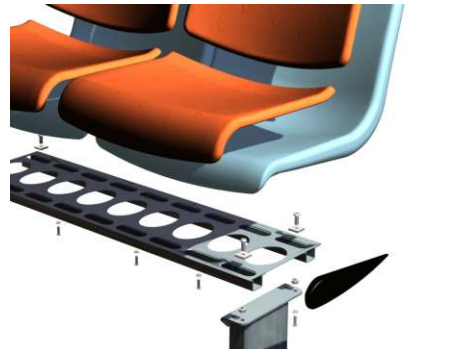
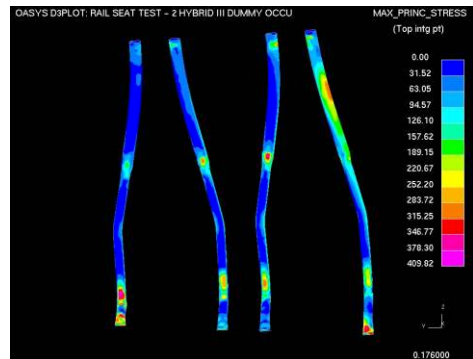
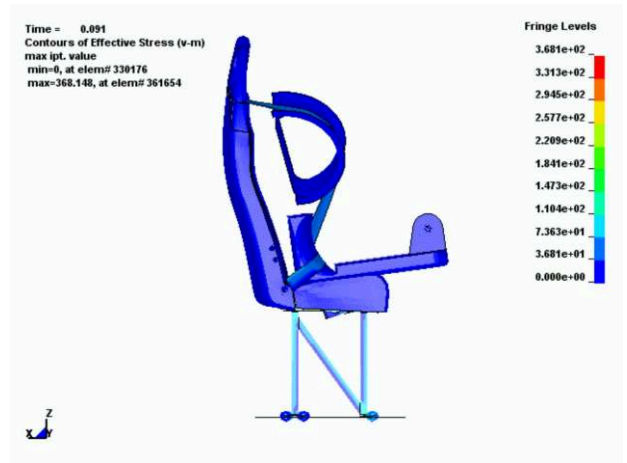
Best selling lighting unit for Invertec, used by Alexander and Wrightbus



3D DESIGN

Design Triangle provides a full service, developing components from concept ideas through to engineering data, manufacturing drawings and prototypes:

- ergonomics
- idea generation
- design concepts and idea evaluation
- 3D CAD models and animation
- form, detail, colour and finish development
- textile design
- engineering design
- design for manufacture
- material and process selection
- FE stress analysis
- 3D CAD tooling data
- manufacturing drawings
- bills of materials
- prototypes and testing



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