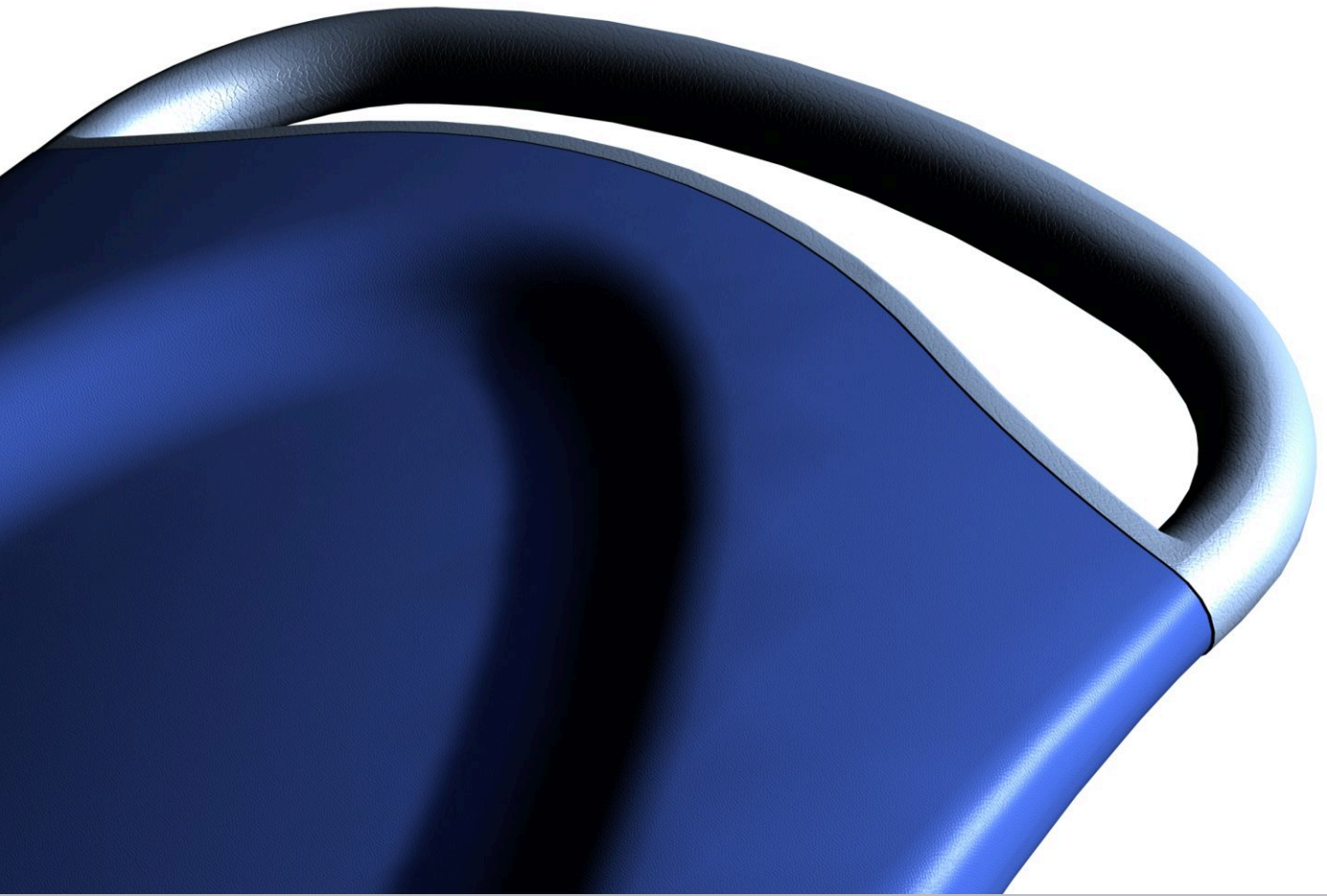


SEATING DESIGN SERVICE



design.engineering.ergonomics

CLEAN SHEET OF PAPER TO PRODUCTION

Part of Design Triangle's industrial design and engineering service to the public transport industry is a full seating service, handling seat design programmes from conception through to production.

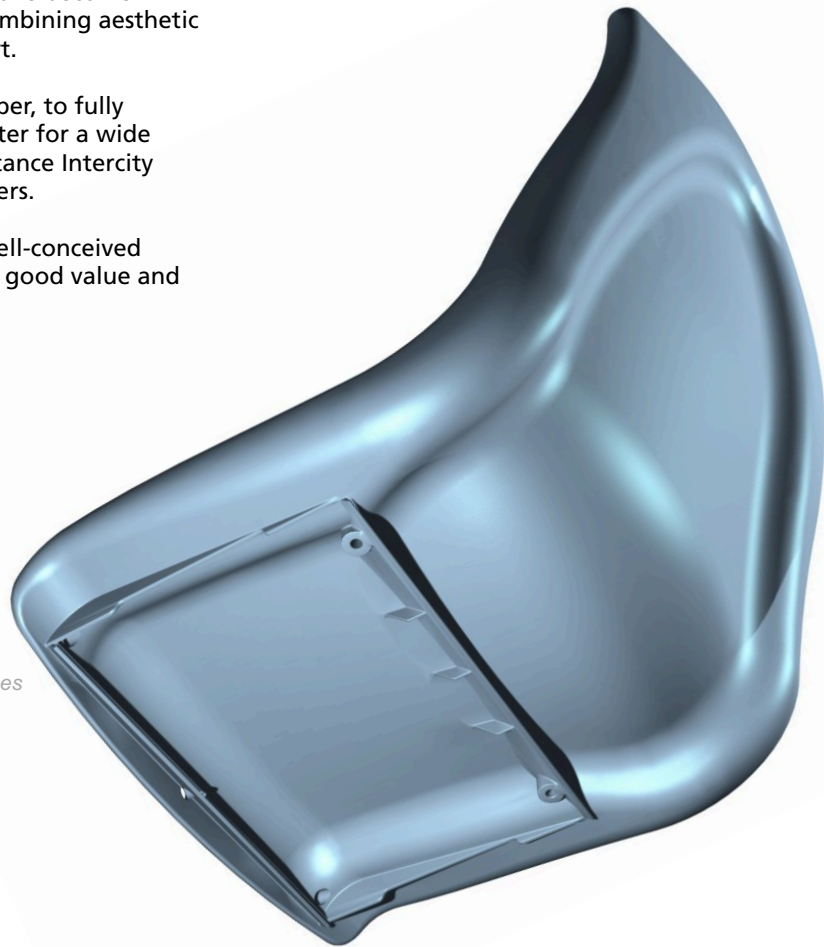
Our clients include seat manufacturers in the bus, rail and coach sectors as well as rail vehicle operators and passenger transport authorities.

Since 1986, many of our designs have become successful commercial products combining aesthetic appeal with reliability and comfort.

Working from a clean sheet of paper, to fully working prototype our designs cater for a wide range of end users. From long distance Intercity passengers, to metro users or drivers.

Our aim is to provide attractive well-conceived designs that are comfortable, and good value and easy to maintain for the operator.

Concept design sketches



Fully engineered prototypes

ENGINEERING EXCELLENCE



CAD modeling of full assemblies

A good idea is not enough in itself. It has to be transformed from sketches and drawings into a real successful product. Teamwork turns dreams into a reality.

All seating design projects are led by our experienced engineering design team. Ensuring that the correct structures and processes are selected for the manufacture of the seat.

Our 3D CAD service provides accurate translation of a design concept into useable, manufacturable data. The true value of a seat lies behind the surface. In daily use a well conceived structure will ultimately prove the success of the design.

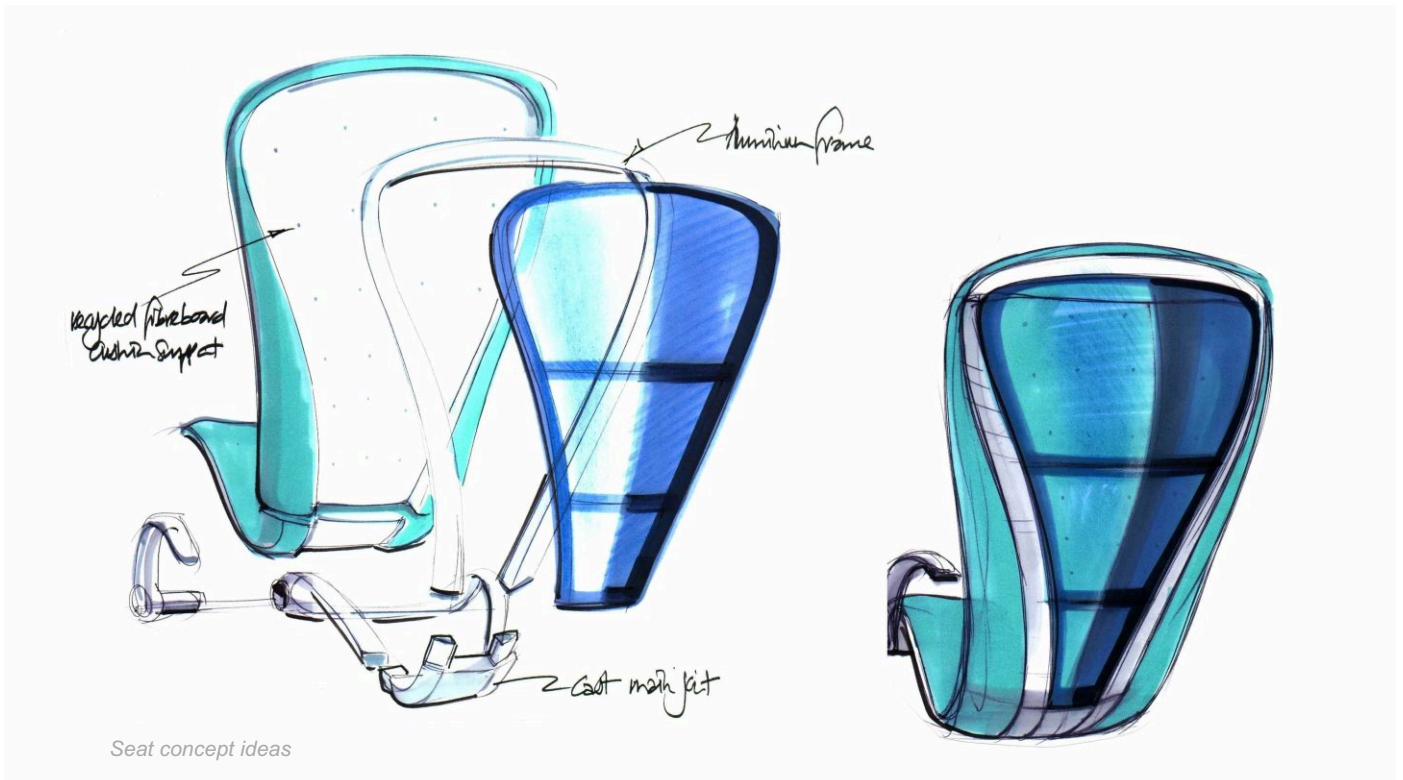


SLS rapid prototyping

THE DIFFERENCE DESIGN MAKES

Design is the art of turning ideas and expectations into attractive quality products, which are fit for purpose.

Seats have been produced for a few thousand years. However, there are always new requirements, and new problems that have to be solved, such as weight reduction, minimum seat pitch, and cost price. It is the art of design, and creativity, which combine these often conflicting objectives into coherent attractive new form, conveying the proposals to the client by means of explicit drawings and sketches.



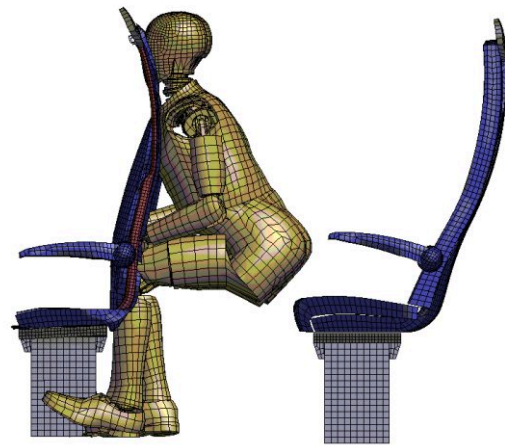
TESTING TO THE LIMITS

Innovation in seating can only be achieved against strict safety criteria.

Comfort is not left to chance. Ergonomics plays a central role in the development of public seating.

Calculations, computer modelling against the safety and strength requirements are parts of the engineering development process.

However, in the end, it is bench testing of prototypes, which can prove that the design is meeting the standards.



Crashworthiness Analysis using LS DYN



Static Load Testing

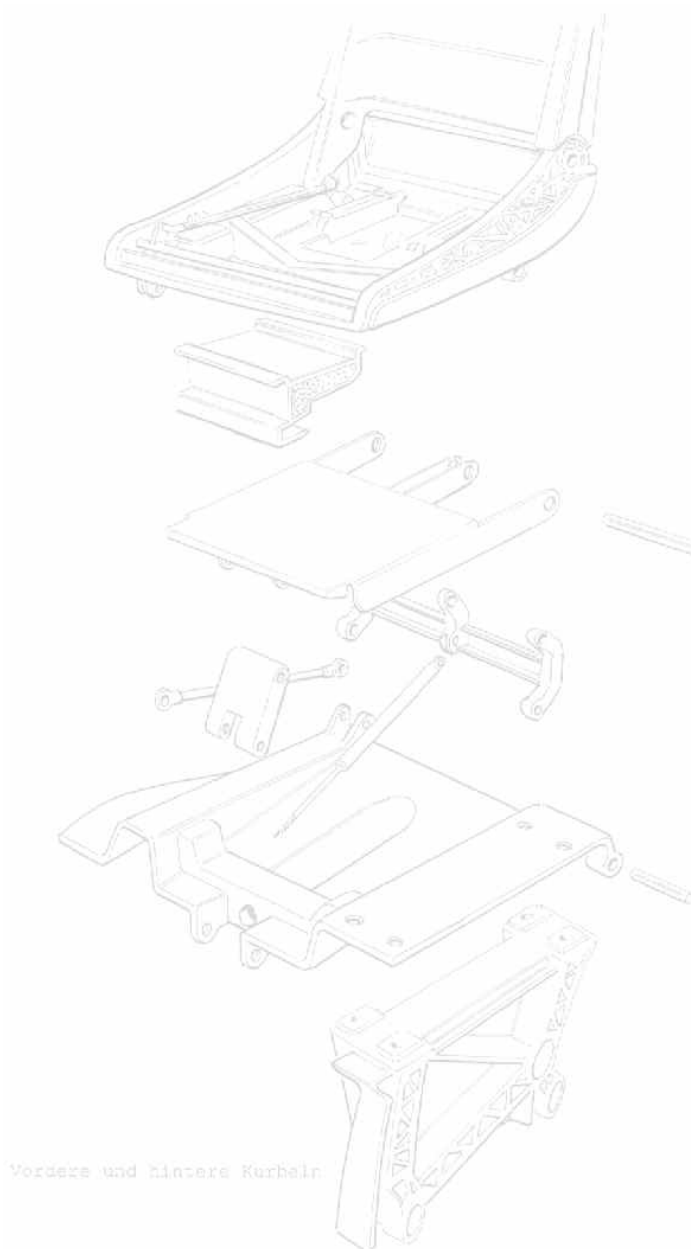
ASSEMBLING KNOWLEDGE

Quick and easy assembly are vital for cost efficiency as well as maintenance.

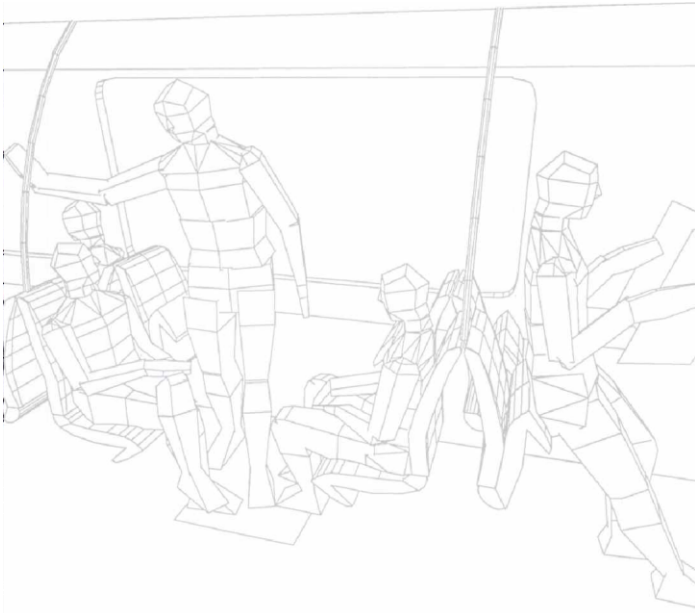
All seating design projects are led by our experienced engineering design team. Ensuring that the correct structures and processes are selected for the manufacture of the seat.

Our expert engineering service ensures the accurate translation of a design concept into a product, which is fit for purpose and easy to manufacture.

Our 3D CAD service provides accurate translation of a design concept into useable manufacturable data. The true value of a seat lies behind the surface. In daily use a well conceived structure will ultimately prove the success of the design.



ARE YOU SITTING COMFORTABLY



The prime objective of a seat is to provide comfort for the passenger.

Comfort wise, there is of course a difference in usage between intercity train or long distance coach seat and a metro or local bus service seat. In the first type, you will be sitting for three to four hours in your seat, while the metro journey may only be for a quarter of an hour.

It takes a lot of experience, ergonomic knowledge and research to get every type of seat right. Design Triangle has managed to design "hard" tram and bus seats that were amazingly comfortable and long distance train and bus seats which were still comfortable after four hours. For the latter, we ran 4 hour-long user trials in mockups of the seats which were adjustable. In the meantime, the subjects of the trials were kept entertained with videos, etc.

Detailed ergonomic research, rigorous design scrutiny and evaluation leads to the optimal seat.



Ergonomics user trial

PRODUCING THE GOODS

Efficient teamwork of an integrated group of designers, engineers and ergonomists turns dreams into reality.

Design Triangle has a long track record, and has been involved in many seat design projects, 10 of which are currently in successful production.



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