Product life cycle
Case study

Auditorium seating

Where?

SR seating Pvt. Ltd

Manufacturers and consultants specialised in Auditorium and theatre seating, established in 2013. Currently located in Nelamangala.

What?

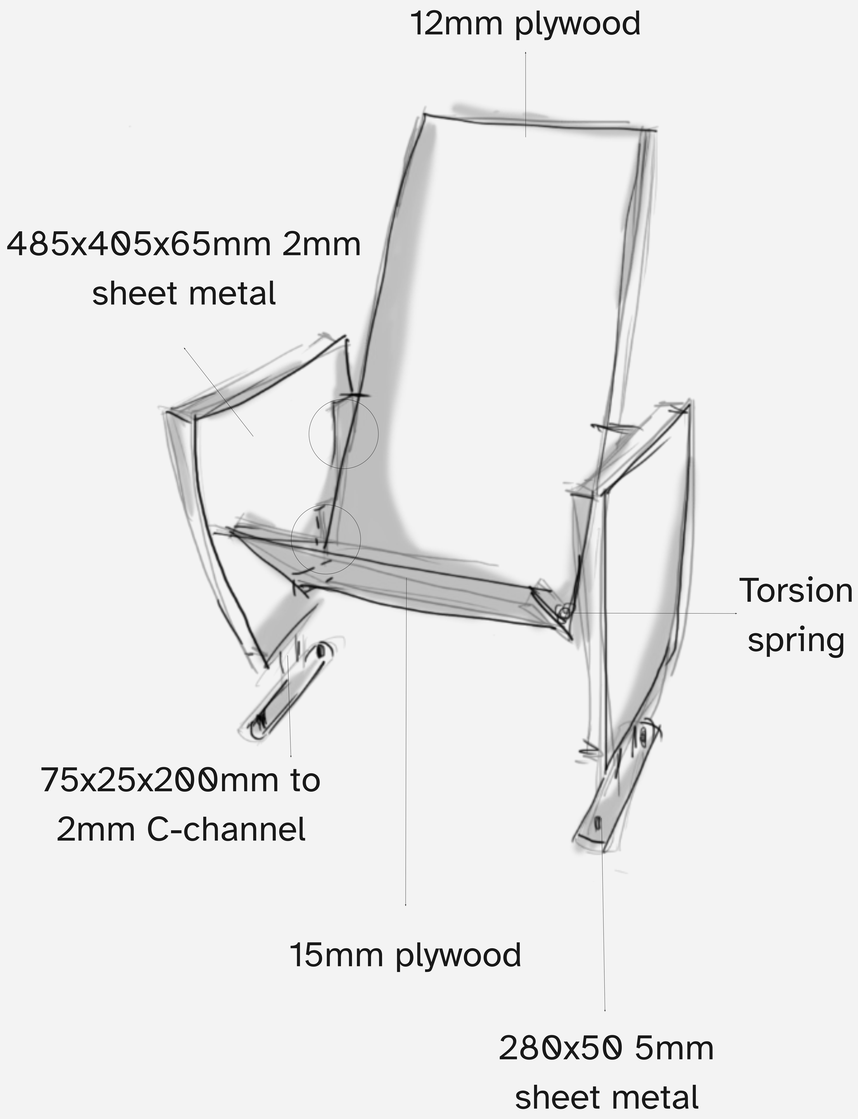
Tip-up and back fixed mechanism chair with concealed writing desk for IISc Auditorium.

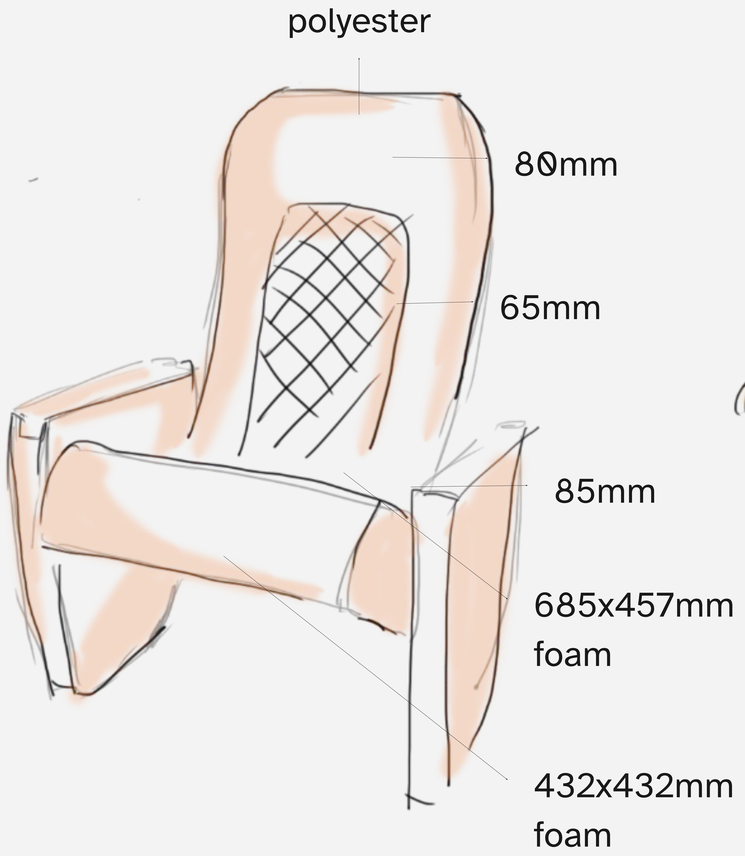
INR 12000/ unit

Around 500 units

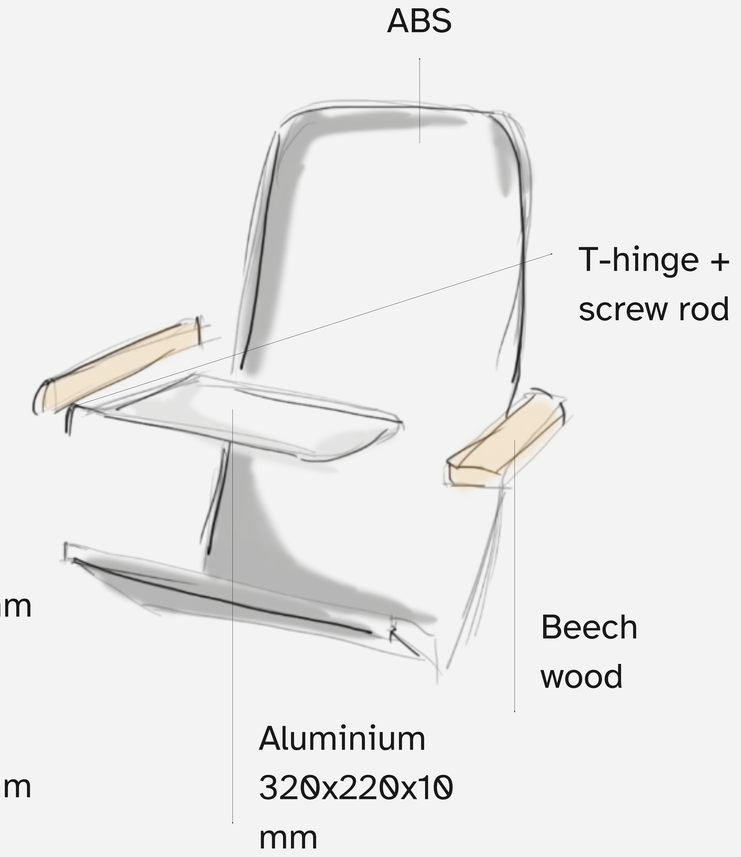
How?

Designed using Indian anthropometric dimensions
Focus on neck, underthigh and lumbar supports
Additional feature
Compact





Back push box: 180x60x20mm sheet metal box to 95x25mm L-bracket + 2 slot holes



Tip-up box: 180x60x20mm sheet metal box to 95x25mm L-bracket + 2 slot holes

Production

Raw materials

Manufacturing process

01

02

Distribution

Packaging

Storage

Transportation

Operation

Assembly

Maintenance

03

04

Reuse

Upcycling

Disposal

Raw **Materials**

Local

(Imported)

Wood

- High pressure and induction heated plywood with hardwood veneers
- 12mm for back, 15mm for seat
- Beech Wood/Teak Wood is used.

(Reliance Industries)

Fabric

- 1 to 1.1 mm thick polyester
- Strong
- Durable
- Inexpensive

Foam

- Polyurethane foam
- 50-55 kg/cu.m

Raw **Materials**

Local

Local

Local

Metal

- HRCA/CRCA sheet metal (IS 2062-2011, IS 4923-1997)
- 2mm HRCA for mechanical components
- 2/5mm for others

Plastic

- 2mm ABS (Acrylonitrile Butadiene Styrene)

Aluminium

- 6061 aluminium
- High strength and durability

Manufacturing **Process**

01

Cutting

Sheet metal is cut/punched/blanked using CNC laser cutting machine

02

Bending

Cut parts are bended using NC Sheet metal bending machine

03

Riveting

Parts are joined using automatic riveting machine

04

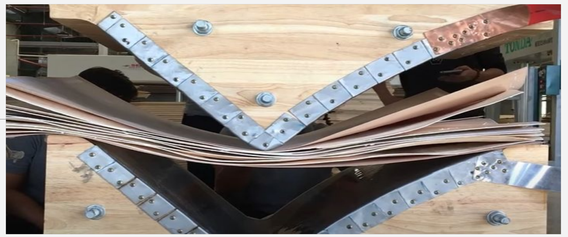
Welding

Mig welding is used to weld parts together

05

Bending

Plywood is bent using plywood bending machine



06

Cutting

Foam cutting is done with the help of saw blade vertical foam cutting machine

07

Molding

Back cushion Housing for the chair is produced using ABS molded vacuum forming

08

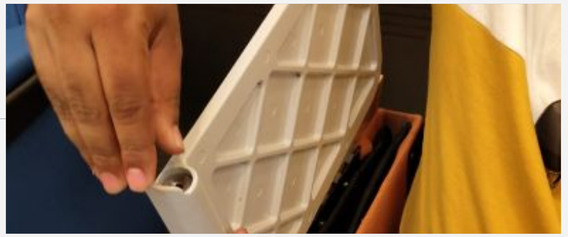
Sewing

CNC Upholstery sewing machine is used to create 3D raised designs on the polymesh cloth

09

Casting

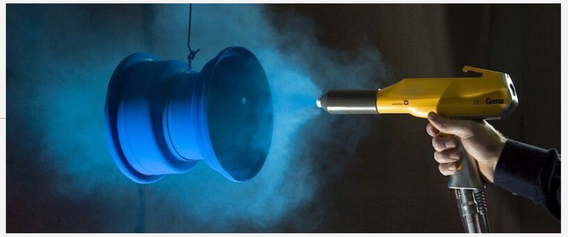
Writing tablet is made using Die casting machine



10

Finish

All sheet metal parts are powder coated
Electrostatic epoxy
Thickness- 70-80 microns



Distribution Process

Packaging

Packaging is done after all the components of the respected chair are in ready to be installed stage.

Storage

The packaged goods are stored in a warehouse inside the facility until its taken out for delivery to the specific location.

Transportation

The chair manufacturers themselves delivers the packaged seating components to the place of installation.

Packaging

- The components of the chair are packed in a single box to avoid confusion in a corrugated box (5ply-7ply depending on the weight).
- The disassembled parts are wrapped separately by bubble wrap.
- Cushions are packed in a plastic bag (one time use plastic is avoided)..
- Screws and other fitting components are packed in a small bag which is labelled respectively.
- Manual for fitting will be with technical team who works on-site.

Storage

- The packed chair box is labelled according to serial number and model.
- The details of delivery are stamped on the box.
- Then it is moved to the warehouse next to the manufacturing unit .
- After completion of the required order ,these boxes are moved to the concerned trucks.

Transportation

- The manufacturer himself delivers the chairs to the location.
- Transportation and installation is done by the dedicated technical team.
- As our chair ,which is selected here is for the auditorium of IISc ,the installation and transportation are simultaneously co-ordinated .
- The respected manufacturer delivers the products globally.

Operation

- Assembly- they also provide the service of installing
- According to SR Seating, chairs are designed to be in use for 15-20 years.
- ‘Abuses’ are taken into account while designing

Operation

- Assembly- they also provide the service of installing
- According to SR Seating, chairs are designed to be in use for 15-20 years.
- ‘Abuses’ are taken into account while designing

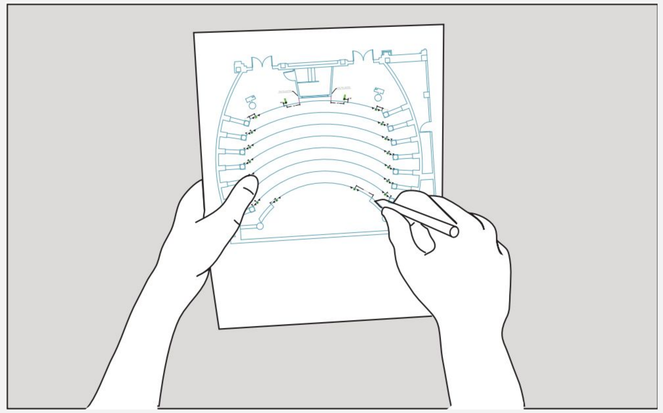
Operation

- Assembly- they also provide the service of installing
- According to SR Seating, chairs are designed to be in use for 15-20 years.
- ‘Abuses’ are taken into account while designing

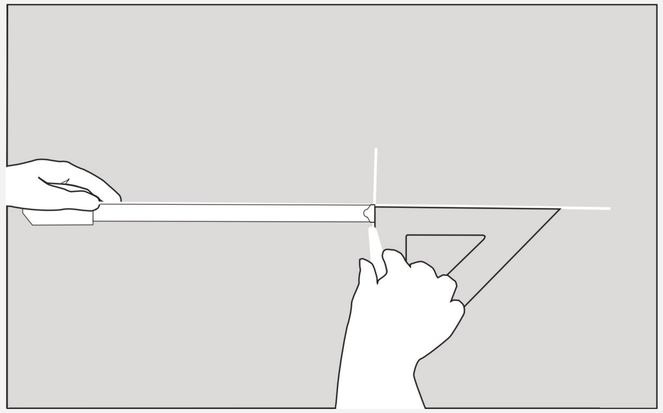
Operation

- Assembly- they also provide the service of installing
- According to SR Seating, chairs are designed to be in use for 15-20 years.
- ‘Abuses’ are taken into account while designing

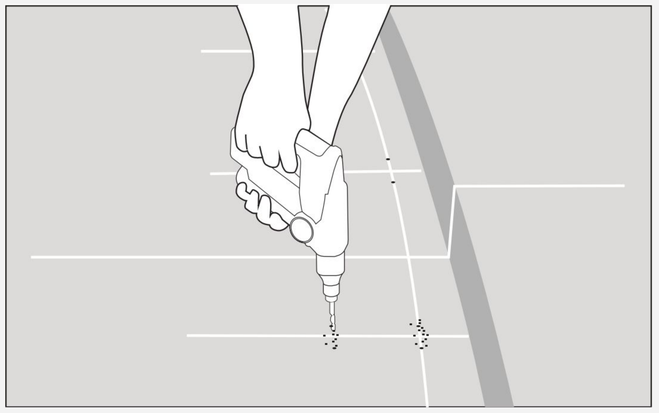
Installation at site



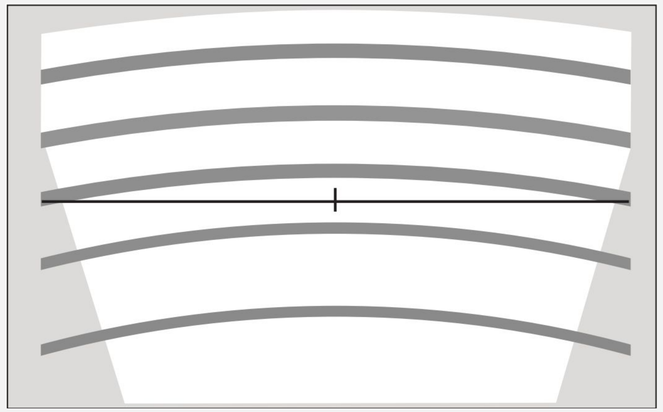
Seating arrangement is made according to the site



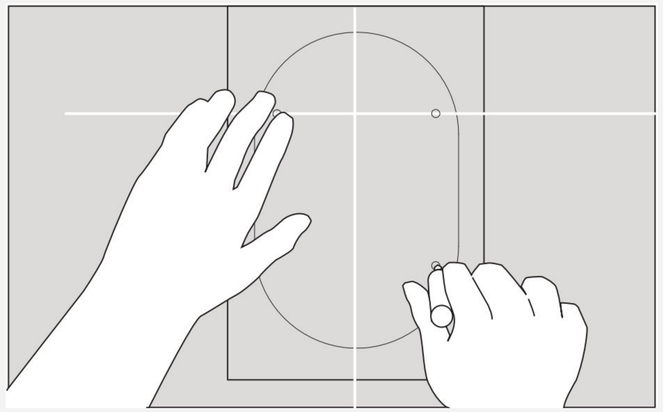
Centre of holes for base mount is drawn



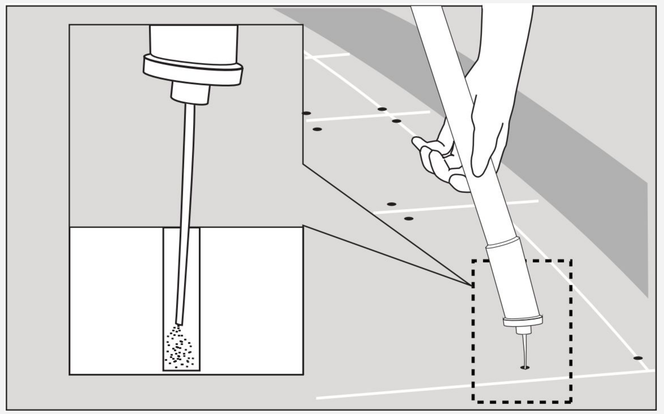
The carpet is cut, and the floor is drilled



Site is measured and marked for installation



The drill holes are marked with base plate in place



Debris is removed and installed to the flooring with the Chemical anchoring. (M10 x 100 mm).

Maintenance

- Chairs can be cleaned using vacuum cleaner and upholstery can be detergent cleaned
- Self-lubricating plastic is used for bearings
- Mechanisms are closed hence, no need of lubricating

Reuse

- Usually its the fabric upholstery that is prone to wear and tear
- Chairs from tier 1 cities are resold to tier 2 or tier 3 cities, with upholstery change.

Thank You