



“Shaping ideas into reality”



ISO 9001:2015 Certified

COMPANY PRESENTATION



Company Introduction



- TrioVision is established to address growing needs of advanced composite technologies for Indian and Global Market.
- It is nurtured by individuals having vast experience both in industrial and academic background.
- It is one of its kind located in Kopparthi Mega Industrial Park of Kadapa city which is South Central part of Andhra Pradesh state which will provide **engineering, tooling & manufacturing** solutions for composites using advanced technologies under one roof .
- It is the first Indian company using Advanced Robotic Machining Technologies in composites industry.
- Production facility spread across an area of 25,000 SQM (2,69,098 SQF).
- **TrioVision is one of the three ZED certified supplier in Andhra Pradesh and also certified by ISO 9001:2015 by QMS**



Advantages of Composites



- Various complex shapes can be processed with intricate details unlike metal parts.
- With proper reinforcements & Glass contents, high strength parts can be engineered offering alternative to metals at half of its weight.
- Composites offers varied type of finishes- Matt/Texture/Gloss/Painted.
- Additives can be used to offer low smoke & fire resistance features especially for the ever growing mandatory requirements in railway / Automotive industries.
- They offer very good chemical, electrical and UV resistance.

Our Location

- Kadapa is strategically located to be the epicentre of South India equidistant to major cities- Chennai (250 km), Bangalore (240 km), Amaravathi (400 km) & Hyderabad (400 km)
- There is vast availability of skilled resources.
- 24 x 7 water and electricity availability in the industrial park.
- Vast availability of land for easy expansion.
- Expansion plans in the way for Kadapa domestic airport.
- Close proximity to Chennai Port.
- Close proximity to Sri City, Tada.



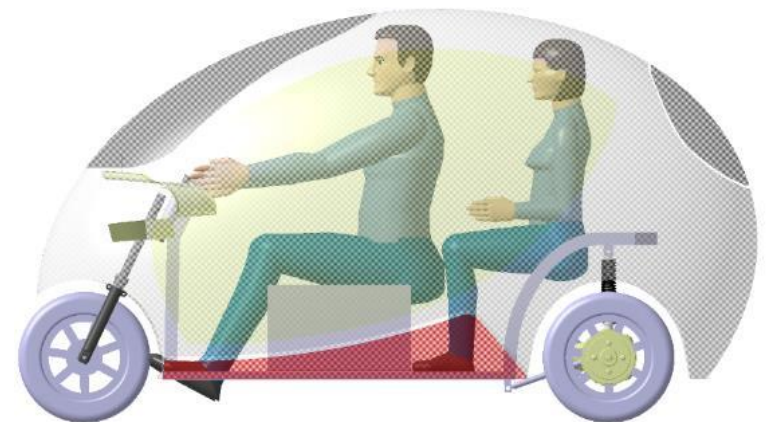
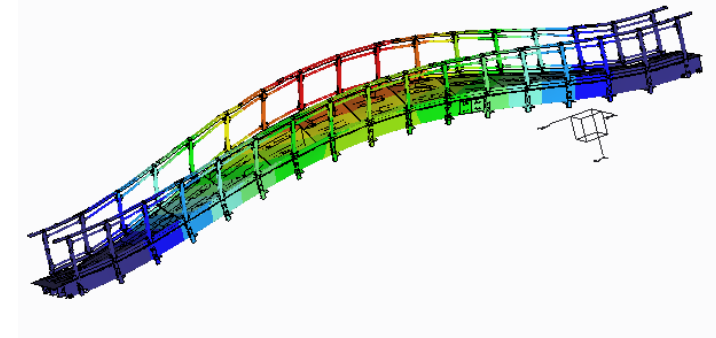
Target Industries

- Infrastructure (Domes, Roof Claddings, Airport Housings, Chemical Tanks, Electrical Enclosures)
- Railways (Interiors, Exteriors & Front Ends)
- Automotive (Bus/Car Interiors, Bus/Car Exteriors, Front & Rear Ends, Dashboards)
- Wind Energy (Nacelle covers, Nose Cones & Blades)
- Automatic Toilet Cabins
- Marine (High speed boats, floating dock yards)
- Aerospace (Interiors, Fuselage, Toilet cabins)
- Defence (Missile covers, ballistic cars, bulletproof jackets)
- Tooling & Prototyping
- Waterslides & Parks



Design & Process Engineering Capabilities

- The company has well qualified technical team to handle Composite Design & Analysis.
- We can advice optimised layups and processes and thoroughly analyse Design For Manufacturability in the initial phase of engineering.
- We can meet different fire and smoke properties for various standards using wide variety of glass and resin.
- We also do industrialized jigs and fixtures during prototype stage which would assist to produce defect free parts in serial production.
- Various foams as reinforcements can be engineered depending on project requirements.
- We have capabilities to fully design Train/Bus Interiors, Exteriors, Automatic Toilet Cabins, Wind energy Nacelle covers, Nose cones & Blades.



Tooling Capabilities

- We have two CNC routers from Flexicam and 8 axis Robotic Milling which can produce large parts.
- We use advanced manufacturing technologies to produce extremely accurate and robust molds.
- The raw materials are carefully chosen for pattern and mold making.
- The coatings used for pattern is easy to sand and will give excellent gloss properties.
- The raw material for producing molds have excellent zero shrink properties and the gelcoats have excellent gloss retention to produce high quality and accurate parts.



Robotic Machining Technology

We use advanced 8 axis robotic machining technology from CNC Robotics (UK) with 6 axis robot from Kuka (Germany), 7th axis linear track, 8th axis rotary table offering extreme flexibility in reaching any complicated shape in our tooling department.

Patterns as big as 15 meter (long) x 3 meter (wide) x 3 meter (height) can be machined in single piece for high precision.

We use advanced offline robotic software technologies from Delcam (UK).

The machine is equipped with Kuka CNC functionality where the robotic system starts behaving like CNC machining using similar strategies to achieve very good surface finish and accuracy.



CMM arm for Quality Inspection

- Quality control is of utmost importance for producing precision parts.
- We use Romer Absolute Arm from Hexagon Metrology for inspecting our patterns and molds in our tooling department. Range is 4.5 meter which is the highest in industry with +/- 0.179 mm accuracy.
- For bigger patterns we API RADIANT laser tracking with the range of 160 mtrs
- 3d CAD model comparison and geometrical measurements can be made using Powerinspect software from Delcam.
- 3d Scanning option is available for reverse engineering requirements where 3d data needs to be restored from existing components.



Tools produced for various industries



Various Processes at our facility

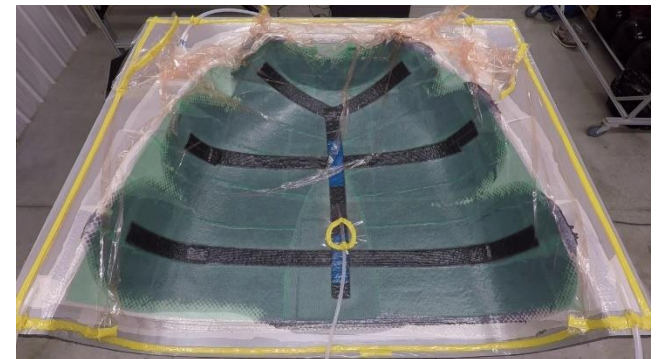
- Hand Lamination : Manual process where only one side mold also called open mold is used. It is a labor intensive process. Glass reinforcement is placed and resin is rolled in several steps to achieve desired thickness



- Resin Transfer Molding : Uses both A side & B side mold where desired cavity is achieved in closed condition. Glass reinforcement is placed in the mold and resin is injected using machine.



- Vacuum Infusion : Uses one side mold which is A sided but B side is polythene bag. Glass reinforcement is placed and pressed by vacuum bag and resin is injected using gravity.



Production Facility

We have world class infrastructure to make Railway, Water slide and Nacelle components such as Painting Booth, Bonding room, Trimming booth and Gelcoat Booth .

Paint Booth (6m x 5mx 5m)

Vertical down draft paint booth which sufficient to paint big front masks



Bonding Booth

Temperature controlled room to bond structural brackets to FRP components



Trimming booth

Sophisticated dust extraction system to extract trimming dust.



Production Facility

Gelcoat machine and LRTM machines were used for the productivity. Key equipment and tools identified , maintenance operations and verifications performed as per schedule



Gelcoat spray system



Chop spray system



Resin Transferring machine



LRTM Machine - RT

Export Projects - Montreal-Canada metro & Sydney Metro extension

TrioVision is executing Alstom
Montreal Canada metro and Sydney
Metro extension projects

Montreal- Canada metro project

Scope: Nose cone, Driver cabin, Door
pillar, Gangway and Electrical cubicle

Process: Hand lamination

Finish: Paint

Sydney – Australia Metro Project

Scope: Window panels

Process: RTM

Finish: Gelcoat



Manufacturing Projects- Railway

- End Customer- Alstom(Montreal-Canada Metro)
- Scope: 106 train sets Nosecone, Driver cabin interiors, Electrical cubicles and Gang way lining scopes & 18 Train sets of Door Pillar
- The resin system meets EN45545 HL2 FST standard
- All parts are made in high glossy paint
- All parts tooling are engineered in such a way that the fitment was consistent.



Manufacturing Projects- Railway

- End Customer- Alstom(Sydney Metro)
- Scope: 21 train sets of Window panels, lateral seat covers
- We have successfully delivered 2 TS parts to our customer
- The resin system meets EN45545 HL2 FST standard
- All parts are made in RTM process
- All parts tooling are engineered in such a way that the fitment was consistent.





Manufacturing Projects- Waterslide

- End Customer- APAC/APARC Attractions
- 16 Projects handled with close to 2,000 parts in LRTM process.
- Various colors with complex shapes are handled.
- Biggest part produced in LRTM process is 15 square meter.
- Pre assembled and dry fit checked at factory to reduce issues at site.
- Parts exported to several countries.



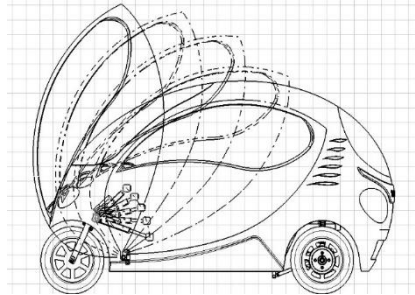
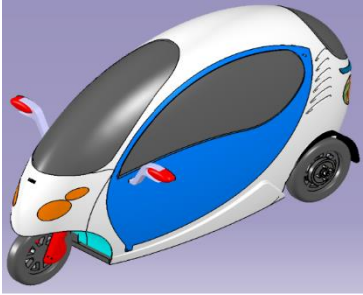
Manufacturing Projects- Traffic Booth

- End customer- Signpost
- Project handled from concept to manufacturing.
- 6.5 ft and 4.5 ft diameter configurations to fit in different locations.
- All components are made in composites.
- 50 booths of 6.5 ft and 130 booths of 4.5 ft are installed and running at several locations of bangalore.
- Has provisions of advanced locking, CCTV and speaker provisions.

Concept to Prototype Projects- Vertical Axis Wind Mill

- Customer: Windstrip LLC
- Power configuration upto 4 KW Wind and 4 KW solar hybrid solution
- Can generate power even at lower wind speeds of less than 2 m/sec
- Comes with a hybrid power electronics solution to address wind and solar peaks.
- Used in remote cell phone tower applications.
- Comes in various sizes to fit power requirement for various applications.





Concept to Prototype Projects- Smart Urban Mobility Vehicle

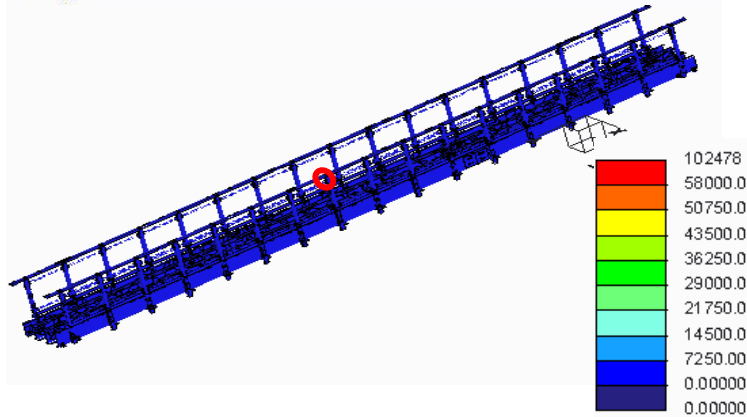
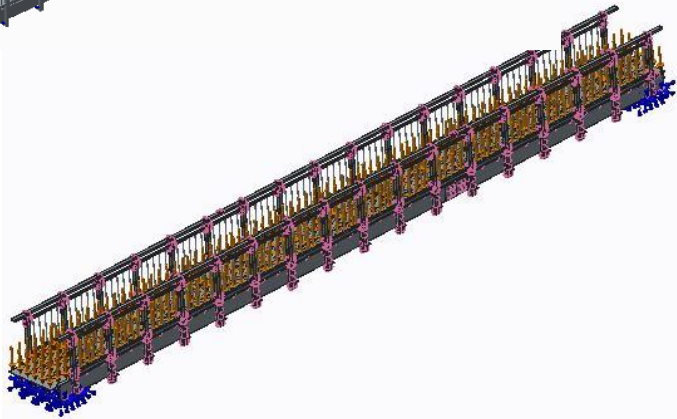
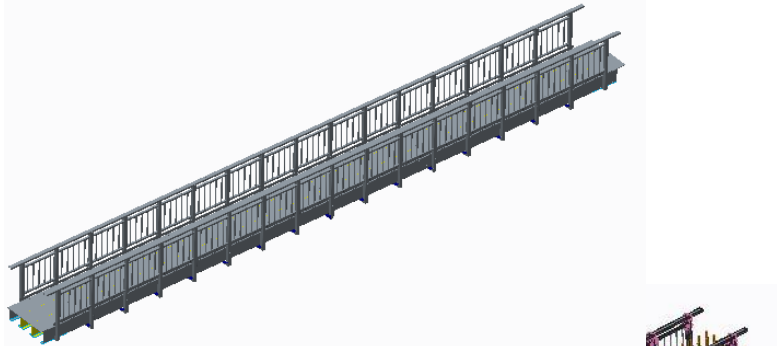
- Customer: Lush Motors
- Three wheeler, two seater configuration to address commuting in city traffic.
- Fully electric with range of 200 km in single charge.
- Fast charging capability to reach full charge in 2 hours.
- Ergonomic design with full body in composites
- Mobile app and touch screen control.



Dimensions(L/W/H)mm	Based on vehicle concepts
Battery Type	48v 100ah, Lithium ion with BMS
Motor	3000w, Dc Brushless
Battery life	800 Cycles
Battery weight	32 kg approx
Charger	Quick DC
Overall weight	420 kg
Pay load	200 kg
Wheel size	14 inch
Range per charge	100 km
Charging time	~2.5 hrs

Concept to Prototype Projects- Electric Auto Facelift

- Customer- Feynman Motors
- Aerodynamic front design compared to traditional autos
- Fully electric
- 100 km range per charge
- Fully made in composites
- Light weight and ergonomic design for 6 passenger seating capacity.



Structural Analysis Projects- FRP bridge

- Customer- ICS Technology LLC
- FRP structural bridge for pedestrian crossing
- Fully composites using pultruded profiles
- FEA analysis is performed and weight reduction of almost 30 percent is achieved with optimized thickness
- Engineering analysis of the bridge approved by American agency.

Honors



2017



2019



Received Best Innovation Award at ICERP 2017 & 2019, Mumbai, India

Address & Contacts



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