

To See This Presentation...

- Click 'Slide Show' Menu
- Click 'View Show'
- Keep Clicking 'Enter' to proceed further
- To see without 'Animation',
Click 'Slide Show', then 'Set-up Show' &
then Click 'Show Without Animation'

Atul Electro Formers Ltd

(Formerly Known as Balaji Composites Ltd)

Pune India

bcl

BALAJI
COMPOSITES
LTD.

**Welcome to the
World of the Composites...!**

bcl

BALAJI
COMPOSITES
LTD.

ATUL ELECTROFORMERS LTD

Formerly Known as

(BALAJI COMPOSITES LTD)

Non-metallic Anti-Corrosive

PULTRUDED

Glass Reinforced Plastic (GRP)
Products

PULTRUSION

bcl

BALAJI
COMPOSITES
LTD.

An ultra-modern Technology for
the Production of composites

Reinforcement of multi-directional
Glass-Fibres impregnated & bound
with a Thermoset Resin System

*Safe and Smart
Wonder Material....*

**PULTRUDED Glass Reinforced
Plastic (GRP)...**

**Choice of the Material
Specifiers of 21st Century..!**

- **Manufacturing Facility** in Charholi (Pune)
- **Pultrusion Machine**- 6"x 20"envelope imported from CPE, USA - **Biggest one of its kind in India, 6"x12", 3"x6" machines**
- **Special Purpose Machines** as Two Spindle Horizontal Drilling & Assembly m/c for Gratings, Multi-blade Slitting m/c, Abrader & Sand Spray Column
- **Pultrusion Capacity** - 2000 Tonnes /Annum
Fabrication Capacity-20000 Sq.. met./ annum

- Corrosion & Chemical Attack, Unsafe Structures
- Electrically unsafe due to conductive structures
- Regular Maintenance required - Down Time & Repetitive Costs
- Replacements - Every 2 to 6 years
- Heavy Structures due to the Over design to Counter Corrosive Attack

Any Solutions to these Structural Problems...?



It's Here....

**A Well Proven Aesthetic
Product in the Severe
Corrosion Attacks...**

Why PULTRUDED Products ?

bcl

BALAJI
COMPOSITES
LTD.

- High Corrosion Resistance.
- Light Weight & High Strength
- Very Long Life without Maintenance
- Fit & Forget Structural Solutions
- Safe, Non-conductive, Non-magnetic
- Low Life-Cycle-Cost per Year
- Flexible Design, Fire Retardant
- Thermally Insulated, UV-Stabilised
- Very Easy to Cut, Fit & Install

Applications

bcl

BALAJI
COMPOSITES
LTD.

Chemical
Offshore
Food
Process
Pulp & Paper
Power
Generation
Mining
Transportation

Applications

bcl

BALAJI
COMPOSITES
LTD.

Petro-Chemicals

ETP

Plating

Desalinization

Engineering

Automobile

Navy

Defence

Product Range

bcl

BALAJI
COMPOSITES
LTD.

- Gratings - Walkways, Maint. & Operator's Platforms, Machine Decks, Floors, Pallets, Covers (for Tanks, Gutters & Trenches etc.)
- Cable Trays Systems - Perforated & Ladder Type with all accessories
- Access Systems - Ladders (Simple, A-type, Extendable etc.), Staircases & Related Structures
- Structural Applications

Typical Product List

- Gateways, Walkways
- Platforms
- Handrails
- Staircases
- Plain/Extendable Ladders
- A-type Ladders
- ETP Structures
- Car Sheds
- Cable Trays & Accessories
- Light Poles
- Picket/ Electrical Fencing
- Drain/ Gutter Covers
- Storage Racks & Pallets
- Roofing Sheets
- Material Handling Trolleys
- Green House Structures
- Cold Storage Structures
- Plating Shop Structures
- Clarifier Structures
- Cooling Tower Structures
- Maintenance Platforms
- Reactor access Platforms

***PULTRUDED GRP is not
Conventional FRP...***

bcl

BALAJI
COMPOSITES
LTD.

<u>PROPERTY</u>	<u>Traditional FRP</u>	<u>Pultruded GRP</u>
Strength	Poor	High
Glass Content	20 to 30 %	50 to 70 %
Fibre Placement	Highly Varying	Consistent
Process	Batch/ Manual	Continuous/Auto
Output	Limited	High Volume
Cross-Section	Non-Uniform	Constant
Quality	Not Consistent	Highly Consistent
Uses	Light Loading	Structural

PROPERTIES Compared....

bcl

BALAJI
COMPOSITES
LTD.

<u>PROPERTIES</u>	<u>GRP</u>	<u>FRP</u>	<u>PVC</u>	<u>M.S.</u>	<u>S.S.</u>	<u>Wood</u>
Specific Gravity	1.7- 1.9	1.4 – 1.6	1.38	7.8	7.92	0.52
Tensile Strength, (N/mm ²)	200 - 650	60-120	44	340	340	80
Flexural Strength, (N/mm ²)	200 - 650	110-190	70	380	380	12
Izod Impact (Kg.m/cm)	1.3 – 2.1	0.2 – 0.6	0.09	1.5	0.53	
Thermal Conductivity (Kcal/hr/m ² /°C)	24.4	7.32	6.4	1220	732	0.4
Coefficient of Linear Exp. (Cm/cm ⁰ Cx10-6)	5.2 – 8.0	20 - 36	37	8	10	1.7
Max. Working Temp. (°C)	130	90	55	600	600	160

Corrosion Resistance

bcl

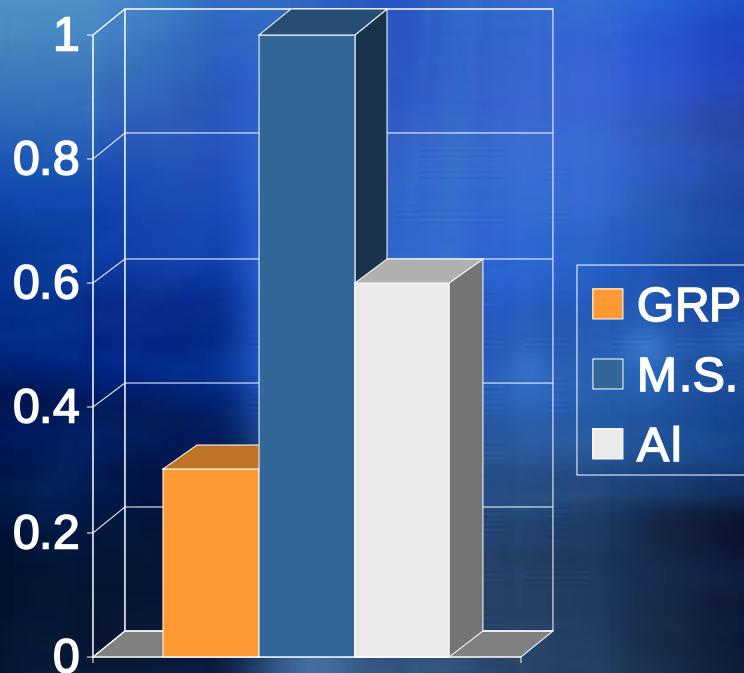
BALAJI
COMPOSITES
LTD.

<u>Environment</u>	<u>GRP</u>	<u>FRP</u>	<u>PVC</u>	<u>M.S.</u>	<u>S.S.</u>	<u>Wood</u>
Acidic	Excellent	Excellent	Good	Poor	Excellent	Poor
Alkaline	Good	Good	Fair	Good	Excellent	Poor
Solvents	Fair	Fair	Poor	Good	Excellent	Fair
Coastal	Excellent	Excellent	Good	Poor	Excellent	Fair
Outdoor Expo.	Excellent	Excellent	Poor	Fair	Excellent	Fair
Effluent Water	Excellent	Excellent	Good	Poor	Excellent	Fair
Steam	Good	Poor	Poor	Fair	Excellent	Fair

Light Weight Application....

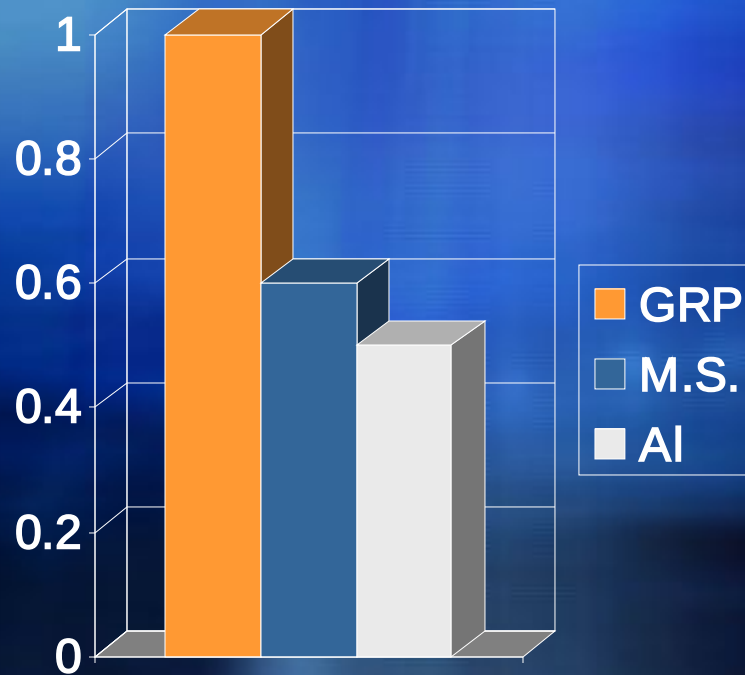
bcl

BALAJI
COMPOSITES
LTD.



Considerable
Reduction in the
Weight of Structural
system

Tensile Strength Retention



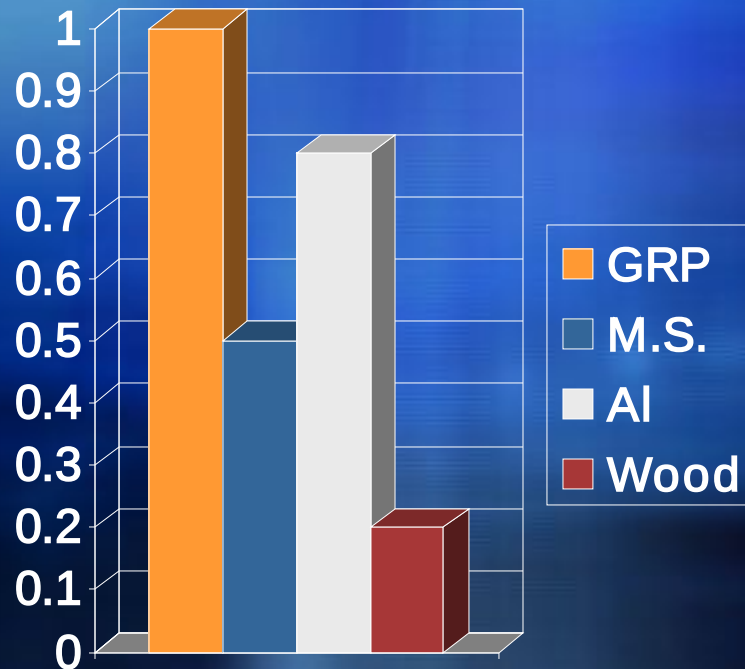
GRP Exhibits better
Mechanical Properties
at Sub-Zero
Temperatures

No yield point. 100%
recovery on removal
of load.

MOISTURE PROBLEM...?

bcl

BALAJI
COMPOSITES
LTD.

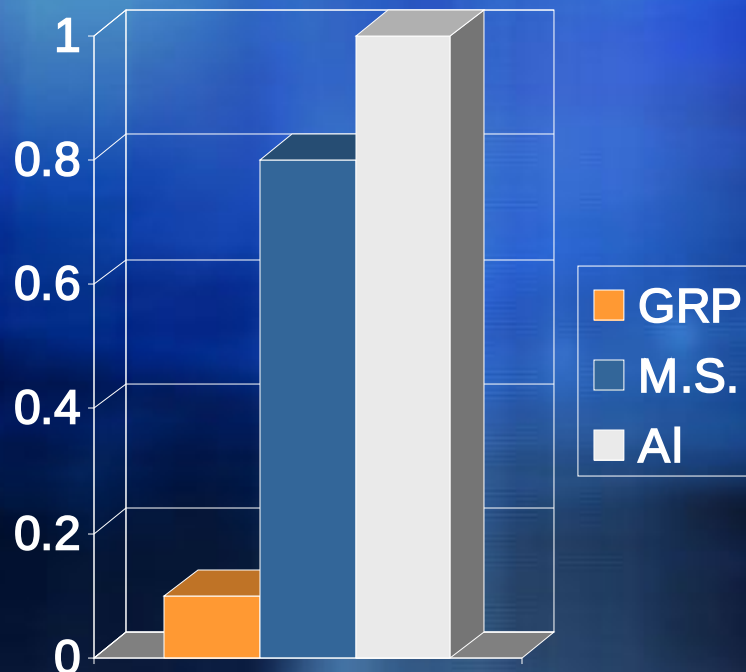


GRP has more resistance to the moisture related corrosion

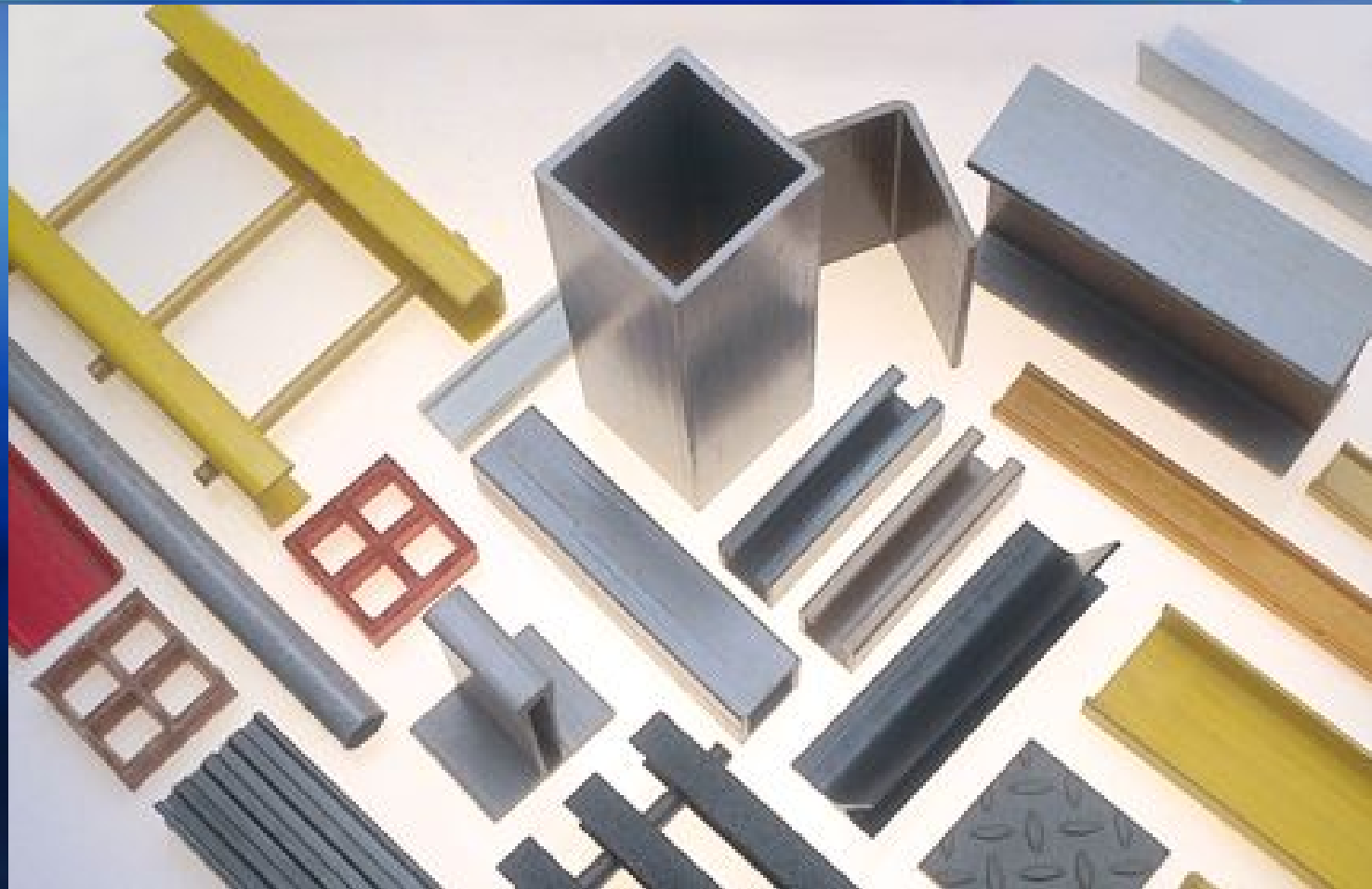
Thermal Conductivity

bcl

BALAJI
COMPOSITES
LTD.



GRP exhibits lower thermal conductivity & lower expansion contraction



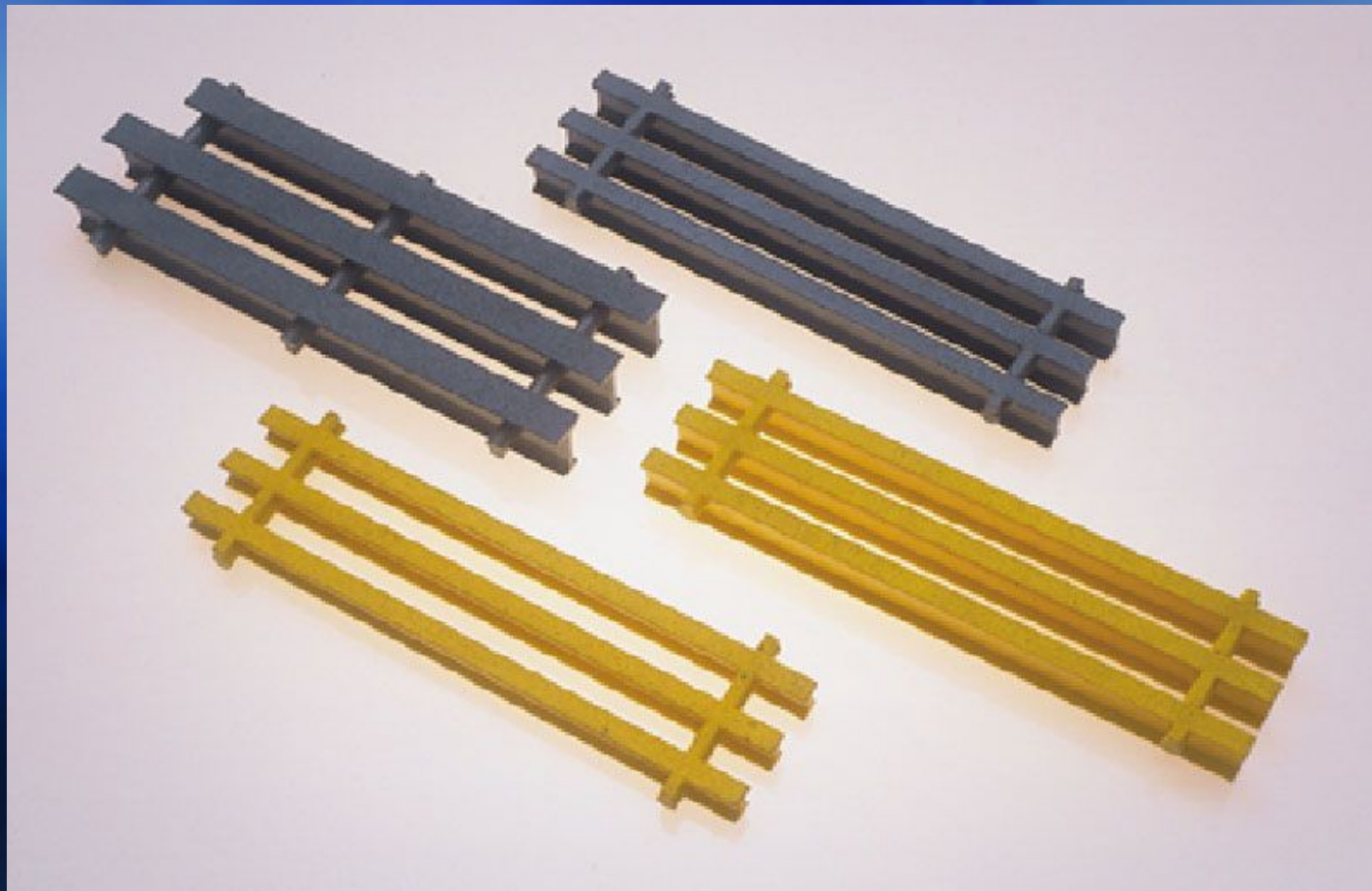
The Rich Range of the Sections made out of the Pultrusion Process



Gratings

bcl

BALAJI
COMPOSITES
LTD.

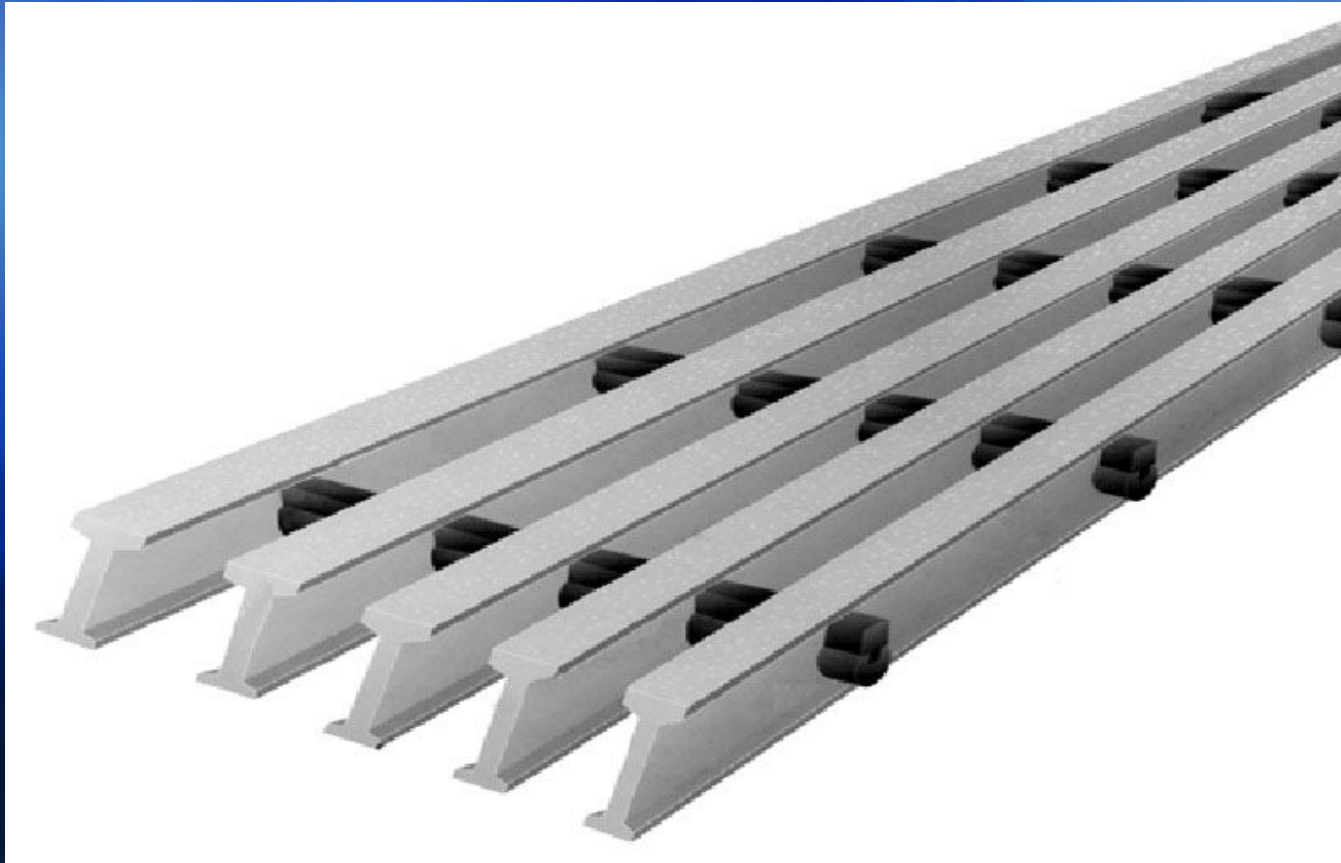


Gratings.... Available in Various Specifications to match the Load requirements of customer

Gratings

bcl

BALAJI
COMPOSITES
LTD.



Gratings are made by **assembling** the Bearing Members (I-Bars) & Locking Members (Notch-Bars & Groove Rods)

Gratings



A Versatile 'GRP'
Solution....

Walkways as well
as Operator Standing
Platforms in the Plating
Shops, ETP Plants,
Chemical & Offshore
Plants

Gratings

bcl

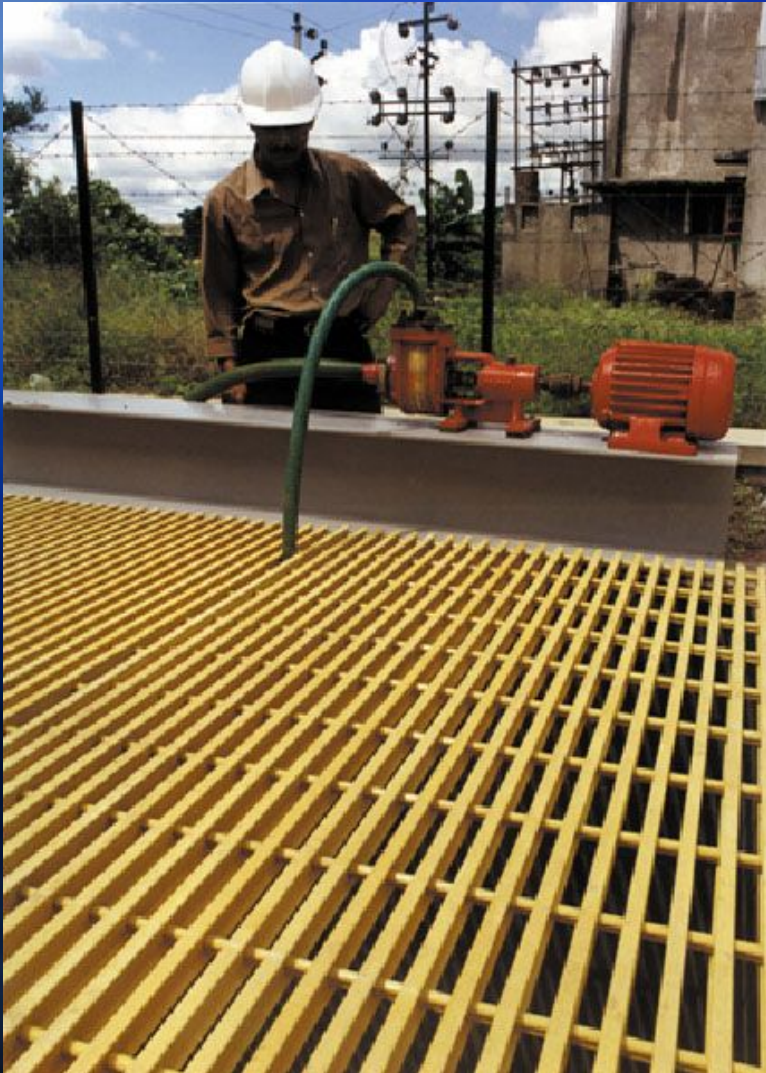
BALAJI
COMPOSITES
LTD.



Machine Decks, Maintenance Platforms & Structures In the Corrosive Environment

Gratings

bcl BALAJI
COMPOSITES
LTD.



The Best Material
for the effluent &
the Water
Treatment Plants

Gratings

bcl

BALAJI
COMPOSITES
LTD.



Tank Covers &
Maintenance
Platforms in the
Process Industry
& ETP Plants

Gratings

bcl

BALAJI
COMPOSITES
LTD.



Only **simple hand tools** required for Installation & Removal

Handrails

bcl

BALAJI
COMPOSITES
LTD.



User-Friendly
Handrails...

Light Weight,
Easy Installation &
Great Aesthetics

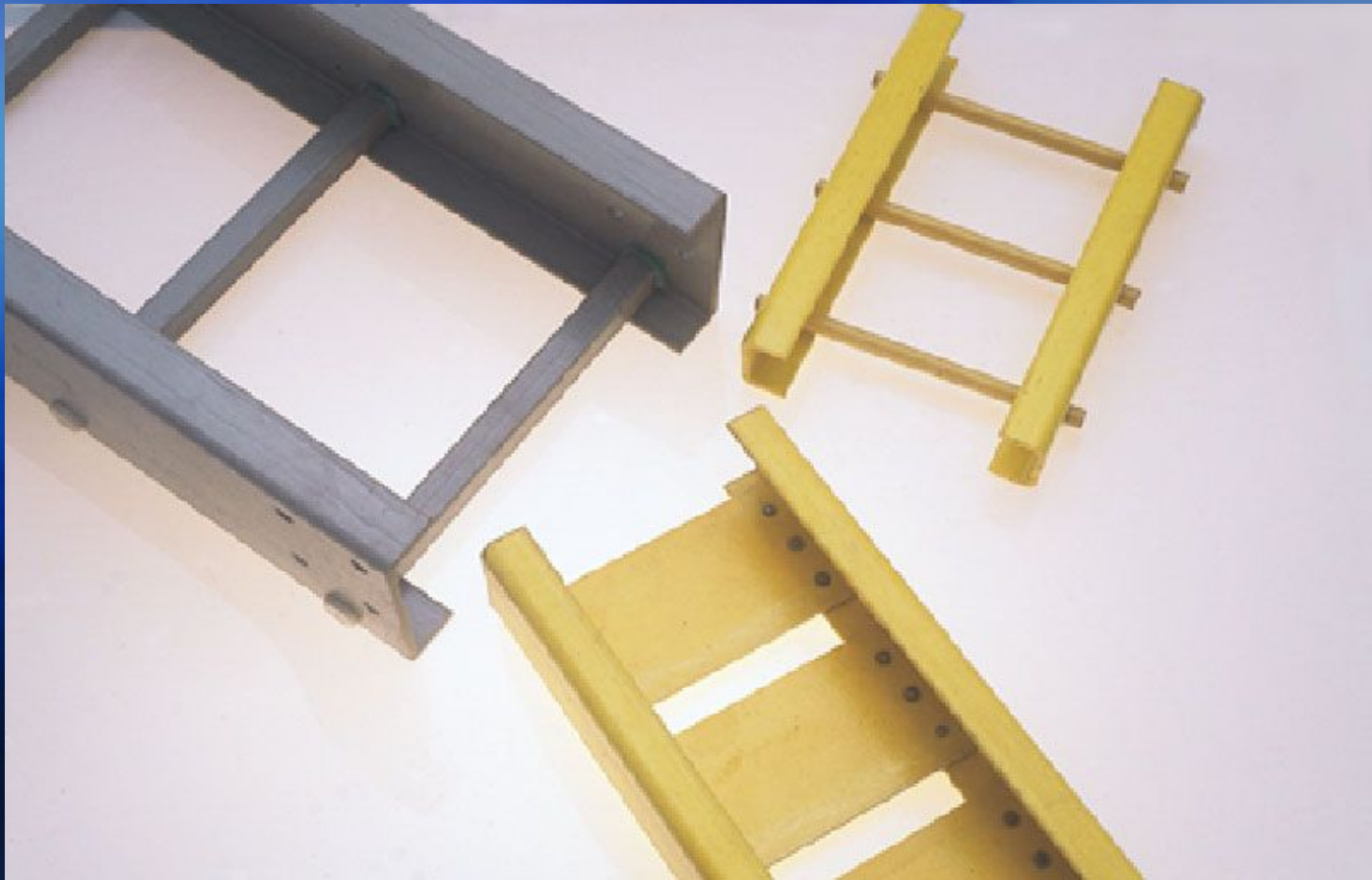
Handrails

bcl

BALAJI
COMPOSITES
LTD.



GRP
Handrails in
the Power
Station

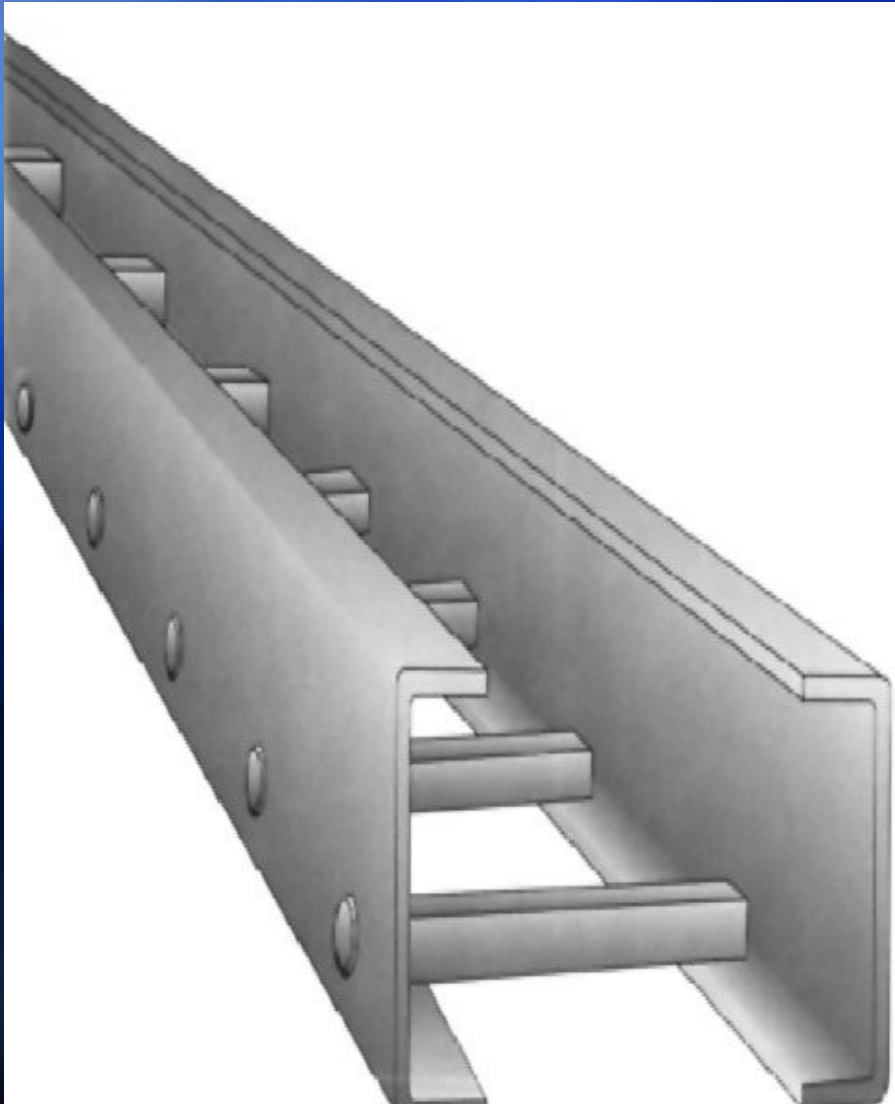


Modern **Cable Tray Systems** (Alongwith Support Structures) are being used since last 25 years in the Developed Countries....

Cable Trays

bcl

BALAJI
COMPOSITES
LTD.

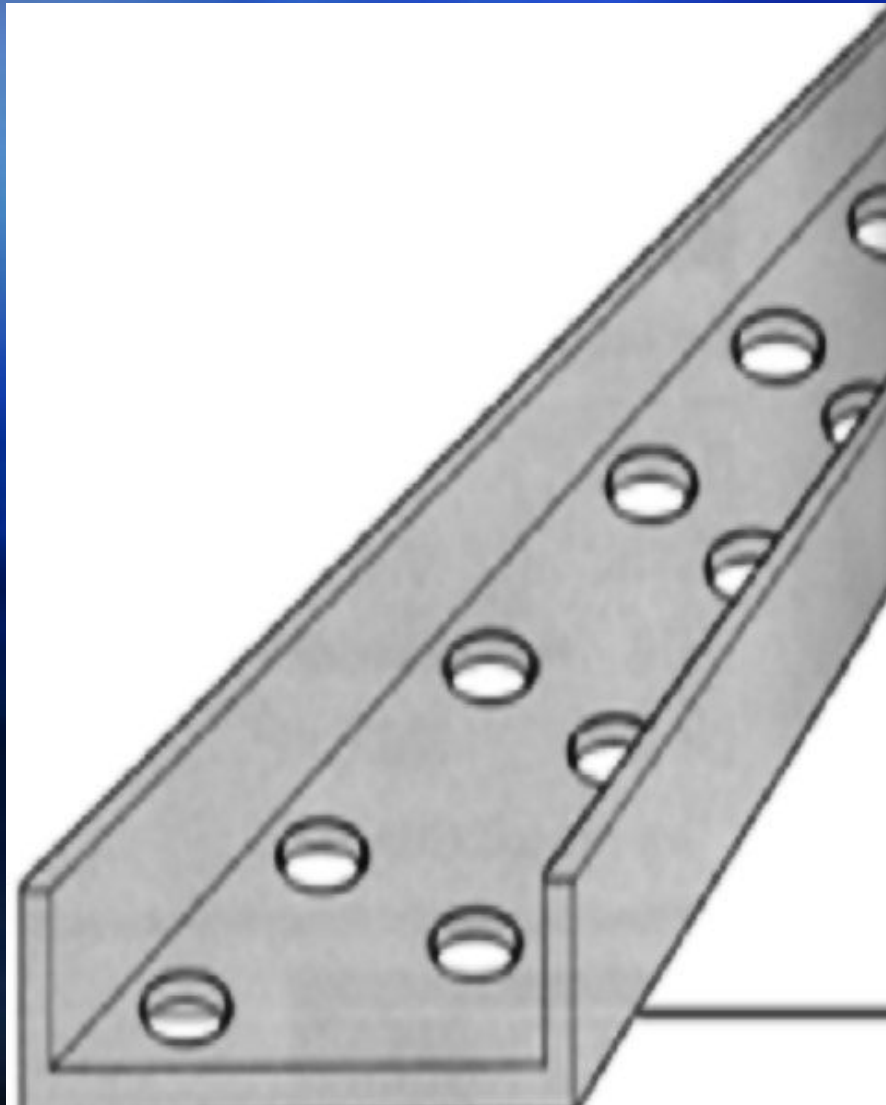


Ladder Type
Cable Trays
Available in
Various Designs
to suit the
Customer's Need

Cable Trays

bcl

BALAJI
COMPOSITES
LTD.



Perforated
Cable Trays
Serving the
Exact Purpose
of the
Customer

Install Easily...

bcl

BALAJI
COMPOSITES
LTD.

Fit & Forget
Solutions.

Very low cost of the
Installations & that
too with ease...

Maintenance-free,
long life Cable
Trays, Accessories
with the complete
Support Structures



Ladders

bcl BALAJI
COMPOSITES
LTD.



A Safe and Smart
Choice...

Anti-Conductive,
Lightweight, Strong
Glass Fibre
Ladders

Plain, Extendable
& A-type ladders
available in various
sizes

bcl

BALAJI
COMPOSITES
LTD.



Various **Access Systems** to satisfy the needs of the Customers offering High Strength to Weight Ratio, Flexibility in Design & Durability



Various [Access Systems](#) to satisfy the needs of the Customers offering High Strength to Weight Ratio, Flexibility in Design and Durability

Support Structures

bcl

BALAJI
COMPOSITES
LTD.



Load bearing support structures for very corrosive atmospheres

Battery Support Stands for Power stations / UPS



Available with
fire-retardant
class 1 ASTM E
84 spec. & the
Self
Extinguishing
Characteristics
of ASTM D-635

bcl

BALAJI
COMPOSITES
LTD.



Virtually eliminates maintenance costs. UV inhibitors protect against degradation from the Sun.

Structures



“Install & Forget”
Maintenance
Friendly Structures



Noncorrosive &
hence very long
life

Typhoon resistant,
radio transparent tower
for High frequency
radio applications



Structures

bcl

BALAJI
COMPOSITES
LTD.

Installation



bcl

BALAJI
COMPOSITES
LTD.



Material Handling Pallets - Pultruded as well as Moulded

bcl

BALAJI
COMPOSITES
LTD.



Garden Benches - Aesthetic look and durability

bcl

BALAJI
COMPOSITES
LTD.



Light Weight but High Strength application -
A Floating Jetty

Towers

bcl

BALAJI
COMPOSITES
LTD.



The Best Suited
(Nonconductive &
light weight)
Material for the
Electrical Towers

Light Poles also is
another application

What do the Antenna masts need...?

bcl

BALAJI
COMPOSITES
LTD.

- Electromagnetic wave Transparency
- Low Thermal Sensitivity
- High level of Stiffness
- Light Wt. / High Strength
- Low Sensitivity to Extreme Climates
- Ease of having Colours added
- Acceptance of surrounding materials
- Ease & the Flexibility in Design



All Composite Deck - Demonstration Pier in the U.S. Navy. No signs of corrosion or deterioration after a decade

bcl

BALAJI
COMPOSITES
LTD.



The use of Pultruded Composites in the Construction industry becoming very popular in the West

Thanks for Being With Us...!

bcl

**BALAJI
COMPOSITES
LTD.**

ATUL ELECTROFORMERS LTD.

**(Formerly Known as BALAJI
COMPOSITES LTD)**

**11 Kubera Estate,
Gultekadi Road**

Pune – 411037. INDIA

Tel. - +91 20,24270478

Fax - +91 20 24272835

Email-composites@aeftl.in

Website: www.aeftl.in