اللّه ﷺ ﺍﻟّهُ ﻓﺮﺻﺎﻟّﻪ ﻓﺮﺻﺎل ﺍﻟّهُ ﻓﺮﺻﺎل
Introduction

- Pakistan’s Pioneers and Largest Fiberglass Products Manufacturing and Service Provider Company
- 37 Years of Experience in Pakistan
- Market Leaders in All types of Fiberglass Composite Products and Services
  a. BIN Tariq GRP/GRE Pipes and Fittings – up to 96 inch Diameter
  b. Fiberglass Industrial Storage Tanks, Vessels, Containers – up to 5 meter diameter
  c. Fiberglass Industrial Moulded Gratings for Walkways, Channels, Tank Covers, Fan Blades etc.
  d. Fiberglass Raw Materials – Pakistan’s Largest Importer
  e. Fiberglass Boats – Pakistan’s Pioneers in Boat Manufacturing for Fishing, Pleasure, Utility etc.
  f. Fiberglass Service Providers for Fiberglass Protective Linings on MS and Concrete Structures
- Manufacturing Units in Lahore and Karachi
- Over 200 employees with offices in Lahore, Karachi, and Gwadar
- ISO Certified Fiberglass Manufacturing Company
- Actively Working in various sectors
  - Water Supply and Sewerage
  - Chemical, Petro Chemical and Processing
  - Power and Energy
  - Oil, Petroleum and Gas
  - Desalination and Waste Water Treatment
  - Infrastructure and Irrigation Networks
  - Heavy and Allied Industries
Pakistan’s First and Only Fully Automated Filament Wound Pipe Manufacturing Facility
“Bin Tariq” GRP Pipe – A Profile

- A State of Art Pipe Manufacturing Factory at the Sundar Industrial Estate Lahore –
  Functional From October 2007

- Specialized Manufacturing of GRP, GRV and GRE Pipes (Isophthalic, Vinylester and Epoxy)
  Special Production of General Purpose Polyester Resin from Local Companies on a set formulation
  Direct Import from principles for Corrosion Resistant Vinylester Resins
  Direct Import of Raw Material from Principles in Korea, Japan, Singapore and China

- Latest Technology Filament Winding Process
  Production capacity of 1200 RFT per day (varies on dia sizes)
  100% AUTOMATIC COMPUTER CONTROLLED UNIT CAPABLE OF PRODUCING FROM 25mm UP TO 2400mm DIAMETER PIPES, TANKS & OTHER AUXILIARY COMPONENTS

  FILAMENT WINDING, CURING STATION, CALIBRATION MACHINE, GANTRY EJECTION MACHINE, RESIN MIXING, HYDROSTATIC TESTING, COMPUTER CONTROL TERMINALS.

- Pipes and Fittings Classified as per Nominal Pressures – Standard Pressure Classes 4,6,10,16,20,22 bars

- Standard Stiffness Classes – 2500,5000,10 000 Pa

- Production as per International Quality Standards
  (ASTM D638, D790, D2105, D2143, D2310, D3517, D3262 & AWWA M-45, C950)

- Default 12m lengths with Bell Spigot Jointing System – Including Imported and Local Rubber Rings

- In house manufacturing of Fittings
  Bends, Equal and Reduced Tees, Flanges Fixed & Blind, Reducers Concentric & Eccentric, Manholes etc.
GRP PIPE APPLICATIONS

- Sewage Disposal and Raw Water Supply
- Potable water
- Desalination Plants
- Cooling Network Systems
- Marine Outfalls and Intakes
- Fire mains
- Cargo and ballast lines for tankers
- Chemical Processing and Effluent Systems
- Oil and Petrochemical Industries
- Slurry lines
- Ducting and Conduits
- Liquid food and edible products
- Geothermal lines
- Water Treatment process lines
- Oil and water well casings
1. **The Liner Layer**
   C-glass fibers, mat and surface veils are used with appropriate resins to have excellent non-corrosion property against chemical liquids.

2. **The Structural Layer**
   Continuous Fiberglass roving strands are impregnated into liquid resin and wound on the rotational axis which has special angles. High Silica Sand is also added uniformly to add stiffness. The most outstanding characteristics of filament winding products is that the mechanical stiffness is very high and the capability of absorbing impact energy is great.

3. **External Layer**
   It protects GRP pipe from aging and deformation originated from environmental factors such as ultraviolet rays.
### Construction of GRP pipe

<table>
<thead>
<tr>
<th>LAYER</th>
<th>CONSTRUCTION</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior layer (liner)</td>
<td>“C” glass tissue</td>
<td>Protection</td>
</tr>
<tr>
<td>Barrier layer (liner)</td>
<td>Chopped glass fibers</td>
<td>Protection</td>
</tr>
<tr>
<td>Inner structural layer</td>
<td>Winding roving</td>
<td>High modulus structural reinforcement</td>
</tr>
<tr>
<td>Core</td>
<td>Silica with resin</td>
<td>Solid core</td>
</tr>
<tr>
<td>Outer structural layer</td>
<td>Winding roving</td>
<td>High modulus structural reinforcement</td>
</tr>
<tr>
<td>Exterior surface</td>
<td>“C” glass tissue</td>
<td>Protection</td>
</tr>
</tbody>
</table>
BIN TARIQ GRP PIPE – Jointing Systems

1. Bell Spigot Jointing System

- pressure test nipple
- locking key
- bell end
- spigot end
- double O-ring

2. Butt & Wrap Jointing System

Lamination Jointing

BELL AND SPIGOT JOINT

BELL AND SPIGOT JOINT
Elastomeric Seals

- Ethylene propylene-diene (EPDM) seal will be supplied. However in special circumstances seal be supplied, manufactured from other polymers.
- Nitrile-butadiene (NBR)
- Styrene-butadiene rubber (SBR).
Comparison of GRP Pipes to Others
### 3. GRP PIPE WITH PE PIPE

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Description</th>
<th>GRP Pipe</th>
<th>HDPE Pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tensile strength</td>
<td>Hoop Tensile Strength 300-375 MPa</td>
<td>60 Mpa</td>
</tr>
<tr>
<td>2</td>
<td>Modulus of Elasticity</td>
<td>Hoop Tensile modulus 20000-30000 GPa</td>
<td>5000 GPa</td>
</tr>
<tr>
<td>3</td>
<td>Specific Gravity</td>
<td>1.8-1.9</td>
<td>0.95</td>
</tr>
<tr>
<td>4</td>
<td>Corrosion Resistance</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>5</td>
<td>Relative cost</td>
<td>15% Cost Saving (For High Dia)</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Process parameter For Manufacturing</td>
<td>Material Varies from case to case</td>
<td>Only one type for all application (Material Vise)</td>
</tr>
<tr>
<td>8</td>
<td>Maintenance</td>
<td>50 years</td>
<td>Periodical Maintenance is required</td>
</tr>
<tr>
<td>9</td>
<td>Under Ground Piping</td>
<td>Best design Optimization possible b/w meeting internal pressure class and stiffness req.</td>
<td>Uneconomical Design Calling for High thickness and jointing</td>
</tr>
</tbody>
</table>
Relative comparison between HDPE and GRP pipe cost

![Graph showing relative pipe cost for different diameters and pressures for HDPE and GRP pipes.](image)
<table>
<thead>
<tr>
<th>S.NO</th>
<th>Description</th>
<th>GRP Pipe</th>
<th>DI Pipe</th>
<th>MS Epoxy coated</th>
<th>PVC</th>
<th>HDPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Corrosion Resistant</td>
<td>GOOD</td>
<td>V. Poor : Protection req.</td>
<td>Inside Protection req.</td>
<td>Poor against Alkali medium</td>
<td>GOOD</td>
</tr>
<tr>
<td>2</td>
<td>Installation</td>
<td>Lesser than D.I</td>
<td>Heavy duty tools req.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Maintenance</td>
<td>Less maintenance is req.</td>
<td>Periodical Maintenance req.</td>
<td>Periodical Maintenance req.</td>
<td>Repair is not possible</td>
<td>Repair is not possible</td>
</tr>
<tr>
<td>4</td>
<td>Life</td>
<td>50 Years</td>
<td>10-15 years</td>
<td>10-15 years</td>
<td>5-8 years</td>
<td>5-8 years</td>
</tr>
<tr>
<td>5</td>
<td>Underground Application</td>
<td>Not attacked by organic matters</td>
<td>Life reduced due to Organic mattes in soil</td>
<td>Life reduced due to Organic mattes in soil</td>
<td>Not suitable for underground application</td>
<td>Uneconomical design</td>
</tr>
<tr>
<td>6</td>
<td>Process parameter For Manufacturing</td>
<td>Varies from case to case</td>
<td>Only one type for all application</td>
<td>limited</td>
<td>limited</td>
<td>Only one type for all application</td>
</tr>
<tr>
<td>7</td>
<td>Weight</td>
<td>Light in weight</td>
<td>4 times higher</td>
<td>4 times higher</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Handling</td>
<td>Easy</td>
<td>Difficult, due to weight</td>
<td>Difficult, due to weight</td>
<td>Easy</td>
<td>Easy</td>
</tr>
<tr>
<td>9</td>
<td>Specific Gravity</td>
<td>1.8-1.9</td>
<td>7.05</td>
<td>7.85</td>
<td>1.4-1.45</td>
<td>0.95</td>
</tr>
<tr>
<td>10</td>
<td>Hazen Williams coefficient</td>
<td>150 ( hence less head loss)</td>
<td>120</td>
<td>120</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>11</td>
<td>Tensile Strength</td>
<td>375 MPa</td>
<td>Min. 420 MPa</td>
<td>Min. 400 MPa</td>
<td>50 MPa</td>
<td>35 MPa</td>
</tr>
<tr>
<td>12</td>
<td>Modulus of Elasticity</td>
<td>35 GPa</td>
<td>150-170 GPa</td>
<td>210-240GPa</td>
<td>3 GPa</td>
<td>5 Gpa</td>
</tr>
</tbody>
</table>
WHY choose BIN TARIQ GRP PIPES?
- Suitable for above the ground and underground applications for pressure and gravity
- Inherently corrosion resistant, both internally and externally, does not require any cathodic protection, lining or decorative coatings.
- The large diameter pipes are relatively lightweight, reducing installation time and cost, by not requiring very large carnage.
- Manholes and Valve containers can be prefabricated and fixed online.
- The Vinyl Ester/ corrosion resistant resin is applied as part of the manufacturing process, rather than applied afterwards.
- GRP pipes are the most cost effective, 40% less operational cost than conventional pipes. Long life solution.
- The sewer has a variable flow rate, causing atmospheric conditions that would limit the life of more traditional PIPE materials, even with a protective coating.
- GRP because of its inherent corrosion resistance properties, its ability to withstand the imposed loading and its ability to be manufactured in sections and the sections re-assembled underground.
- 12 meter lengths by default, less joints and easy installation at sites. Fewer joints than the concrete rings also reduces the chance of ingress by water
- The smooth external surface of GRP limits marine growth.
- Almost 50% cheaper then imported pipes
Serving the Nation for 37 Years

Projects Undertaken (Sector Wise)
# Projects Undertaken - GRP Pipes and Fittings

<table>
<thead>
<tr>
<th>S.No</th>
<th>Sectors</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water Supply &amp; Sewerage</td>
<td>GRP Pipes for Water &amp; Sewerage</td>
</tr>
<tr>
<td>2</td>
<td>Effluent Waste Water Treatment Plants</td>
<td>GRP Pipes for toxic water, Channels, Gas collectors, GRP Tanks, Gratings</td>
</tr>
<tr>
<td>3</td>
<td>Chemical, Petro-Chemical &amp; Processing</td>
<td>GRP Pipes, Tanks, Spools, Gratings, Coatings, Dykes, Analyzer/Pump/Meter</td>
</tr>
<tr>
<td></td>
<td>Plants</td>
<td>Rooms, Cooling Tower Sheets, Anti-corrosive Lining</td>
</tr>
<tr>
<td>4</td>
<td>Energy &amp; Power Sector</td>
<td>Complete GRP piping &amp; Fittings</td>
</tr>
<tr>
<td>5</td>
<td>Desalination Plants</td>
<td>Bulk Water Supply &amp; Sewerage, Town Water Supply, Waste Water Treatment</td>
</tr>
<tr>
<td>6</td>
<td>Infrastructure Development</td>
<td>GRP / GRE High Pressured Pipes, Condensate Pipes, Fire Water Pipes, GRP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tanks, Gratings</td>
</tr>
<tr>
<td>7</td>
<td>Oil &amp; Gas Industry</td>
<td>GRP Analyzer/Pump/Meter Rooms, Cooling Tower, Fan Blades, Booths, Kiosks</td>
</tr>
<tr>
<td>8</td>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>

## SERVICE

| 1    | GRP Repair & Maintenance – After sale Service |
| 2    | GRP Chemical Resistant & Protective Coatings on MS & Concrete Structures |
BET’s Valued Clients (Partial) For GRP Products and Services

- Siemens Pakistan Limited – GRP Contractor Agreement
- International Power-HUBCO GRP Contractor Agreement
- Engro Polymer Limited – GRP Contractor Agreement
- LOTTE PPTA LTD – GRP Contractor Agreement
- Nestle Pakistan – GRP Contractor Agreement
- Dawood Hercules – GRP Contractor Agreement
- Descon Engineering – GRP Contractor Agreement
- Procter and Gamble Pakistan Ltd - GRP Contractor Agreement
- Pak Arab Refinery – PARCO – GRP Contractor Agreement
- Karachi Nuclear Power Plant - KANUPP
- Pakistan Steel Mills
- Kohinoor Group
- Bestway Group
- Atomic Energy Commission Pakistan
- Fauji Fertilizer Bin Qasim Limited
- Al Tawariqui Steel Mills
- Fatima Fertilizer
- OMV
- ENI
- Pakistan Petroleum Limited
- Engro Fertilizer Limited Dherki
- Fauji Fertilizer Mirpur Matehlo
- Engro Energy
- Aisha Steel Mills
- KESC
- Jamshoro Power Co. Ltd
- Karachi Water and Sewerage Board
- Pakistan Textile City
- National Industrial Parks
- Public Health Department – Punjab & Sindh
- Port Qasim Authority
- City District Government Hyderabad
- DHA COGEN Limited
- CEWTP – Pakistan Tanners Association
- Defense Housing Authority – Lahore & Karachi
- Capital Development Authority – Islamabad
- Japan International Cooperation Agency
- Pakistan Ordinance Factory
- WASA
- WAPDA
- Faisalabad Development Authority
- Government of Punjab
- Government of Sindh
### SINDH

<table>
<thead>
<tr>
<th>S.No</th>
<th>Project Name</th>
<th>Location</th>
<th>Usage</th>
<th>Diameter</th>
<th>Pressure</th>
<th>Total Quantity (RFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DHA Phase 8</td>
<td>Karachi</td>
<td>Sewerage</td>
<td>20”</td>
<td>9 bar</td>
<td>13120</td>
</tr>
<tr>
<td>2</td>
<td>Pakistan Textile City</td>
<td>Karachi</td>
<td>Sewerage</td>
<td>40”</td>
<td>PN 6</td>
<td>361</td>
</tr>
<tr>
<td>3</td>
<td>CEWTP Korangi PTA Environmental Society.</td>
<td>Karachi</td>
<td>Industrial Waste Water Treatment</td>
<td>6” upto 42”</td>
<td>PN 6 to PN 9</td>
<td>21,000</td>
</tr>
<tr>
<td>4</td>
<td>DHA Cogen - Desal Plant Siemens Pakistan Limited.</td>
<td>Karachi</td>
<td>Water Supply</td>
<td>6” upto 54”</td>
<td>PN 12</td>
<td>Approx 60,000</td>
</tr>
<tr>
<td>5</td>
<td>KANUPP</td>
<td>Karachi</td>
<td>Water</td>
<td>6” upto 12”</td>
<td>PN 10</td>
<td>1000</td>
</tr>
</tbody>
</table>

### PUNJAB

<table>
<thead>
<tr>
<th>S.No</th>
<th>Project Name</th>
<th>Location</th>
<th>Usage</th>
<th>Diameter</th>
<th>Pressure</th>
<th>Total Quantity (RFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power Plant Workshops – Chashma Nuclear Power</td>
<td>Islamabad</td>
<td>Industrial</td>
<td>2, 4, 6”</td>
<td></td>
<td>3720</td>
</tr>
<tr>
<td>2</td>
<td>Zero Point Interchange Project C/o Capital Development Authority (CDA)</td>
<td>Islamabad</td>
<td>Water</td>
<td>500 mm</td>
<td>PN 9</td>
<td>984</td>
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<tr>
<td>3</td>
<td>Pakistan Atomic Energy Commission</td>
<td>Lahore</td>
<td>Water</td>
<td>150 mm</td>
<td>PN 9</td>
<td>1010</td>
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<tr>
<td>4</td>
<td>Defence Housing Authority Project C/o Divine Developers (Pvt) Ltd</td>
<td>Lahore</td>
<td>Sewerage</td>
<td>600 mm</td>
<td>PN 6</td>
<td>1100</td>
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<tr>
<td>5</td>
<td>Southern Punjab Urban Services Project - Asian Development Bank</td>
<td>Multan</td>
<td>Sewerage</td>
<td>1000 mm</td>
<td>PN 6</td>
<td>3000</td>
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<tr>
<td>6</td>
<td>WASA Sewerage Project C/o KSB Pumps Company Ltd.</td>
<td>Multan</td>
<td>Sewerage</td>
<td>1400 mm</td>
<td>PN 6</td>
<td>5232</td>
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<td>7</td>
<td>Southern Punjab Urban Services Project - Asian Development Bank.</td>
<td>D.G. Khan</td>
<td>Sewerage</td>
<td>600 mm</td>
<td>PN 6</td>
<td>7000</td>
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<td>8</td>
<td>Southern Punjab Urban Services Project - Asian Development Bank C/o NPI.</td>
<td>D.G. Khan</td>
<td>Sewerage</td>
<td>700 mm</td>
<td>PN 6</td>
<td>16000</td>
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<td>Southern Punjab Urban Services Project - Asian Development Bank C/o NPI.</td>
<td>D.G. Khan</td>
<td>Sewerage</td>
<td>800 mm</td>
<td>PN 6</td>
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<td>10</td>
<td>Public Health Engineering Punjab C/o Saddaqt Builders - Kot Addu</td>
<td>D.G. Khan</td>
<td>Water</td>
<td>400 mm</td>
<td>PN 6</td>
<td>3700</td>
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<tr>
<td></td>
<td>Company Name and Project Details</td>
<td>Location</td>
<td>Product</td>
<td>Specification</td>
<td>PN</td>
<td>Quantity</td>
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<td>11</td>
<td>Public Health Engineering Punjab C/o Saddaqat Builders - Kot Addu</td>
<td>D.G. Khan</td>
<td>Water</td>
<td>450 mm</td>
<td>PN 6</td>
<td>7700</td>
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<td>12</td>
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<td>PN 6</td>
<td>1425</td>
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<td>Public Health Engineering Punjab C/o Saddaqat Builders - Kot Addu</td>
<td>D.G. Khan</td>
<td>Water</td>
<td>600 mm</td>
<td>PN 6</td>
<td>750</td>
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<td>14</td>
<td>Public Health Engineering Punjab C/o Saddaqat Builders - Kot Addu</td>
<td>D.G. Khan</td>
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<td>700 mm</td>
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<td>100</td>
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<td>15</td>
<td>Public Health Engineering Punjab C/o Muhammad Idreeses</td>
<td>D. G. Khan</td>
<td>Water</td>
<td>500 mm</td>
<td>PN 6</td>
<td>11000</td>
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<tr>
<td>16</td>
<td>Public Health Engineering Punjab Water supply Scheme C/o Muhammad Idrees</td>
<td>D.G. Khan</td>
<td>Water</td>
<td>600 mm</td>
<td>PN 6</td>
<td>9500</td>
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<td>17</td>
<td>Public Health Engineering Punjab Water supply Scheme C/o Nazir &amp; Company</td>
<td>Chunian</td>
<td>Water</td>
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<td>PN 9</td>
<td>11000</td>
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<tr>
<td>18</td>
<td>Public Health Engineering Punjab Water supply Scheme C/o Top Class Engineering</td>
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<td>Water</td>
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<td>PN 6</td>
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<td>250 mm</td>
<td>PN 9</td>
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<td>PN 9</td>
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<td>Water</td>
<td>400 mm</td>
<td>PN 9</td>
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<td>24</td>
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<td>PN 9</td>
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<td>Water</td>
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<td>26</td>
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<td>600 mm</td>
<td>PN 9</td>
<td>1500</td>
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<tr>
<td></td>
<td>Project Description</td>
<td>Contractor</td>
<td>Location</td>
<td>Service Type</td>
<td>Size (mm)</td>
<td>Pressure Class (PN)</td>
</tr>
<tr>
<td>---</td>
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</table>
Major GRP Piping Projects Being Undertaken

- GRP Pipes – 500mm diameter, 5 km line – DHA Phase 8 Karachi.
- GRP Pipes – 1500mm diameter, 20km line – Hyderabad Development Package.
- GRP Pipes – 250,350,450,600mm diameter, 12km line – Chunian, Public Health Punjab.
- GRP Pipes – 500&600mm diameter, 14 km line – Bahawalnagar, Public Health Punjab.
- GRP Pipes – 700mm diameter, 17km line – Pattoki, Public Health Punjab.
- GRP Pipes – 900mm diameter, 5.4 km line – Rahim Yar Khan, Public Health Punjab.
- GRP Pipes – 700mm diameter, 6 km line – Rahim Yar Khan, Public Health Punjab.
“BIN TARIQ”
GRP PIPE PRODUCTION HIGHLIGHTS
LINER MAKING MACHINE

• This machine is specially used in the GRP pipe product line for making the Inner liner of the pipe.
Specification of production: DNφ1600x12000mm
• Power of main axis: 11 KW
• Power of carriage of liner making machine: 3KW
• Main axis and carriage is timing with frequency conversion
• Feeding-resin system: Flow:0-20KG/min.
• Flow is regulated with frequency conversion. Power: 3KW.
LATEST TECHNOLOGY
(Filament Winding Process)

- Production capacity of 1200 RFT per day (varies on dia sizes)

- 100% AUTOMATIC COMPUTER CONTROLLED UNIT CAPABLE OF PRODUCING 25mm to 4000mm DIAMETER PIPES, TANKS & OTHER AUXILIARY COMPONENTS
Curing Station

Main technical data of the curing station
a. Speed of main axis: 5rpm
b. Power: 4kw
c. Infrared heating board: 24 pieces x 0.9Kw = 21.6 kw.

The machine is specially used in the GRP pipe product line for making the inner liner layer or structural layer of pipe for solidifying.
Curing Station
CALIBRATION M/C
SYSTEM OF RESIN MIXING

• Capacity of holding 3000 kg of Resin.
• Mixing of accelerator with Resin is homogenized.
• Delivery of Resin to the storage tanks of winder and liner is motor and pump driven.
• This machine is specially used in the GRP pipe product line for supply with
  • pre-mixing resin added hardener for the GRP pipe product line.
• The resin is fed into the tin and out the tin by the gear pump for reducing the
  • labour intensity of the workers.
Gantry Ejection System
COMPUTER CONTROL TERMINALS
BIN TARIQ GRP Pipe Manufacturing Process
INHOUSE TESTING FACILITY
Hydrostatic Pressure Testing 0-40 bar

ASTM D2992, D3517 (PRESSURE PIPE) - BS 5480
For Water Supply and Sewerage
Parallel Plate External Loading
ASTM D 2412 – BS 5480
For Water Supply and Sewerage
Resin Properties Check
Viscometer with constant temperature water bath
Resin Properties Check
(GEL TIMER)
ASTM D2471
HARDNESS TESTER
(BARCOL HARDNESS TESTER)
ASTM D2583
3. Axial Tensile Strength Testing  As per BS 5480
Test Methods

- **ASTM D2412**  Test method for determination of External loading characteristic of plastic pipe (RTRP, RPMP) pipe by *parallel plate loading*.
- **ASTM D 2992**  Test method for determination of *hydrostatic* or pressure design basis for pipes.
- **ASTM D 2583**  Standard test method for indentation hardness of rigid plastics by means of *Barcol* Impresor.
- **ASTM D 2584**  Standard test method for *Ignition loss* of cured reinforced Resin.
- **ASTM D4161**  Standard specification for *Elastomeric seals (Gasket)* for joining Fiberglass pipe. Elastomeric seal is Ethylene propylene-diene (EPDM)
- **ASTM D790**  Standard Test method for *Flexure properties* of un-reinforced and reinforced plastics and electric insulating material.
- **ASTM D2105**  Standard test method for *Longitudinal Tensile* properties of Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) pipe.
- **ASTM D638**  Standard test method for *Tensile* properties of plastics, Reinforced or Un-reinforced.
Dimensions & Visual Defects

- **ASTM D3567** Standard practice for determining **Dimensions** of Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) **pipe and fittings**. O.D, I.D, Total Wall Thickness, Reinforced wall thickness, Liner thickness and Length Dimensions.

- **ASTM D2563** Standard practice for classifying **visual defects** in glass reinforced plastics laminate parts.

- **AWWA M45** Fiberglass pipe design manual.
Product Specification & Classification

Water Services

- **ASTM D2996**  For Filament –Wound Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe *up to 400 mm Diameter*. RTRP(Without aggregate)

- **ASTM D3517**  For Filament –Wound Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) *Pressure Pipe 200 mm to 3700 mm* Diameter for water system operating At 250 psi, 1.72 Mpa or less installed in buried or other wise. RTRP, RPMP. (Glass-Fiber-Reinforced Polymer ortar Pipe)

- **ASTM D2310**  this classification covers machine made Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) pressure pipe. Methods of classification, requirements, test methods and the methods of marking included RTRP, RPMP.

- **AWWA C-950**  Standard describes the fabrication, testing manual of fiberglass pressure pipe. RTRP, RPMP.  *For Water Services*

- **BS 5480-1990**  Specification for Glass reinforced plastics (GRP) *pipes, joints and fittings for use of Water supply or Sewerage.*

- **ASTM C 33**  Specification for concrete *aggregate.*
Product Specification & Classification

Sewer Storm water & industrial wastes

- **ASTM D3262 & D3754-96** For Filament –Wound Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe, Storm water, and some industrial wastes. RTRP & RPMP (a fiberglass pipe with aggregate).

- **BS 5480-1990** Specification for Glass reinforced plastics (GRP) pipes, joints and fittings for use of Water supply or Sewerage.
CERTIFICATIONS

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED

P-50/5/W/ZDC/01/803  July 13, 2009

TO WHOM IT MAY CONCERN

LOCALLY MANUFACTURED GRP PIPES & FITTINGS

It is informed that M/s. Business & Engineering Trends are manufacturing GRP pipes and fittings locally at their production unit located at Sundar Industrial Estate Lahore.

During a recent visit of the plant it was found that the production of GRP pipes and fittings is being done on an automatic plant having a capacity to produce about 2500 rpf per day of various diameters of pipes. After the production random samples of pipes from each batch are hydrostatically tested. Additionally material testing is also carried out at the request of the Client.

The quality of production pipes and materials (resin & fibre) used were found to be in compliance with ASTM and AWWA standards recommended for the manufacture of GRP pipes.

Locally produced GRP pipes manufactured by M/s. Business & Engineering Trends are recommended to be considered for use in water supply and wastewater projects.

(Signed) Hafeez Hay
Senior Engineer (Infrastructure)

(Signed) Zubin D. Cooper
Chief Engineer (Infrastructure)

Ref: HQCAA/2135/1626/Sup(Pol&Pro)

Dear Sir,

REGISTRATION NO.1626

RENEWAL OF REGISTRATION AS ‘A’ CLASS SUPPLIER

1. Reference is made to your application for renewal of registration as suppliers with CAA.
2. Your registration with Civil Aviation Authority is hereby renewed for a further period of two years from 13.5.2012 to 12.5.2014 as ‘A’ Class supplier for the supply of following range of stores to CAA:

   “Fiberglass pipes, Fiberglass Tanks, Fiberglass Gratings, Fiberglass Decorative items”

3. In case you wish to get your registration renewed for a further period of two years, the prescribed renewal fee charges will be Rs.10,000/- payable through pay order/bank draft as appropriate drawn in favour of Civil Aviation Authority, Karachi, two months prior to the expiry of your registration as given in clause 1(a) of CAA Form 102A (Terms and Conditions for Registration).

4. This registration entitles you to participate in press tenders as well as local purchase tenders of all CAA Airports/Units. CAA tenders are advertised in leading newspapers as well as listed on CAA website www.caapakistan.org.pk and PPRA website www.ppra.com.pk. You are requested to participate actively in CAA tenders.

5. Please note that the Proprieter/Chief Executive of the firm will be the authorized person to sign CAA contracts/purchase orders.

6. Please acknowledge receipt.

(Signed) G. Javaid Ali
A/General Manager
Supply Chain Management

Ms. Business & Engineering Trends
155-G-2, First Floor, Khushal Road
PECHS, Block-2
Karachi
Tel.No. 34529028
Fax No. 34529025

Phone : +9221-9090080 & 9207277 to 9207284 (98)
Fax : +9221-9202366 & 565/994
E-mail : nespakkhal@khi.wol.net.pk P.O.Box 5772 Karachi.
KARACHI WATER & SEWERAGE BOARD
OFFICE OF DY. MANAGING DIRECTOR
(TECHNICAL SERVICES)
Block "B" 9th Mie Karsaz


M/s. Business & Engineering Trends (BET)
155-0/2, First Floor, Block-2,
Khuhal Road, PECHS,
Karachi

SUB: PREQUALIFICATION OF M/S. BUSINESS & ENGINEERING TRENDS (BET) AS MANUFACTURERS OF GRP PIPE IN KW&SB

I am directed to convey the approval of Competent Authority for prequalification of your firm as a Manufacturer of GRP Pipe as per existing terms and condition of KW&SB.

Dy. Managing Director (TS)
KW&SB

Copy to:
1. The Managing Director, KW&SB.
2. The Chief Engineer (BT&D), KW&SB.
3. The Chief Engineer (Projects), KW&SB.
4. The Chief Engineer (Mega Project), KW&SB.
5. The Chief Engineer (E&M), KW&SB.
6. The Chief Engineer (Special Project), KW&SB.
7. All Zonal Chief Engineers, KW&SB.

TO WHOM IT MAY CONCERN

This is to certify that Southern Punjab Basic Urban Services Project (SPBUSP) is implementing a project financed by the Asian Development Bank for improving infrastructure of several towns in Southern Punjab.

In implementing this project M/s. Business & Engineering Trends having their factory at Sundar Industrial Estate, Lahore are supplying GRP Pipes to several of the projects in various sizes.

Dy. Project Coordinator (Engg)

Dated: 03-4-2008
RENEWAL OF REGISTRATION

M/s Business & Engineering Trends, 24-Habibullah Road, Lahore is hereby renewed for the year 2009-10 as a approved manufacturer / supplier of Fiberglass (GRP/FRP Pipe) ranging 2" to 90" dia with HUD & PHE Department as likely supplier of the above products subject to the condition that Technical Committee of HUD & PHE Department will submit its recommendations to the Administrative Department within one month and if the Technical Committee did not recommend your renewal, the renewal letter will be withdrawn.

1. The firm will be 100% responsible for the quality of the Pipe supplied to the contractors and in case of any complaint from field regarding the quality / specifications of Pipes supplied the firm will be responsible.
2. The firm will be bound to supply a test report (alongwith other documents) of Pipe supplied for each delivery to Contractor / HUD & PHE Department.
3. The Annual renewal of the firm for the year 2010-11 should be applied by 30th April, 2010.
4. The N.T.N. of the firm is 0665704-A.

SECRETARY
HUD & PHE DEPARTMENT

No. & Date Even

A copy is forwarded for information to:-
1. The Secretary, Government of the Punjab, LG & CD Department.
2. The Accountant General Punjab, Lahore.
3. The Director General Accounts (Works), Lahore.
4. The Director General, LDA, FDA, RDA, MDA & GDA.
5. The Director General, PHATA, Lahore.
6. The Chief Engineer (North/South) PHE Department, Lahore.
7. The Managing Director, WASA, LDA, FDA, RDA, MDA & GDA.
8. The Project Director, New Murree Development Authority, Murree.
9. The Project Director, PCWSS-P, Lahore.
10. The Superintending Engineer PHE Circle, Lahore, Faisalabad, Multan, Gujranwala, Rawalpindi, Sargodha, Bahawalpur and D.G. Khan with the request to circulate it to the lower formation.

No. & Date Even

A copy is forwarded to M/s Business & Engineering Trends, 24-Habibullah Road, Lahore for information.
Certificate of Registration

MOODY INTERNATIONAL

This is to certify that the Quality Management System of:

BUSINESS AND ENGINEERING TRENDS

H.O. 24 Habib-Ullah Road, Lahore
Works plot # 646-647 Sundar Industrial Estate, Lahore

has been assessed and found compliant with the requirements of

ISO 9001:2008

Approval is hereby granted for registration providing the Certification rules and conditions are observed at all times.

Certification Scope:

MANUFACTURING OF FIBER GLASS PIPES AND PRODUCTS OF COMPOSITE MATERIAL.

Certificate No. 16111301008
Issue Date: February 26, 2013
Expiry Date: February 22, 2016

Authorised Signature
Moody International (Pvt) Ltd.

The use of the Accreditation Mark indicates accreditation in respect of those activities covered by the Accreditation Certificate CR 001. The certificate remains the property of Moody International (Pvt) Ltd, to whom it must be returned on request.
OMV (formerly known as Lasmo Oil) Fields Erection @ Kadanwari
Services for Jointing And Installation
Other Products
GRE Tube Well Pipe