The FLOWTITE GRP piping products and accessories sold by the AMIANTIT Group offer many advantages for the use in water applications.

This case study brochure represents only a small extract of the available references.

Due to the worldwide product availability of FLOWTITE GRP pipes, a huge number of irrigation projects have been established all over the world and an increasing number of projects are recently in progress.

Further information about additional references and case studies can be found on our website at www.amiantit.com.
# Case Study -1-

**PROJECT NAME:** Riego la Surpina  
**Community/Country:** Gral. San Martin, Provincia de Chaco, Argentina  
**Amiantit location:** AMITECH Argentina  
**Description:** The irrigation project was established in an unproductive area of the Chaco province, in the north of Argentina. After pipe installation and all the irrigation system, the area became in an important agro producer, with more than 10,000 ha harvested.

<table>
<thead>
<tr>
<th>Application</th>
<th>Irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transported medium</td>
<td>Raw water</td>
</tr>
<tr>
<td>Working pressure</td>
<td>6 bar</td>
</tr>
<tr>
<td>Type of project</td>
<td>New installation</td>
</tr>
</tbody>
</table>
| Demanded standards / specifications / approvals | IRAM 13432  
AWWA C950 |

**Special requirement on pipe-system:** Light weight, fast and easy installation

**Chosen pipe system:**  
- GRP filament wound  
- Light weight  
- Corrosion resistance  
- Flow characteristics  
- Chem. properties  
- Mech. properties  
- Price

**Project owner:** Riego El Bellaco, Bs As  
**Consultant / Engineer:** Irr Management, Pilar Bs As  
**Contractor:** COINDESA, Bs As

**Pipe Details - Material:**

| Total pipeline length (m) | 36,780 |
| Diameter DN min / max (mm) | 600 / 1500 |
| Pressure PN min / max (bar) | 6 |
| Stiffness SN min / max (N/m²) | 2500 |
| Joint types | FLOWTITE standard couplings |
| Fittings used | Elbows, reducers, concentric and tangential tees |

**Installation Details:**

| Type | Open trench |
| Trench dimensions (m) | 1.2 to 2.2 |
| Laying depth (m) | 1.5 to 4.5 |
| Native soil type | Loose medium |
| Backfill soil type / compaction | Native soil |
| Thrust blocks / lockpoints | Yes |
| Deflection min/max | Max. 3° |
| Quality measures during installation | Tightness test per section |
| Project duration | 7 months |
| Year start / end | 2008 |
# Case Study -2-  

<table>
<thead>
<tr>
<th><strong>PROJECT NAME:</strong></th>
<th>Cosan Irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community/Country:</strong></td>
<td>Brasil - Jataí Goias</td>
</tr>
<tr>
<td><strong>Amiantit location:</strong></td>
<td>AMITECH Brasil</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Cosan company to produce more than 56 million tons of sugar in 2010, 27% more than previous harvest volume. To reach this target, a FLOWTITE GRP aqueduct was built.</td>
</tr>
</tbody>
</table>

| **application:** | Irrigation |
| **transported medium:** | Raw water |
| **working pressure:** | 6-10 bar |
| **type of project:** | new installation |
| **demanded standards / specifications / approvals:** | AWWA C950, DIN |
| **Special requirement on pipe-system:** | Durability and installation ease |
| **chosen pipe system:** | GRP filament wound |
| **why our product:** | light weight, corrosion resistance, flow characteristics, chem. prop. mech. prop., other reasons? |

| **Project owner:** | Cosan S/A – Jataí Goias |
| **consultant / engineer:** | Cosan S/A – Jataí Goias |
| **contractor:** | Cosan S/A – Jataí Goias |

**Pipe Details - material:**

- **Total pipeline length (m):** 4,828
- **Diameter DN min / max (mm):** 600 / 700
- **Pressure PN min / max (bar):** 6 / 10
- **Stiffness SN min / max (N/m²):** 2500
- **joint types:** FLOWTITE standard couplings
- **fittings used:** no

**Installation Details:**

- **type:** open trench
- **trench dimensions (m):** 1.10 – 1.80
- **native soil type:** Loose Medium
- **backfill soil type / compaction:** Native soil
- **thrust blocks / lockjoints:** Yes
- **Project duration:** < 12 months
- **Year start / end:** 2009
## Case Study -3-  

**PROJECT NAME:**  
Brenta-Cittadella

**Community/Country:**  
Italy, Cittadella

**Amiantit location:**  
AMITECH Germany GmbH

**Description:**  
Agricultural irrigation system

**application:**  
Irrigation

**transported medium:**  
Raw water

**working pressure:**  
10 bar

**type of project:**  
- new installation

**demanded standards / specifications / approvals:**  
European standard;  
Austrian standard

**Special requirement on pipe-system:**  
Pressure pipe; fast and easy installation; REKA coupling

**project value in US$:**  
US$ > 1,000,000

**chosen pipe system:**  
- GRP filament wound
- light weight
- corrosion resistance
- flow characteristics
- positive experience with Amitech / FLOWTITE GRP-pipes in the past

---

**Project owner:**  
Consorzio Brenta-Cittadella

**consultant / engineer:**  
Consorzio Brenta-Cittadella

**contractor:**  
Gelmini Lidio CO.MA.C

### Pipe Details - material:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total pipeline length (m)</td>
<td>12,144</td>
</tr>
<tr>
<td>Diameter DN min / max (mm)</td>
<td>350 / 700</td>
</tr>
<tr>
<td>Pressure PN min / max (bar)</td>
<td>10</td>
</tr>
<tr>
<td>Stiffness SN min / max (N/m²)</td>
<td>10000</td>
</tr>
<tr>
<td>joint types</td>
<td>FLOWTITE standard couplings</td>
</tr>
<tr>
<td>fittings used</td>
<td>No</td>
</tr>
</tbody>
</table>

### Installation Details:

- **type:** open trench
- **trench dimensions (m):** Double the pipe diameter
- **laying depth (m):** 2
- **native soil type:** Soil class G3
- **backfill soil type / compaction:** Sand & gravel
- **thrust blocks / lockpoints:** Yes
- **deflection min/max:** max. 1°
- **quality measures during installation:** Tightness test per section
- **Project duration:** 12 months
- **Year start / end:** 2008 / 2009

**Owner/Consultant/Contractor comments:**  
The Consorzio was very satisfied with the preparation support, the excellent delivery time and the overall quality of the FLOWTITE products.
Case Study -4-

<table>
<thead>
<tr>
<th>PROJECT NAME:</th>
<th>Campigo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community/Country:</td>
<td>Italy / San Floriano di Castelfranco-Veneto</td>
</tr>
<tr>
<td>Amiantit location</td>
<td>AMITECH Germany GmbH</td>
</tr>
<tr>
<td>Description:</td>
<td>Agricultural irrigation system</td>
</tr>
</tbody>
</table>

- **application:** Irrigation
- **transported medium:** Raw water
- **working pressure:** 10 bar
- **type of project:** new installation
- **demanded standards / specifications / approvals:**
  - European standard;
  - Austrian standard
- **Special requirement on pipe-system:** Pressure pipe; fast and easy installation; REKA coupling
- **project value in US$:** US$ 1,900,000

- **chosen pipe system:** GRP filament wound
- **why our product?**
  - light weight
  - corrosion resistance
  - flow characteristics
  - positive experience with Amitech / FLOWTITE GRP-pipes in the past

- **Project owner:** Consorzio Ledra Tagliamento, Montebelluna (TV), Italy
- **consultant / engineer:** Consorzio Ledra Tagliamento, Montebelluna (TV), Italy
- **contractor:** Manzato Andreola, Canella Vanni

### Pipe Details - material:

- **Total pipeline length (m):** 7,834
- **Diameter DN min / max (mm):** 1000
- **Pressure PN min / max (bar):** 10
- **Stiffness SN min / max (N/m²):** 10000

- **joint types:** FLOWTITE standard couplings
- **fittings used:** No

### Installation Details:

- **type:** open trench
- **trench dimensions (m):** Double the pipe diameter
  - laying depth (m): 2
  - native soil type: Soil class G3
  - backfill soil type / compaction: Sand & gravel
  - thrust blocks / lockjoints: yes, 2
  - deflection min/max: 2°
  - quality measures during installation: Tightness test per section
  - Project duration: 12 months
  - Year start / end: 2008

**Owner/Consultant/Contractor comments:** The Consorzio was very satisfied with the preparation support, the excellent delivery time and the general quality of the FLOWTITE products.
# Case Study

**PROJECT NAME:** Nerves della Battaglia  
**Community/Country:** Italy / Veneto  
**Amiantit location:** AMITECH Germany GmbH  
**Description:** Agricultural irrigation system  
- **application:** Irrigation  
- **transported medium:** Raw water  
- **working pressure:** 16 bar  
- **type of project:** new installation  
- **demanded standards / specifications / approvals:** European standard; Austrian standard  
- **Special requirement on pipe-system:** Pressure pipe; fast and easy installation; REKA coupling  
- **project value in US$:** US$ 1,400,000

**Pipe Details - material:**  
- **Total pipeline length (m):** 9,500  
- **Diameter DN min / max (mm):** 400 / 700  
- **Pressure PN min / max (bar):** 16  
- **Stiffness SN min / max (N/m²):** 10000  
  - **joint types:** FLOWTITE standard couplings  
  - **fittings used:** No

**Installation Details:**  
- **type:** open trench  
- **trench dimensions (m):** Double the pipe diameter  
- **laying depth (m):** 2  
- **native soil type:** Soil class G3  
- **backfill soil type / compaction:** Sand & gravel  
- **thrust blocks / lockjoints:** No  
- **deflection min/max:** max. 2°  
- **quality measures during installation:** Tightness test per section  
- **Project duration:** 12 months  
- **Your start / end:** 2008 / 2009

**Owner/Consultant/Contractor comments:** Also at difficult weather conditions (intense rain) in the construction period, Amitech was able to ensure certain delivery and consistent quality standards.
**Case Study -6-**

<table>
<thead>
<tr>
<th>PROJECT NAME:</th>
<th>Metohija Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community/Country:</td>
<td>Pristina, Kosovo</td>
</tr>
<tr>
<td>Amiantit location</td>
<td>APS Norway AS - Vera AS</td>
</tr>
<tr>
<td>Description:</td>
<td>Supply of 130 mill. m³ water per year, mainly for irrigation, but also for drinking water and industrial supply.</td>
</tr>
<tr>
<td>application:</td>
<td>Irrigation, Raw water, Potable water</td>
</tr>
<tr>
<td>transported medium</td>
<td>Water</td>
</tr>
<tr>
<td>working pressure</td>
<td>12 bar max.</td>
</tr>
<tr>
<td>type of project:</td>
<td>new installation</td>
</tr>
<tr>
<td>demanded standards / specifications / approvals:</td>
<td>AWWA / ASTM</td>
</tr>
<tr>
<td>Special requirement on pipe-system:</td>
<td>Light weight, difficult transport through rough terrain, none corrosive</td>
</tr>
<tr>
<td>project value in US$:</td>
<td>US$ 10,000,000</td>
</tr>
</tbody>
</table>

**Project owner:** Vodoprivredna Organizacija Metohija (VOM), Prizren, Kosovo  
**consultant / engineer:** Kosovoproyekt Hydroengineer Boal, Belgrade  
**contractor:** various

<table>
<thead>
<tr>
<th>Pipe Details - material:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total pipeline length (m):</td>
</tr>
<tr>
<td>Diameter DN min / max (mm):</td>
</tr>
<tr>
<td>Pressure PN min / max (bar):</td>
</tr>
<tr>
<td>Stiffness SN min / max (N/m²):</td>
</tr>
<tr>
<td>joint types:</td>
</tr>
<tr>
<td>fittings used:</td>
</tr>
</tbody>
</table>

**Installation Details:**  
- type: open trench  
- laying depth (m): up to 4 m  
- backfill soil type / compaction: Sand - gravel mixture  
- thrust blocks / lockjoints: No  
- deflection min/max: 1° / 2°  
- quality measures during installation: Internal field joint tester for joints, pressure tested to 1.5 times operating pressure, just after assembly.  
- Project duration: 30 months  
- Year start / end: 1984 / 1986

**Summary:** The irrigation and water supply and distribution systems are fully operational, with all 10,250 hectares under cultivation. The outlook for Kosovo Province and the Republic of Serbia has improved measurably, as a result of this project.
## Project Name: Safeguard of the agrumicole area of Sebt El-Guerdane

### Community/Country:
El-Guerdane / Morocco

### Amiantit Location:
AMITECH Maroc

### Description:
Irrigation of 10,600 hectares agricultural land with citrus fruits at Sebt El-Guerdane, in the province of Taroudant with 45 million m² of water per year. Starting from the hydraulic complex Aoulouz and Mokhtar Soussi, each hectare will receive 4,000 m² of water during the crop year.

<table>
<thead>
<tr>
<th>Application</th>
<th>Irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transferred medium</td>
<td>Raw water</td>
</tr>
<tr>
<td>Working pressure</td>
<td>16 bar max.</td>
</tr>
<tr>
<td>Type of project</td>
<td>New installation</td>
</tr>
<tr>
<td>Demanded standards/specifications/approvals</td>
<td>ISO 10639, AWWA C950</td>
</tr>
<tr>
<td>Special requirement on pipe-system</td>
<td>Supply within time limits</td>
</tr>
<tr>
<td>Project value in US$</td>
<td>US$ 42,300,000</td>
</tr>
</tbody>
</table>

### Project Owner:
Amansouss/El Guerdane

### Consultant/Engineer:
Abdelatif Farh/Adil/Morocco

### Contractor:
Louis Raymond Baudrand/Stam/Morocco

### Pipe Details - Material:
- **Total pipeline length (m):** 186,000
- **Diameter DN min/max (mm):** 400 / 1400
- **Pressure PN min/max (bar):** 6 / 16
- **Stiffness SN min/max (N/m²):** 5000
  - **Joint types:** FLOWTITE standard couplings
  - **Fittings used:** Elbows, flanges, wall coupling, thrust ring, tees, branches, reducers

### Installation Details:
- **Type:** Open trench
- **Trench dimensions (m):** 1 - 2.5
- **Laying depth (m):** 1.2 - 4
- **Native soil type:** Soil class G3
- **Backfill soil type/compaction:** Soil class SC2 / Hydraulic compaction
- **Thrust blocks/lockjoints:** Yes
- **Deflection min/max:** 1° / 3°, Field hydro testing
- **Project duration:** 20 months

### Summary:
AMITECH Maroc delivered the pipes within 20 months which allows now 600 farms (370 farmers) access to irrigated water. FLOWTITE GRP Pipes were the preferred choice due to easy installation resulting in a short project duration.
**Case Study -8-**

**PROJECT NAME:** Irrigation Arabayona  
**Community/Country:** Salamanca, Castilla y León (Spain)  
**Amiantit location** AMITECH Spain, S.A.  
**Description:** The project irrigates 3,319 hectares of dry land. More than 600 farmers benefit from the measure.

<table>
<thead>
<tr>
<th>application</th>
<th>Irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>transported medium</td>
<td>Raw water</td>
</tr>
<tr>
<td>working pressure</td>
<td>16 bar max.</td>
</tr>
<tr>
<td>type of project</td>
<td>new installation</td>
</tr>
<tr>
<td>demanded standards / specifications / approvals</td>
<td>FLOWTITE quality standards</td>
</tr>
<tr>
<td>Special requirement on pipe-system</td>
<td>Light weight and no corrosion</td>
</tr>
<tr>
<td>project value in US$</td>
<td>US$ 5,500,000</td>
</tr>
</tbody>
</table>

**Project owner:** Agricultura. Junta de Castilla y León, Madrid  
**consultant / engineer:** TRAGSATEC, Madrid  
**contractor:** UTE ALDESA-GRUPO AGASA, Madrid

**Pipe Details - material:**

<table>
<thead>
<tr>
<th>Diameter DN min / max (mm)</th>
<th>500 / 1400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure PN min / max (bar)</td>
<td>6 / 16</td>
</tr>
<tr>
<td>Stiffness SN min / max (N/m²)</td>
<td>5000</td>
</tr>
<tr>
<td>joint types</td>
<td>FLOWTITE standard couplings</td>
</tr>
<tr>
<td>fittings used</td>
<td>Elbows, tees, reducers</td>
</tr>
</tbody>
</table>

**Installation Details:**

<table>
<thead>
<tr>
<th>type</th>
<th>open trench</th>
</tr>
</thead>
<tbody>
<tr>
<td>trench dimensions (m)</td>
<td>1.80 x DN</td>
</tr>
<tr>
<td>laying depth (m)</td>
<td>3.0 m</td>
</tr>
<tr>
<td>native soil type</td>
<td>Hard clay</td>
</tr>
<tr>
<td>backfill soil type / compaction</td>
<td>Gravel, soil class SC1</td>
</tr>
<tr>
<td>thrust blocks / lockjoints</td>
<td>Concrete thrust blocks</td>
</tr>
<tr>
<td>deflection min/max</td>
<td>1.5° / 3°</td>
</tr>
<tr>
<td>Project duration</td>
<td>7 months</td>
</tr>
<tr>
<td>Year start / end</td>
<td>2008 / 2009</td>
</tr>
</tbody>
</table>

**chosen pipe system:** GRP filament wound  
**other materials in this project:** PVC  
**why our product:**
- light weight
- corrosion resistance
- flow characteristics
- chem. properties
- mech. properties
- price
Case Study -9-

**PROJECT NAME:** Canal Alto de los Payuelos I y II  
**Community/Country:** Spain, Castilla y León  
**Amiantit location:** AMITECH Spain  
**Description:** The project provides water for the irrigation of three big areas with a total of 24,580 ha.

- **application:** Irrigation  
- **transported medium:** Raw water  
- **working pressure:** 16 bar max.  
- **type of project:** new installation  
- **demanded standards / specifications / approvals:** FLOWTITE quality standards  
- **Special requirement on pipe-system:** Easy assembling installation and low prices  
- **project value in US$:** US$ 17,000,000

**Project owner:** AGUAS DEL DUERO, Valladolid  
**consultant / engineer:** TRAGSATEC, Madrid  
**contractor:** CORSAN CORVIAM / ALDESA BEGAR, Madrid

**Pipe Details - material:**  
- **Total pipeline length (m):** 112,667  
- **Diameter DN min / max (mm):** 400 / 2000  
- **Pressure PN min / max (bar):** 6 / 10  
- **Stiffness SN min / max (N/m²):** 5000, 10000  
- **Joint types:** FLOWTITE standard couplings  
- **fittings used:** approx. 500 elbows and tees

**Installation Details:**  
- **type:** open trench  
- **trench dimensions (m):** 1.75 x DN  
- **laying depth (m):** 4.5  
- **native soil type:** Natural sand  
- **backfill soil type / compaction:** Selected natural sand / 90%  
- **thrust blocks / lockjoints:** No  
- **deflection min/max:** 1.5° / 3°  
- **quality measures during installation:** Pressure tests and leakage tests  
- **Project duration:** 11 months  
- **Year start / end:** 2007 / 2008

**Summary:** Original specifications in the projects were steel cylinder concrete pipe. Price / easy and quick assembling / corrosion resistance and excellent commercial job of Amitech were key points for changing to GRP.
### Case Study -10-  

**PROJECT NAME:** Estación de Bombeo del Sector VII del Páramo Medio  

**Community/Country:** Castilla y León / Spain  

**Amiantit location:** AMITECH Spain, S.A  

**Description:** Extension of an existing irrigation system by installing a new GRP pipeline network and pumping stations in a second area.  

- **application:** Irrigation  
- **transported medium:** Raw water  
- **working pressure:** 6 bar  
- **type of project:** new installation  
- **demanded standards / specifications / approvals:** FLOWTITE quality standards  
- **Special requirement on pipe-system:** Light weight and corrosion resistance  
- **project value in US$:** US$ 1,600,000  

**chosen pipe system:**  
- GRP filament wound  
- light weight  
- corrosion resistance  
- flow characteristics  
- chem. properties  
- mech. properties  
- price  

**Pipe Details - material:**  
- **Total pipeline length (m):** 3,100  
- **Diameter DN min / max (mm):** 1600 / 2200  
- **Pressure PN min / max (bar):** 6  
- **Stiffness SN min / max (N/mm²):** 5000  
  - **joint types:** FLOWTITE standard couplings  
  - **fittings used:** Elbows  

**Installation Details:**  
- **type:** open trench  
- **trench dimensions (m):** 4  
- **laying depth (m):** 2  
- **native soil type:** Gravel, silt and clay, soil class G3  
- **backfill soil type / compaction:** Gravel, soil class SC1  
- **thrust blocks / lockjoints:** Yes  
- **deflection min/max:** 1.5° / 3°  
- **quality measures during installation:** Three leakage tests, pressure tests  
- **Project duration:** 2.5 months  
- **Year start / end:** 2009  

**Project owner:** ITACYL, Castilla y León, León  

**consultant / engineer:** TRAGSATEC LEÓN, Leon  

**contractor:** SACYR, Madrid
Handbook is intended as a guide only. All values listed in the product specifications are nominal. Unsatisfactory product results may occur due to environmental fluctuations, variations in operating procedures, or interpolation of data. We highly recommend that any personnel using this data have specialised training and experience in the application of these products and their normal installation and operating conditions. The engineering staff should always be consulted before any of these products are installed to ensure the suitability of the products for their intended purpose and applications. We hereby state that we do not accept any liability, and will not be held liable, for any losses or damage which may result from the installation or use of any products listed in this handbook as we have not determined the degree of care required for product installation or service. We reserve the right to revise this data, as necessary, without notice. We welcome comments regarding this handbook.

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