

# Large Diameter Piping System

DURABLE PE-PIPING  
SYSTEM FOR HIGH-  
VOLUME FLOW







## The Plastics Experts.

AGRU Pipe & Fitting Systems offer a complete range of high-quality pipes, fittings, valves and customized components made from polyethylene. Built for the safe and environmentally sensitive supply of gas, potable water and wastewater transport, AGRU solutions are built with years of experience, a highly knowledgeable staff and state-of-the-art manufacturing equipment.

The AGRU success story has been unfolding now for about seven decades. Founded in 1948 by Alois Gruber Sr., the company has grown to become one of the world's most important single-source suppliers for piping systems, semi-finished products, concrete protection liners and lining systems made from engineered plastics. Our ability to supply everything from a single source sets us apart. We use only the highest-grade thermoplastic polymers as our raw materials and, when it comes to application-technical consulting, AGRU is your best partner in the field.



### Quality

At AGRU, customer satisfaction comes first. Technical consultations, training courses, welding instruction and expert supervision on site are essential to the installation of our products. Our start-to-finish attention to quality ensures that our products meet and beat the strictest technical specifications, providing safe operation within gas, water and wastewater infrastructures.

# Cost and Time-Saving Installation and Operation

Made from PE 100, PE 100-RC, or PE 4710, AGRU's Large Diameter Piping System offers the most economic solution for high-volume flow applications. Better long-term hydraulic properties and operating expense savings, are based on the product's high-resistance to corrosion, wear and tear, and UV radiation. Together with its fast and easy installation, this is the perfect system both on- and offshore.

## Outstanding Life Span

### **POLYETHYLENE NEVER CORRODES**

Less operating costs compared to other solutions

- Based on a high resistance to corrosion, abrasion and UV radiation
- Long lasting smooth internal surface reduces biogrowth / incrustations
- Maintenance-free operation

## Fast and Easy Installation

### **POLYETHYLENE IS FLEXIBLE, LIGHTWEIGHT AND EASY TO WELD**

- Allows various installation methods
- Fast & safe sinking processes for offshore installation due to an extensive range of pipe diameters and fittings
- Time-saving butt welding provides durability and leak tightness
- Superior strength prevents damages during installation & operation

## Heavy-Duty Dimensioned

**PIPES AVAILABLE UP TO OD 2500 MM (98") AND 600 M (1968 FT) IN LENGTH, FROM SDR 41 UP TO SDR 7.4 (FOR LARGER PIPE SIZES UP TO SDR 17)**

Designed for highest demands

- Perfect for power plants with large required quantities of cooling water
- Withstands pressure surges
- Wide application range (sewage, mining, cooling, desalination, irrigation, etc)



## Large Diameter Pipes



### Smooth Internal Pipe Surface

- Reduces biological growth and incrustations
- Corrosion resistant and nontoxic
- Provides high abrasion resistance
- Offers the best long-term hydraulic properties
- Permanent low-head loss
- Results in lower pumping costs
- Provides excellent chemical resistance



## High Fatigue Strength

- Proven resistance to seismic forces (impact and soil settlements)
- Safer handling compared to other materials
- Withstands water hammers and pressure surges
- Allows direction changes without elbows
- Prevents damages during installation and operation

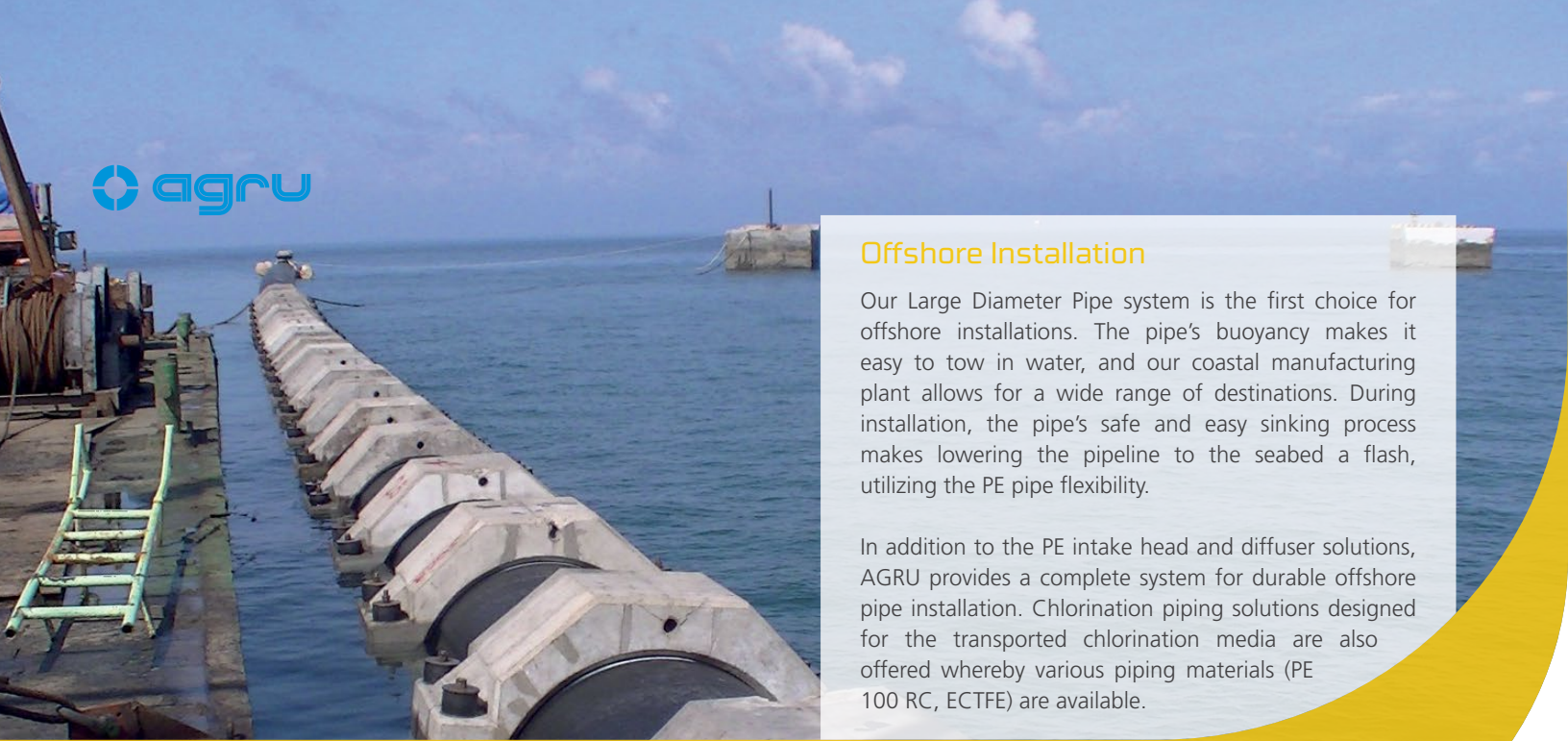


## Large Diameter Pipes

- Are lightweight despite their enormous size, cutting down transport and installation costs on-site
- Features a high roundness and uniform wall thickness for hassle-free installation
- Are equally suitable for heavy-duty on- and offshore applications
- Simply the most economic solution for high volume flow applications







## Offshore Installation

Our Large Diameter Pipe system is the first choice for offshore installations. The pipe's buoyancy makes it easy to tow in water, and our coastal manufacturing plant allows for a wide range of destinations. During installation, the pipe's safe and easy sinking process makes lowering the pipeline to the seabed a flash, utilizing the PE pipe flexibility.

In addition to the PE intake head and diffuser solutions, AGRU provides a complete system for durable offshore pipe installation. Chlorination piping solutions designed for the transported chlorination media are also offered whereby various piping materials (PE 100 RC, ECTFE) are available.

# Large Diameter Pipes Applications



## Onshore Installation

The piping system's wear-and-tear resistance and simple joining methods make the installation fast and safe. No heavy lifting or sophisticated equipment is necessary on-site. Therefore, transport costs are significantly lower compared to other pipe materials. Pipe joining can be done outside and inside the trench. Electrofusion couplers up to 48" IPS are also available.



## Relining

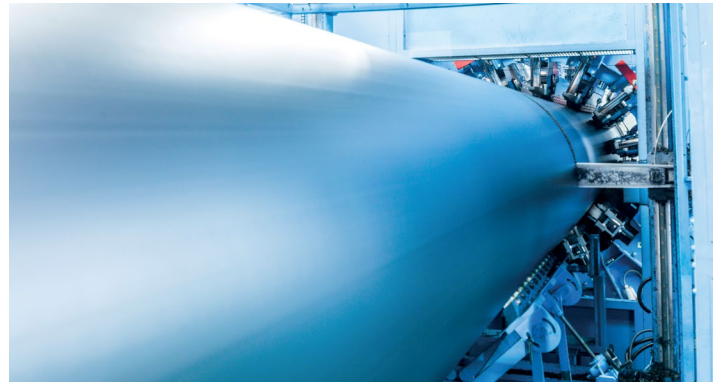
Alternate methods for restoration are sliplining, swagelining and sublining with AGRU PE pipes. This is a proven cost-effective method that provides a new pipe structure with minimum disruption of service, surface traffic, or property damage that would be caused by extensive excavation.



## High Production Standards

Agru manufactures and tests large diameter HDPE pipes according to EN 12201/ISO 4427. Agru America also manufactures and tests large diameter HDPE pipe in accordance with both the EN and ISO standards and in accordance with ASTM D3035, F714 or F3123. Minimal ovality, uniform wall thickness and outstanding life span are the outcome.

Highest quality and state of the art PE4710 / PE 100/ PE 100 RC resins in combination with unique production technology are further important features of our Large Diameter Piping system. Stringent QC in our test labs which are also fully equipped for testing large diameter pipes ensure top quality.



## One Stop Shop

Large diameter pipes are available from our extensive stock in various dimensions and sizes. As a one-stop shop supplier, AGRU also offers a wide range of fittings. Furthermore, optimized diameters and pipe lengths can be produced according project requirements.







# Large Diameter Piping System Connection Methods

## Various Connection Methods For Ease of Installation

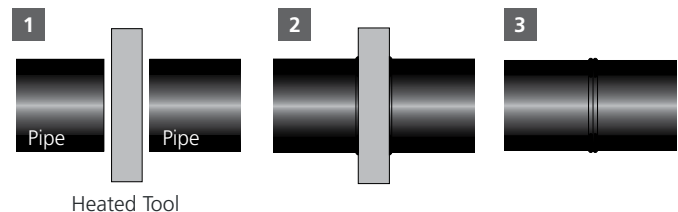
Four different connection methods are suitable and offered for joining large diameter pipes: Heated tool butt welding, electro-socket welding, saddle welding and flange connection.

The heat fusion process results in a monolithic piping system that is as strong and leak free as the pipe itself.



### 1. Heated Tool Butt Welding

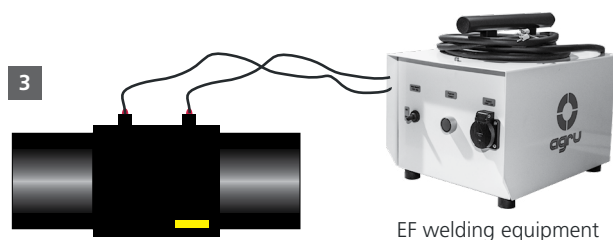
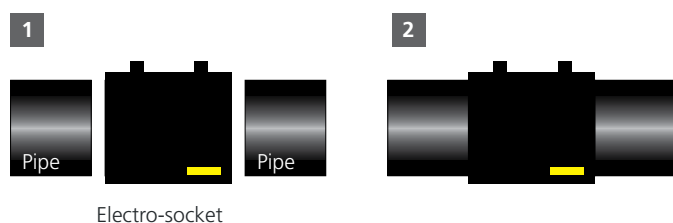
Heated tool butt welding is applicable up to OD 2500 (98"). The two pipe components are clamped in the welding machine and pipe ends are planned. The welding area is heated up with the heating tool and then joined together with a defined welding pressure. This ensures high-quality joints with excellent reproducibility under site conditions.





## 2. Electro-Socket Welding

Alternatively, the electro-socket welding method is available up to a diameter of 48" IPS. At the electro-socket welding, the scraped and cleaned pipes are placed into electro-sockets and then welded on both sides of the socket. The advantage is the small amount of space needed for performing this welding method as well as the easy handling of the small and lightweight welding machine.



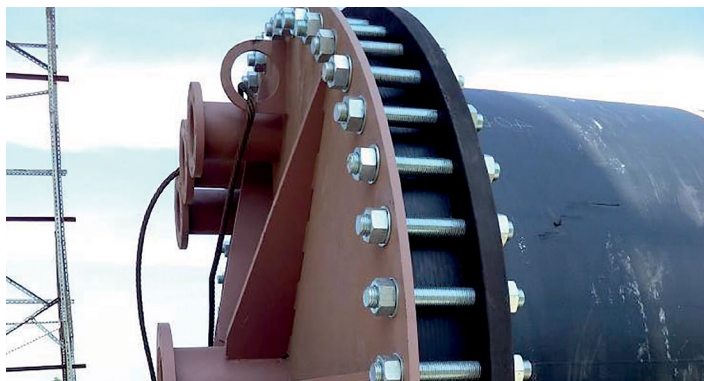
## 3. EF Saddle Welding

Saddle welding is an efficient solution to create branches on existing or new pipelines (such as manholes, intake head connections and diffuser outlets). Saddles are clamped onto a scraped and cleaned pipe and welded by electrofusion welding. Branches in different positions on the main pipe can be created by this from AGRU offered method quick and easy. Also factory welded branches are offered from AGRU by this method.



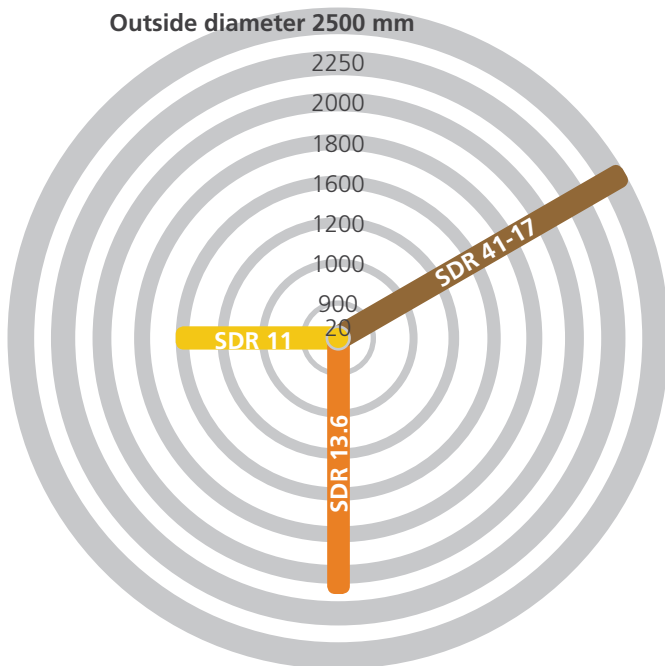
## 4. Flange Connection

To connect two pipe segments without welding equipment, a flange connection can be chosen. Flange connections are detachable and provide easy access for cleaning or the connection of prefabricated pipe spools. AGRU supplies stub ends, backing rings, blind flanges and suitable gaskets according to DIN, ASTM and AWWA standard up to OD 2500 mm (98").





## Large Diameter Piping System



### Supply Range PE 100 (-RC) Pipe

Large Diameter Pipes can be produced up to a diameter of 2500 mm (98") with a wall thickness up to 150 mm (6"). For special projects the wall thickness of the pipe can be tailor-made to provide the optimal solution for the clients at reduced costs.

| SDR  | Max. Working Pressure (bar) |
|------|-----------------------------|
| 41   | 4                           |
| 33   | 5                           |
| 26   | 6.3                         |
| 21   | 8                           |
| 17   | 10                          |
| 13.6 | 12.5                        |
| 11   | 16                          |

Further pressure ratings are available on request.



## Chlorination Pipes

Chlorination pipes are an essential part for offshore installed seawater intake systems. AGRU provides a complete solution of chlorination pipes, fittings and valves which can be installed offshore. Depending on the transported chlorination chemical and working conditions, PE 100-RC, PVDF, ECTFE or PFA pipes can be offered. For the safe and fast installation of these products AGRU also offers state of the art joining systems (Infrared fusion for PVDF and ECTFE piping, for example). For detailed information please consult with AGRU.



## Intake Heads, Diffusers and Manholes

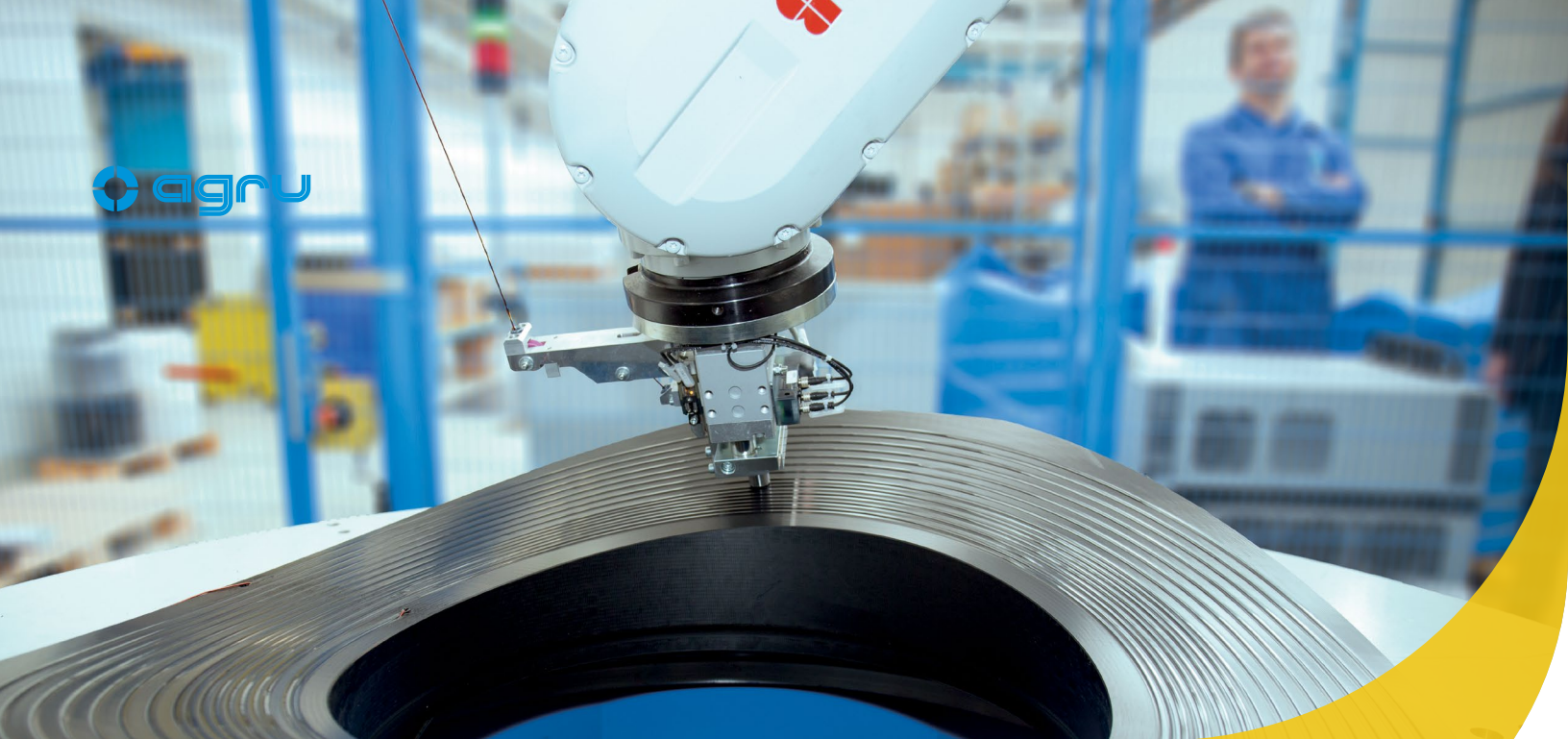
An intake head is fixed on a pipeline which transports water from the source (i.e. sea, lake, river) to a chamber or directly to a pumping station. This special fitting prevents the intake of marine life forms and larger objects. AGRU can provide various solutions adopted for the project in PE. Diffusers are part of a piping system, which feeds back warmed-up cooling water into the sea. The diffusers spread the hot water volume over a variety of outlets, allowing a fast and environmentally friendly adaptation to the ambient temperature. Headers and diffusers made in PE do offer many advantages in installation and operation.



Also large structures, such as manholes, can be fabricated out of PE piping components. Easy combination with the main pipes (e.g. by welding) as well as good hydraulic and corrosion resistance properties are an essential feature for onshore and offshore installations.







## Large Diameter Piping System

### PE 100 Fittings

AGRU manufactures a wide range of standard fittings (machined and fabricated version). Using most modern workshop machines AGRU is able to provide special fittings and pre-fabricated spools according to the requirements of the clients.

In house design, state of the art fabrication and AGRU's one-stop shop philosophy enable the client to get from one source a complete solution.



### Large Diameter EF-Couplers

AGRU produces large diameter EF-couplers from 22" up to 48" IPS using state of the art production technology which grants high product and welding quality. They feature:

- Maximum security due to completely embedded heating wire
- Bifilar welding system enables pre-installation of the EF-couplers outside the trench for mobile and space-saving application
- Available in SDR 11 and 17
- Perfectly suitable for tie in joints
- Weldable depending on the OD with pipes ranging from SDR 33 up to SDR 11



## Branch Saddle Topload

AGRU offers machined branch saddles system "Topload" for large diameter pipes. The specially developed clamping system ensures a cost effective installation suitable for tight space configurations. They feature:

- Fully embedded heating wire
- Pressure-resistant design
- Branch connection by butt or electro-socket welding
- Easy mounting for specially developed clamping device
- Branch adjustable in any position on the main pipe

### SUPPLY RANGE CODE 289

#### Dimensions STS 355-2500

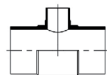
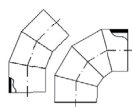
| Main Dimension [mm]                                     | Branch Dimension [mm]            |
|---|----------------------------------|
| 355 - 1400  | 90, 110, 125, 160, 180, 200, 225 |
| 450 - 1400  | 250, 280                         |
| 450 - 2500  | 315                              |
| 710 - 2500  | 355, 400, 450, 500               |
| 1600 - 2500   | 560, 630, 710, 800, 900          |
| Special dimensions not listed are available on request. |                                  |



## Supply Range PE 100 (-RC) Fittings

AGRU manufactures full-pressure resistant fittings out of round- and hollow bars. Fittings, segmented out of pipes like bends and tees, can also be provided.

### SUPPLY RANGE PE 100 RC FITTINGS



|      | Bend<br>30°, 45°, 90° | Tee  | Reduced<br>Tee | Stub<br>flange | Reduction       | End Cap |
|------|-----------------------|------|----------------|----------------|-----------------|---------|
| 800  | 800                   | 800  | 800/≤ 700      | 800            | 800/630/800/710 | 800     |
| 900  | 900                   | 900  | 900/≤ 800      | 900            | 900/710/900/800 | 900     |
| 1000 | 1000                  | 1000 | 1000/≤ 900     | 1000           | 1000/900        | 1000    |
| 1200 | 1200                  | 1200 | 1200/≤ 1000    | 1200           | 1200/1000       | -       |
| 1400 | 1400                  | 1400 | 1400/≤ 1200    | 1400           | 1400/1200       | -       |
| 1600 | 1600                  | 1600 | 1600/≤ 1400    | 1600           | 1600/1400       | -       |
| 1800 | 1800                  | 1800 | 1800/≤ 1600    | 1800           | 1800/1600       | -       |
| 2000 | 2000                  | 2000 | 2000/≤ 1800    | 2000           | 2000/1800       | -       |
| 2250 | 2250                  | 2250 | 2250/≤ 2000    | 2250           | 2250/2000       | -       |
| 2500 | -                     | -    | 2500/≤ 2250    | 2500           | 2500/2250       | -       |

SDR 41 - 11

SDR 41-13,6

SDR 41 - 17

### Offshore/Onshore Installation

Sea water intake pipe (PE 100 OD 2500 mm SDR 26) connected to the onshore intake building

## Large Diameter Piping System References



### Installation Without Sand Bed

PE 100-RC, available for special order, is crack resistant and allows onshore installation without cost intensive sand bedding.



## Giant Cooling Water Piping System

AGRU provides PE 100 large diameter pipes up to OD 2500 (98"), SDR 26 for a cooling water intake and outfall in a large scale power plant.







Subject to errors of typesetting, misprints and modifications.  
Illustrations are generic and for reference only.

**AGRU America**  
500 Garrison Road  
Georgetown, SC 29440  
USA

T. +1 800 373 2478  
F. +1 843 527 2738  
[salesmkg@agruamerica.com](mailto:salesmkg@agruamerica.com)

