



## 1 Building and Construction

# Press Fitting System for Drinking Water Pipes

Grade 316 stainless steel is often selected for drinking water pipes. Costs are reduced considerably if the ferritic stainless grade 444 is used instead of the austenitic 316 grade. This strengthens the competitive position of stainless steel against the other materials that can be used in this application.



**Location/environment** | GERMANY AND SWITZERLAND/INDOOR

**Product** | COLD ROLLED STAINLESS STEEL STRIPS

**Fabrication process** | FORMING AND WELDING

**Grade/surface** | AISI 444/2B

**Material thickness/diameter** | 10 - 100 MM DIAMETER

**Weight** | 0.64 KG/M (AVG.)

**Competing material** | MLP/ALUMINIUM, COPPER, CARBON STEEL, PLASTIC

**Date of completion** | ONGOING

**Manufacturer** | FISCHER EDELSTAHLROHRE, SCHOELLER WERK, NIROSAN, ESTA ROHR

**Material supplier** | THYSSENKRUPP NIROSTA

**Source of information** | THYSSENKRUPP NIROSTA

**Remarks**

## Electric Machinery and Equipment

# Solar Hot Water Heater

A basic solar water heating system works on very simple principles, can cost little to install and usually requires minimal maintenance. From a technical point of view, ferritic stainless steels have various advantages in this application, not least of which is their corrosion resistance. The initial cost of these units is also low.



**Location/environment** | SWITZERLAND/OUTDOOR

**Product** | STAINLESS STEEL SHEET

**Fabrication process** | ABSORPTION PANEL: STAMPED AND SPOT WELDED. TANK: MIG WELDING.

**Grade/surface** | TYPE 444/INNER CYLINDER IN 2B, ENVELOPE IN BA

**Material thickness/diameter** | ABSORPTION PANEL: 0.6 MM. TANK: 1.5 AND 2.0 MM.

**Weight** | 125 KG

**Competing material** | 316L ENAMELLED STEEL

**Date of completion** | NOVEMBER 2008

**Manufacturer** | ABSORPTION PANEL AND STAND: ENERGIE SOLAIRE. TANK: DEPOSITOS COBALLES.

**Material supplier** | ARCELORMITTAL STAINLESS EUROPE

**Source of information** | ISSF FERRITIC STAINLESS STEEL PROJECT

**Remarks** | FERRITIC GRADES OF STAINLESS HAVE ALREADY PROVEN THEMSELVES IN HOT WATER TANKS AND ARE WELL ACCEPTED. ASSEMBLING TWO FERRITIC STAINLESS SHEETS TOGETHER MAKES A SUPER-EFFECTIVE ABSORBER PANEL WITH 98% OF THE SURFACE AREA USED FOR HEAT EXCHANGE. THIS COMPARES VERY WELL WITH TRADITIONAL BLACK-PAINTED COPPER TUBES WHICH CAN ONLY UTILISE 30% OF THEIR SURFACE AREA FOR HEAT EXCHANGE.

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## Industrial Machinery

# Water Treatment Plant

Stainless steel has been used for the pipes and fittings of this advanced large-scale water treatment plant.



**Location/environment** | AUSTRALIA/OUTDOOR

**Product** | STAINLESS STEEL PIPE, PIPE FITTINGS AND FLANGES

**Fabrication process** | PASSIVATION AND WELDING

**Grade/surface** | 316, 316L

**Material thickness/diameter** | 25-600NB

**Weight** | 350 TONS

**Competing material**

**Date of completion** | SEPTEMBER 2007

**Manufacturer** | D&R STAINLESS AND PERFAB PTY. LTD. AND STAINLESS PIPE AND FITTINGS

**Material supplier**

**Source of information** | ASSDA, AUSTRALIAN STAINLESS MAGAZINE EDITION 41

**Remarks** | THE CONTRACTOR FOR THIS PROJECT WAS THIESS PTY. LTD.

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Home and Office

## Fasteners for Solar Panels

Solar panels are exposed to high wind and snow loads. The fastening systems used to secure them are critical and must have a life-span that exceeds that of the panels. Typically 25 years is the minimum life. As they are partly covered they are not cleaned by rain. The manufacturer utilised a medium-lean duplex grade of stainless with 23% chromium and 4% nickel (EN 1.4362, UNS S 32304), ideal for the purpose.



**Location/environment** | GERMANY/OUTDOOR

**Product** | STAINLESS STEEL PLATE AND SHEET

**Fabrication process** | CUTTING, BENDING, DRILLING

**Grade/surface** | DUPLEX STAINLESS STEEL (23% CR, 4% NI), EN 1.4362, UNS S 32304/2E BLASTED SURFACE TO EN STANDARDS

**Material thickness/diameter** | 1.5 TO 8.0 MM DEPENDING ON DESIGN

**Weight** | VARIES DEPENDING ON DESIGN

**Competing material** | STAINLESS STEEL GRADE 316L OR 316TI, GALVANISED CARBON STEEL

**Date of completion** | 2002

**Manufacturer** | MODERSOHN.DE

**Material supplier**

**Source of information** | MODERSOHN.DE/ISSF SOLAR ARCHITECTURE PROJECT

**Remarks**

## Home and Office

# Thermal Solar System

High-performance ferritic grades of stainless were used to improve the cost-effectiveness of these gravity-fed hot water tanks. Typically the tanks are mounted outside next to solar panels on roofs.



Location/environment | SOUTH AFRICA/OUTDOOR

Product | STAINLESS STEEL COLD ROLLED SHEET

Fabrication process | BENDING, WELDING

Grade/surface | TANK INTERIOR: 441. ENVELOPE: 430/BRIGHT ANNEALED

Material thickness/diameter | 1.5 MM

Weight

Competing material | GALVANISED CARBON STEEL, ALUMINIUM

Date of completion

Manufacturer | SUNTANK.COM

Material supplier

Source of information | SUNTANK.COM/ISSF SOLAR ARCHITECTURE PROJECT

Remarks

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