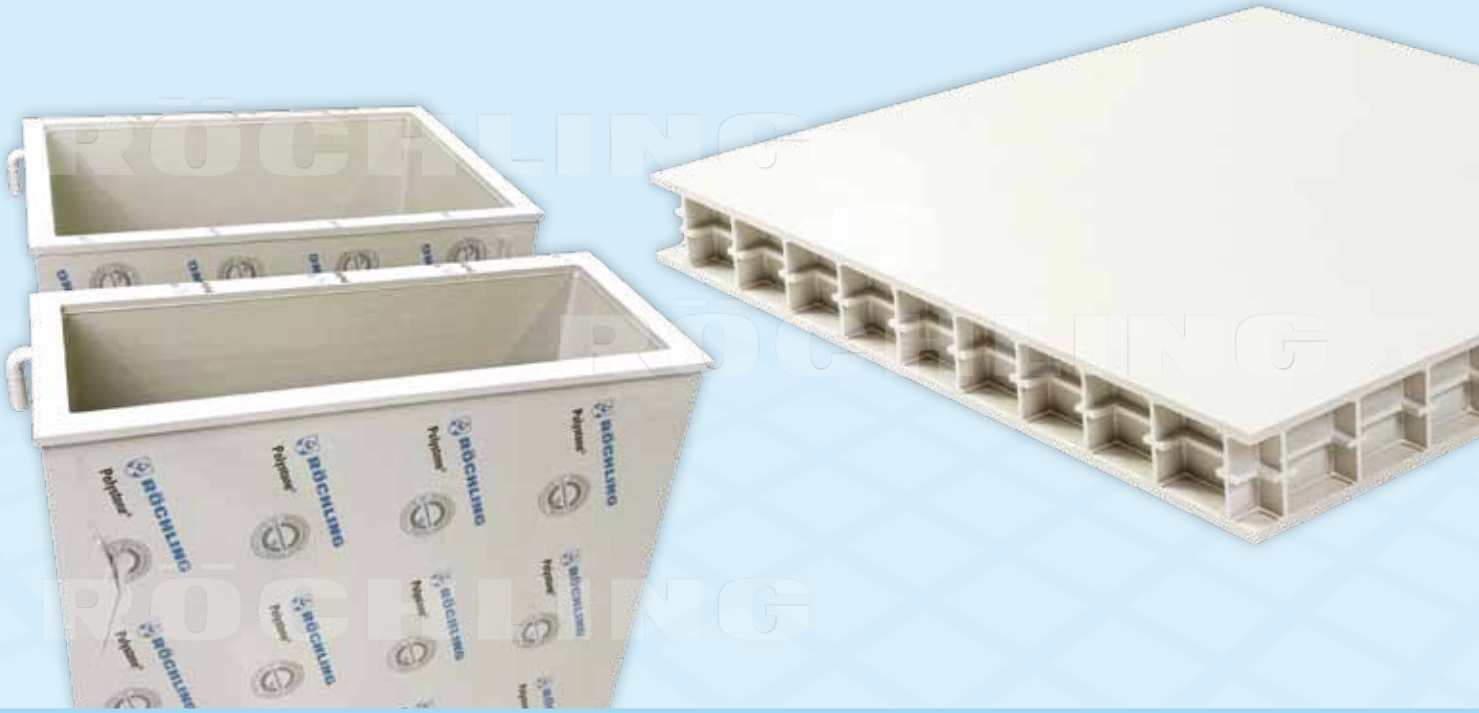
RÖCHLING



Project report

Rinsing water tank for an anodising plant made of Polystone® P CubX®

Enormous time saving: Rectangular tank without steel reinforcement

Chemical processing industry

Enormous time saving

Rectangular tank without steel reinforcement

There are hardly any other words that drive the pulse of system operators through the roof like: machine shutdown! Whether planned or unplanned: if a system shuts down, everything is done to make it sure it gets back into operation as fast as possible. Shutdowns cost money. Randolf Gödecke, Managing Director of G&H Kunststofftechnik GmbH & Co. KG from Sprockhövel/ Germany knows this only too well. G&H has been producing components and systems made of plastic for chemical tank and plant construction, ventilation technology and pipe construction for 20 years. G&H produces round and rectangular plastic tanks for its customers worldwide – either for new systems or to replace the existing ones. The same principle always applies: the customer needs the tanks in the time and quality required.

"We were able to dispense with steel reinforcement and the associated welding work completely and as a result complete both tanks earlier than originally planned."

For an **anodising plant** for the surface treatment of heat sinks, G&H was commissioned with the production of two **rinsing water tanks** with the dimensions 1,000 x 1,400 x 1,400 mm and 480 x 1,400 x 1,400 mm. The two previous steel tanks with GFRP-coating had to be replaced, due to signs of wear and tear. However, the production of rectangular tanks is often very time-consuming. Even small rectangular tanks usually have to be reinforced with steel. Cladding with plastic profiles, which have to be elaborately cut to size and welded, is required to protect the steel reinforcement against corrosion. Gödecke explained, "Producing rectangular tanks made of solid plastic sheets usually requires all-round steel reinforcement and welding." This costs a lot of time and resources.

Interior view: The interior cube structure of Polystone® CubX® bestows high transverse and longitudinal rigidity at a very low weight

Easy handling and custom-fit installation. The low weight of Polystone® P CubX® greatly simplified the exact alignment of the tanks

Fast production: Two rinsing water tanks for an anodising plant made of Polystone® P CubX®. Polystone® P CubX® makes it possible to dispense completely with steel reinforcement and the associated time-consuming welding work

Project overview

Rinsing water tank for an anodising plant

Initial situation

Planning and production of two rinsing water tanks for an anodising plant for surface treatment of heat sinks.

- Tank 1: 1.000 x 1.400 x 1.400 mm
- Tank 2: 480 x 1.400 x 1.400 mm

Requirements

- Fast production of the tank: The two previous steel tanks of the anodising plant with GFRP-coating had to be replaced due to signs of wear and tear. The machine shutdown of the anodising plant should be as short as possible.
- Easy handling

Material used

- Polystone® P CubX®
- Colour: grey (RAL 7032)

Result

Polystone® P CubX® makes it possible to dispense completely with steel reinforcement and the associated elaborate welding work. The tanks were completed earlier than planned.

Project partner

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Process optimisation

This is why Gödecke saw precisely here the opportunity to optimise its production processes and provide its customers with even better service. Together with Pascal Adam, the production manager at G&H, he decided against using conventional solid plastic panels with steel reinforcement for the manufacture of the rinsing water tanks. Instead, the tank construction sheet Polystone® P CubX®, developed by Röchling, Haren, was used.

New tank construction sheet

Polystone® P CubX® is a cross-ribbed twin-wall sheet, which in its interior consists of a homogeneous quadratic (orthogonal) grid pattern welded on the exterior sides with two sheets forming the sheet surface. **The interior cube structure** endows the sheet with a **low weight and high longitudinal and transverse rigidity**. The advantage: Depending on the tank design, **continuous steel reinforcement can be partially or completely dispensed with**. At the same time, thanks to its very good and proven chemical resistance, it is suitable for permanent contact with chemical media. The Polystone® P (PP) material has been in worldwide use for decades by tank constructors for building safer tanks.

Gödecke explains: "Polystone® P CubX® provided us with the opportunity to produce the rinsing tanks faster than rectangular tanks of comparable dimensions made of solid plastic sheets." When Röchling contacted him and he heard of the new development, he decided immediately on a test. Together with his team, Adam used the 57 mm thick Polystone ® P CubX® sheets for the side walls and base of the rinsing water tanks. The side walls were rabbeted in the corners. Interior seams were extrusion welded; hot-gas string-bead welding was used for the outer seams and outer welding rod.

Compared to conventional solid plastic sheets, **no steel reinforcement was required**; an enormous time saving Adam says, "We were able to dispense with steel reinforcement and the associated welding work completely and as a result complete both tanks earlier than originally planned."

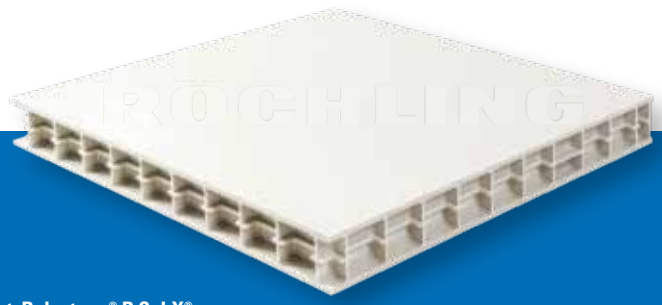
Great mechanical stability

But the following must also be kept in mind: apart from fast supply, what above all counts for customers is the performance of the tanks. But how do the rinsing water tanks made of Polystone® P CubX® perform without all-round steel reinforcement when completely full? Adam conducted a stress test. When completely filled with water, there was only a very mild bulge of approximately 5 mm on the longest exterior wall of the large tank. Adam: "Both tanks passed the test, thanks to the **great longitudinal and transverse rigidity** of the sheet."

Low weight and easy processing

Another positive factor for Adam during the work was the **low weight** of the sheets at 17 kg/m²: "Polystone® P CubX® is very light. This was not only an advantage during the processing, but also during the installation of the tanks. The latter required great precision. The easy handling simplified the precise alignment of the tanks enormously." Röchling was able to demonstrate in tests in its own material laboratory: a Polystone® P CubX® sheet with a thickness of 57 mm has the same rigidity as a solid plastic sheet made of PP with a thickness of 35 mm, but weighs only half as much. This means the sheet is also ideal for tank repairs and retrofitting in poorly accessible installation locations.

For Adam, another advantage was the handy 1,500 x 2,000 mm format of the sheets: "Processing the sheets during machining and cutting them to the size required were very easy. They remained very straight after the processing as well." Gödecke sees the results as confirming his decision, "We're always on the lookout for ways to optimise our processes and produce even better tanks for our customers even quicker. Polystone® P CubX® saved us a lot of time. These kinds of innovations enable us to provide our customers with even better service. We're going to use the sheet in future projects too."



The tank construction sheet Polystone® P CubX®: Featuring a unique inner cube structure for outstanding stiffness properties. Reduces steel reinforcement considerably. The time saving in tank construction is enormous

"Polystone® P CubX® provided us with the opportunity to produce the rinsing tanks faster than rectangular tanks of comparable dimensions made of solid plastic sheets."

Developed especially for chemical tank and plant construction:
Polystone® P CubX®

Plastics for chemical tank construction

Röchling thermoplastics have been in use for decades in the chemical industry as material for plants and tanks. Röchling provides a complete system consisting of sheet material, square tubes, U-Profiles and different welding rods and expert advice in selecting the correct material. Furthermore, Röchling has a comprehensive database and many years of experience with chemical resistance and the successful use of thermoplastics. The most important areas of use are tanks for the storage of liquids, galvanic plants, steel-pickling plants, water-treatment systems, exhaust-air cleaning plants and ventilation plants.

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