



- Flood Control
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- Tidal Barrier
- Water Supply
- Hydropower

Spillway Gates and Inflatable Rubber Dams



Introduction

Dyrhoff specialises in the design and supply of spillway gates and inflatable rubber dams. The company has been involved in rubber dam business in Europe since 1989 and in spillway gate business since 1997. In 2003, Dyrhoff took over the *Sumigate* rubber dam business from the Japanese company, Sumitomo Electric Industries, Ltd. At the time, Sumitomo Electric was the world's leading manufacturer and supplier of inflatable rubber dams.

The Dyrhoff rubber dam is designed by Dyrhoff in Europe using design know-how acquired from Sumitomo Electric. All our rubber dam components are designed and manufactured according to the current Japanese technical standards on inflatable rubber dams.

Dyrhoff is also the main European agent for the Obermeyer Hydro spillway gate. We supply complete spillway gate systems according to Obermeyer Hydro's design. Depending on the size of the spillway gate and type of steel required, Dyrhoff can fabricate some steel components in house such as the gate panels, abutment plates and steel embeds as well as pre-fabricating pipe layouts. Otherwise, manufacturing of painted steel components is usually outsourced to local companies in Europe depending on the location of the project.

Dyrhoff can work on a supply only or a full turnkey basis. Furthermore, Dyrhoff can supply all or part of the rubber dam or spillway gate system with or without the control system. Dyrhoff can give independent and impartial advice on the best type of gate system for a particular application or location without being tied to a specific rubber dam or spillway gate manufacturer.



Ⓐ Fabrication and painting of gate panel in Europe.

Ⓥ Sumitomo Electric rubber dam in Japan.



*"We are the only company in
the world that can supply and
install both spillway gates and
inflatable rubber dams".*

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DYRHOFF**

Inflatable Rubber Dam

Inflatable rubber dams have been used as water control structures for more than fifty years. The world's first inflatable rubber dam was installed in Los Angeles County in the USA in the mid-1950s. In those days, inflatable rubber dams were viewed much as they are today as relatively inexpensive, versatile structures capable of creating pondage and/or controlling flow in a particular watercourse.

The rubber dam is a permanent structure comprising a sheet of rubber-coated fabric (rubber body) which is fixed to a reinforced concrete foundation using clamp plates and anchor bolts. The rubber dam is inflated by pumping air or water inside the rubber body until the design height or pressure is reached. It is deflated by allowing the air or water inside the rubber body to escape.

The inflatable rubber dam has numerous advantages over other types of water control gate, such as;

- Simple and inexpensive operating system
- Can be installed on almost any channel cross-section shape
- Relatively low capital cost
- Perfect sealing; no leakage
- Virtually maintenance free; no moving parts, no painting
- Long spans up to 100m; multiple spans of several hundred metres
- Easily designed to accept loading in both directions
- Light structure
- Clean operation; no hydraulic oil required
- Can always be "opened" (deflated); no possibility of jamming



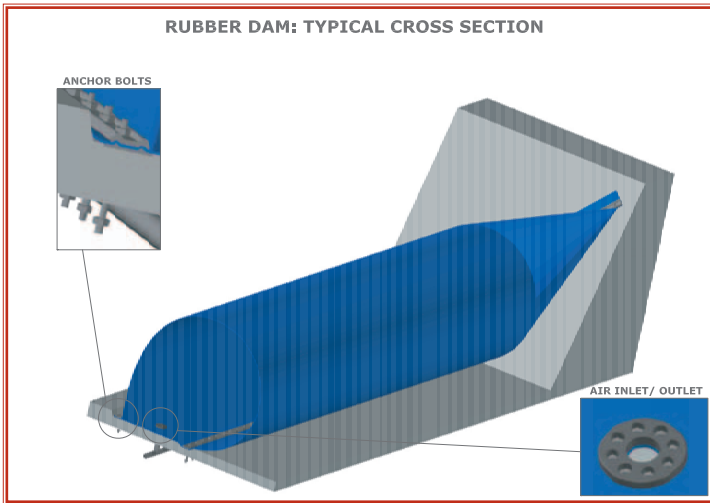
⬆️ 4.0m high Ma Wat rubber dam in Hong Kong.



⬆️ Rubber dam on River Besos near Barcelona.

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✓ Two 45m long rubber dams at Kagoshima in Japan.



The key element of the inflatable rubber dam is the rubber body. The rubber body of the Dyrhoff rubber dam is manufactured by Sumitomo Electric Industries Ltd in Japan. Sumitomo Electric has been involved in the manufacture of rubber dams since 1965; longer than other company in the world. In that period, the company has manufactured more than 1,800 rubber dams for projects around the world.

In keeping with market demands, Dyrhoff is also able to supply inflatable rubber dams from manufacturers in China and Taiwan. Dyrhoff was the first company to supply and install a Chinese-made inflatable rubber dam in Europe.



⚠ Chinese-made rubber dam on River Oglio in Italy.

All Dyrhoff's inflatable rubber dams whether manufactured in Japan, Taiwan, China or elsewhere are designed to the same technical standards. Dyrhoff inspects all rubber bodies after manufacture and prior to shipping. When requested, Dyrhoff will provide qualified and experienced on-site supervisors to advise on the installation of the inflatable rubber dam anywhere in the world.

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Obermeyer Spillway Gate System

Obermeyer pneumatically-operated spillway gates provide increased water storage and automatic upstream level control for water storage projects, hydroelectric plants, flood control structures, navigation and recreation purposes.

Obermeyer installed its first spillway gate in the USA in 1988 and in Europe in 1997. The largest Obermeyer spillway gate constructed to date is 6.5m high x 10.0m wide. Four such gates are installed at Lakatnik and Svragen small hydropower plants in Bulgaria. Installation was completed in 2007.

The OHI spillway gate is a patented, bottom-hinged spillway gate. The system comprises a row of steel gate panels supported on their downstream side by inflatable air bladders. By controlling the pressure in the bladders, the upstream pond elevation can be infinitely adjusted within the specified control range and accurately maintained at user-selected set points.

The main features of the Obermeyer spillway gate are;

- Modular design means that very long spans can be installed
- Single components can easily be replaced if damaged
- Steel panels protect the air bladders from damage
- Can be operated at any height from fully inflated to fully deflated
- Can operate with higher values of overtopping; no vibration
- Independent operation of different gate sections is possible



▲ Deflated spillway gate at HPP Pontey in Italy.

◀ Cross section through an Obermeyer spillway gate.

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Further Information



Dyrhoff is pleased to provide technical advice, product information, preliminary design drawings, budget prices or a full technical and/or commercial proposal for any project involving inflatable rubber dams and/or spillway gates anywhere in the world. As each project is different and each rubber dam or spillway gate is custom built, it is important to provide us with as much information as possible about the project and the gate operating requirements at an early stage. Such information would normally include:

- Maximum upstream and downstream water levels across the rubber dam
- River flow characteristics including maximum velocity
- Maximum overflow depth (overtopping) when rubber dam is fully inflated
- Type of rubber dam (air-inflated or water filled)
- Required time for inflation/deflation (average is 60 minutes)
- Type of control/operating system (manual/automatic)
- Location of control room relative to rubber dam (distance)
- Type and quality of fixings (carbon steel, 304 or 316 stainless steel)

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