

# **New Titanium Swivel Produced by Rotaflow**

Rotaflow are specialists in producing swivel joints that operate in extreme environments.

For over 40 years Rotaflow have produced thousands of swivel joints that are designed to cope with high water pressure in hoses, deep sea oil wells, sub-zero climates, strong winds, long term sun exposure and a variety of corrosive chemicals.

The latest in a long line of swivel joints designed to operate in difficult conditions is a heavy duty swivel made from Titanium, forming part of a fire suppression system on a North Sea oil rig.

The swivel is a bespoke heavy duty design with 3 inch nominal bore size and additional bearing races to handle the high loads required by the end user. The swivel also has integral flanges for easy installation and to allow to swivel to carry the high pressure and flow rate.

Rotaflow also supplied a smaller version of the swivel joint manufactured in 316L stainless steel as requested for a smaller system on the rig.

## **Why Titanium for a Swivel?**

Experience has shown the Rotaflow engineers that Titanium is the perfect metal for such a job. Alongside the damaging effects of saltwater, the North Sea can experience temperatures well below zero for long periods of time throughout the winter. This is contrasted with the summer where temperatures can exceed 30 degrees. We also have to factor in strong winds, rain and general wear and tear from daily use.

Titanium has excellent corrosion resistance properties, especially when dealing with long term exposure to sea water. Despite its relatively light weight, it is incredibly strong and able to cope with the extreme water pressure and weather conditions it'll be exposed to over many years in the North Sea.



These properties are the reason it's most often used in the aviation/aerospace and military industries. It's a versatile material that can cope with conditions that a lot of cheaper metals wouldn't be suitable for.

It's not a material that is very popular when it comes to swivel manufacture because the cost is often so prohibitive when weighing up positives.

Given the client was looking for an integral part of a fire suppression system, corners couldn't be cut. Only the most suitable materials for the job had been considered, along with the experience and skill set of the Rotaflow design and engineering teams.

## **Swivel Design and Turnaround**

The design was taken from a Rotaflow standard range and modified to suit the customer's specification, including physical envelope, bearing load capacity and end fittings. Given Rotaflow's long history of swivel joint design and manufacture this process is now very efficient and effective with a library of proven designs to take inspiration from.

The enquiry came in October 2019. In the early discussions we asked whether Stainless Steel/Duplex would be a possibility, as clients often prefer these materials due to lower cost but similar quality. The customer simply advised the swivel absolutely had to be constructed from titanium.

As the discussions evolved the designs changed, mostly to cope with a near doubling of weight. The axial load on the horizontal swivel would be 500kg

(originally stated 270kg) and this forced the need to review and update calculations and designs for the swivel. This flexibility is one of the reasons Rotaflow are so often used on such jobs.

It was in May 2020 that the order was agreed. The swivel was manufactured in house and delivered to the customer early July.

### **Why did the client use Rotaflow?**

With extensive experience and a proven track record in this field, Rotaflow have become trusted designer and manufacturer of bespoke swivels for various companies in the oil and gas industry.

A long standing relationship with the customer proved to them that Rotaflow could be trusted to design a swivel solution that was practical, manufactured to exacting standards and within a budget. This was another example of Rotaflow's experience, flexibility and manufacturing expertise being used to deliver an excellent project to exact specifications.

*Contact Rotaflow for your engineering needs...*

With quality of design and manufacture at the forefront of everything that Rotaflow do, they continue to be trusted by many of the worlds' leading businesses, producing consumer products that we all use every single day.

If you have an engineering problem and require specialist solutions, contact us on...

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