AF system

Distributors of Tungum

Instrumentation Tubing for demanding Environments

AF SYSTEM

- Excellent lifetime cost
- Compatible with all industry recognised tube fittings
- Highly resistant to sea water
- Quicker installation times
- High resistance to fatigue and shock
- Oxygen Compatible

OIL | GAS | DIVE | TRANSPORTATION | MARINE | DEFENCE

NO RECORDED FAILURES OF TUNGUM TUBING

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Tungum Tubing

PRODUCT SUMMARY

Tungum Tubing has been used in the field for over 80 years in demanding, safety critical applications. There are no recorded failures of Tungum when correctly used and installed. This is why we use the expression: 'fit and forget' due to its long life and excellent corrosion resistance.

FEATURES AND BENEFITS OF TUNGUM

- Excellent lifetime cost compared to other tubing options. Typically less in cost compared to 6Mo and Super Duplex tubing
- No recorded failures of Tungum Tubing when correctly used and installed in over 80 years of application experiences
- Material of choice for oxygen and hyperbaric systems
- Highly resistant to sea water and its atmosphere. It resists both pitting and crevice corrosion to offer outstanding performance, especially in highly corrosive 'splash zones'
- High resistance to fatigue and shock for applications where there is excessive vibration
- Non-magnetic and non-sparking properties make it ideal for high pressure gas applications
- Compatible and approved with all industry recognised tube fittings
- Quicker installation times – can be as little as 75% of the time compared to 6Mo or Super Duplex
- Reduced system down times due to its longer life
- Cryogenic material, suitable for chemical engineering and low temperature processes
- Over 40 years of experience of real time oil & gas applications
- Wide range of sizes in both imperial and metric
- Worldwide distributor network

Tungum Tubing is found around the world contributing to the success and longevity of applications in a wide cross section of industries, including:

- HIGH PRESSURE GAS
- OFFSHORE OIL
- AEROSPACE
- RAIL AND TRANSPORT
- DEFENCE
- CIVIL ENGINEERING
- DIVE
- MEDICAL
- NUCLEAR

COMPARED TO SUPER DUPLEX MATERIALS

Significantly cheaper and easier to install than super duplex materials

COMPARED TO 316 STAINLESS STEEL

- + 4 - 6 Times the working life
- + Does not suffer the same pitting and crevice corrosion issues
- + Up to 1/3 less time to install

Material Costs

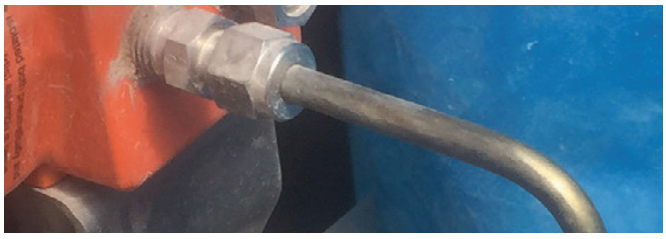
EXCELLENT LIFETIME COST COMPARED TO OTHER TUBING OPTIONS. TYPICALLY LESS IN COST COMPARED TO 6MO AND SUPER DUPLEX TUBING

MATERIAL COST AND LIFETIME

MATERIAL	COST RANKING 1 = LOW / 10 = HIGH	TIME TO FAILURE
316 Stainless steel	1	2-4 years
Tungum C69100	2	30 years +
6Mo	4	10-12 years
2507	4	20 years

- Chart show cost ranking of various alloys
- Time to failure for Tungum is proven time and time again on installations Worldwide
- For 6Mo and 2507 materials, the service life is not yet proven

Pitting on Stainless Steel tube after 3 years' service.



Tungum installed with twin ferrule stainless steel compression fittings, more than 12 years in service with no corrosion issues.

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The fact that it doesn't give us any issues, we have no recorded failures and it does exactly what it was specified for, is a major success in keeping us working without any downtime.

It also lasts where other products have been an issue with regard to corrosion damage in the harsh salt water environment.

Bruce Collie, Snr. Tech. Support Diving Equipment, Subsea 7

Changes in material selection on instrumentation tube lines have very significant cost implications when calculated over a whole project. Although specifying a complete 316 stainless steel based system is going to be the cheapest option, it is widely accepted that this material can no longer offer the lifespan or level of integrity required now in system designs. It is generally accepted that this limitation applies to 316 stainless tube, whereas 316 fittings still offer good service life at a reasonable cost.

Alternative alloys such as 6MO and 2507 offer greater protection against corrosion than 316 stainless steel, but at a significant increase in cost. Often these materials require a more expensive fitting in the same alloy grade, which adds even more cost to the total system price. Although these alloys offer a greater service life, they are still affected by pitting and crevice corrosion and require more lengthy and complicated installation processes.

Tungum tube does not suffer from the pitting and crevice corrosion that stainless steels do. Tungum can be used with fittings without any adverse galvanic standard 316 stainless steel compression fittings without any adverse galvanic corrosion, to offer an easy to install and cost effective system. Tungum tube is typically less in cost compared to 6MO or other Super Duplex type materials.

Tungum tube has an unrivalled history of use in a wide variety of applications allowing us to offer our experience and advice on corrosion issues and how to get the best out of Tungum tube. Tungum has proven time and time again to be not only the technically right choice for instrumentation tubing, but also the most cost effective over its lifetime compared to other products.

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Distributors of Tungum

Accreditations & Approvals

TUNGUM ALLOY TUBING HAS THE APPROVAL OF:

- DNV: Det Norske Veritas ISO 9001:2015
- ASME: American Society of Mechanical Engineers Section 1, VIII, B31.1 & B31.3 Code Case
- USCG: United States Coast Guard
- RINAMIL: Rules for the Classification of Naval Ships
- ABS: American Bureau of Shipping Type Approval
- BAM: Federal Institute for Gaseous
- Oxygen Service, tested in accordance with ASTM G124-10 (2010)
- FPAL: Achilles First Point Assessment for suppliers to the Oil & Gas Industry (Supplier No. 10054096)
- MCA: International Marine Contractors Association – Document D012-approved for use in Oxygen systems
- Lloyds Register of Shipping

Tungum has passed extensive testing and is segment defined for mitigating and preventing external corrosion on topside small bore tubing.
Tungum tubing has been specified and used on many projects with companies such as:

- AIR LIQUIDE
- AIR PRODUCTS
- AMEC
- BAE
- BECHTEL
- BOC
- BOMBARDIER
- BP
- CONOCO PHILLIPS
- DRASS
- HESS
- JGC
- KBR
- MOD, UK
- MODEC
- PRAXAIR
- SHELL
- SUBSEA7
- TECHNIP
- WILLIAMS

ABS DESIGN ASSESSED · Achilles FPAL MEMBER · QUALITY SYSTEM CERTIFICATION DNV ISO 9001 · RINA

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