



## 简化轮机舱设置

# Simplifying the engine room set-up

**面** 对不同以往的环境与市场要求，航运业必须进行调整，在这一情况下，对船运机械因素的全新考量即成为了各方瞩目的焦点。降低成本自然成为了主要目标，而相较于新造船只而言，改装现有船只则是一个切实可行的替代方案。目前，加强操作安全正受到越来越多的重视，而操作安全的因素之一——设备长期使用的可靠性也愈显重要。此外，建立独立的推进概念和拥有完全备援的机器也正受到日益广泛的关注。

就轮机舱布局而言，设计师们目前面临的挑战是在有限的空间内集成更多的技术，并保持机舱内高度的安全性。在这种情况下，遥控系统以及阀门等设备的技术质量与可获得性就变得至关重要。装置的重量的尺寸也至为关键，而最大的挑战则是发现合适的产

适用于燃料油和压载舱的电气自动化组合压力阀箱  
Electrically automated Combination Pressure Valve Chests for fuel oil and ballast tanks



由于空间有限，轮机舱的设置需要灵活的解决方案，而Armaturen-Wolff公司的发动机相关产品系列恰恰可以满足这一需求

**Constraints on engine room space call for flexible solutions. Armaturen-Wolff's range of engine-related products provide the answer**

**A**s the industry is forced to adapt to changed environmental and market requirements, new considerations related to the mechanical aspect of shipping move into focus. Naturally, mitigation of costs is the key objective; often retrofitting of existing vessels is a viable alternative to newbuilding. Greater importance is now also attributed to increased operational safety; the reliability of equipment through a long service life is an increasingly important factor. There is now added recognition of the importance of the independent propulsion concept and machinery that is fully redundant.

With regards to engine room layout, designers are facing the challenge of integrating more technology into confined spaces whilst also maintaining a good level of safety. In this context, remote control systems, and the technical quality and accessibility of equipment like valves is essential. The weight and size of installations gain importance, and the greatest challenge is to identify appropriate products to meet these requirements.



在泵控制室中使用的柔性拉杆  
Flexible Reach Rods used in a Pump Control Room

品，以满足这些要求。

### 阀门灵活性

应对这一挑战的一个非常有效的方式就是使用德国阀门与系统技术制造商ARMATUREN-WOLFF的阀箱单元。该单元的主要特征是具有比蝶阀系统更小的碳足迹。阀箱的使用使各种控制装置能够集成在一个设备之中。

阀箱是一个可定制的产品，其设计多种多样，可与阀门的尺寸，出入口的数量、尺寸和位置相匹配。阀箱单元的安装也可以定制，现有的各种基本款阀箱单元可安装在泵的吸水侧或排水侧，或同时安装在两侧。优化的管道铺设也可以减少重量和节省空间，进而减少成本。

阀箱特别适合安装在舱底或交叉装置上，适用于海水、淡水、润滑油和燃料。阀箱的操作方式需视具体要求而定，可人工操作，也可利用电气、液压、气动或电动液压调节器进行遥控操作，还可与船舶的综合自动化系统进行直接的“即插即用”交互操作。

事实证明，Armaturen-Wolff公司的阀箱概念对地震勘测船、潜艇、海上支持船以及各种海军军舰和商用船等专用船只的修建具有重大意义。

### 阀门的遥控操作

Tramistec柔性拉杆的设计目的是对阀门进行手工遥控操作。该柔性拉杆由一个柔性金属与橡胶外壳和一个可扭转的刚性钢质电缆构成，可沿尖角或曲线弯曲，并穿过隔板和甲板。目前已生产出大量配件，可将该柔性拉杆整段安装在贯穿点，以及将其连接到阀门上并进行操作。常见的做法是将其安装在舱底海水阀、排水箱和隔离阀等难以触及或危险的地方。

Tramistec柔性拉杆采用密封润滑围绕，这意味着该款拉杆无需维护，而且即使在水下使用也可保证长期使用性能。如果遥控电力不够，利用连接在自动阀门调节器紧急手轮上的柔性拉杆进行手工操作可减少设备损耗，并延长设备寿命。而在改装过程中，工程师则不必调整管道，因为柔性拉杆可以轻易地适应现有结构。

Tramistec柔性拉杆现已应用在商用船、海上支持船、海军军舰和潜艇、游艇以及巡航艇上。

### Valve flexibility

A very effective way of tackling this challenge is by using the valve chest unit from Germany-based valve and systems technology manufacturer ARMATUREN-WOLFF. The primary feature of the unit is its small footprint in comparison to butterfly valve systems. Valve chests allow a diverse range of controls to be integrated into one piece of equipment.

The valve chest is a customisable product, which is available in a multitude of designs, related to the size of the valves, and the number, size and position of the inlets and outlets. The installation of the unit can also be customised; there are specific basic types available for the installation on the suction or the discharge side of a pump, or a combination of both. An optimised piping arrangement can also reduce weight and space consumption, leading in turn to cost reductions.

Particularly applicable to bilge and crossover installations, valve chests are suitable for seawater, fresh water, lubrication oils and fuels. Depending on the specific requirements, operation can be either manual or remote-controlled (with electric, hydraulic, pneumatic or electro-hydraulic actuators), and possibly allow direct “plug-and-play” interfacing with the ship's integrated automation system (IAS).

Armaturen-Wolff's valve chest concept has proven valuable in the construction of special purpose vessels like seismic survey vessels, submarines, offshore support vessels (OSVs) and various Navy and commercial vessels.

### Remote control operation of valves

The tramistec Flexible Reach Rod is designed for the manual remote operation of valves. Consisting of a torsionally stiff steel cable inside a flexible metal and rubber encasement, it can be bent around angles and curves and pass through bulkheads and decks. A wide range of accessories are available for fixing the Flexible Reach Rod along its length at penetration points, as well as for operating and connecting it to the valve. A typical application would be in places difficult to reach or in dangerous areas such as sea valves, the tank drain and isolation valves in the bilge.

The hermetically sealed lubricated enclosure means maintenance is not required and ensures a long service life even in a submerged condition. In cases of defective remote control power, manual operation with a Flexible Reach Rod connected to the emergency handwheel of an automated valve actuator can save equipment and lives. In retrofitting, engineers appreciate not having to modify pipelines as the Flexible Reach Rod can easily be adapted to the existing structure.

The tramistec Flexible Reach Rod has been used on commercial vessels, OSVs, Navy vessels and submarines, yachts, and cruise liners. ■