Bawat

NEW-TYPE METHOD AND TECHNOLOGY FOR BWT
压载水管理的新方法和技术

Sino-Danish Workshop on Maritime Industry 8 May 2018

中丹船舶压载水管理技术研讨会2018年5月8日

Panel 2: Innovation of BWM technology

小组2：压载水管理技术创新

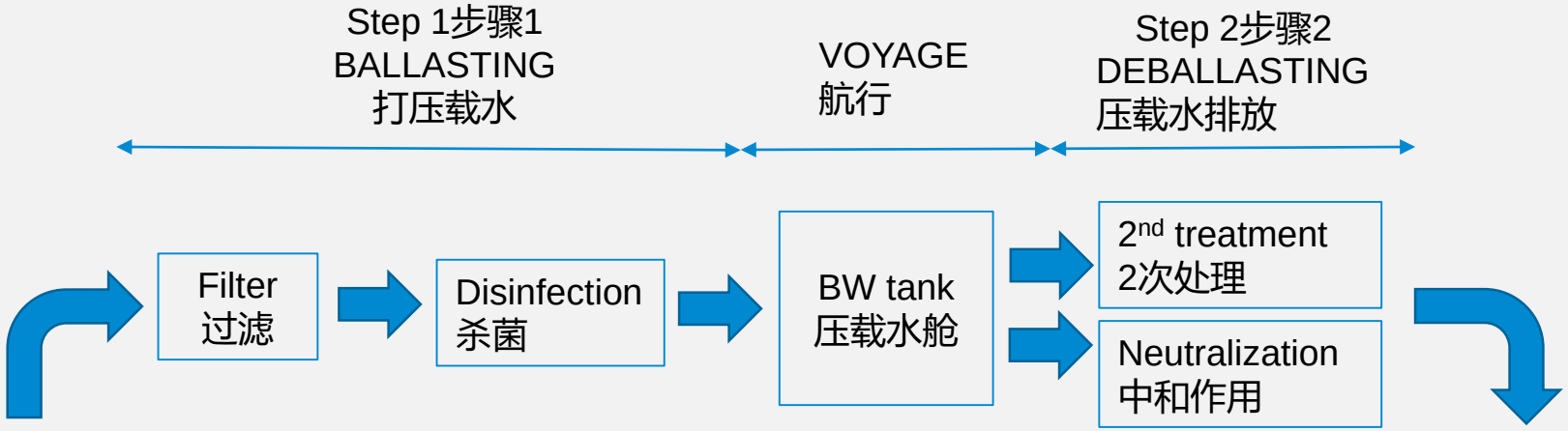
SEAMEN'S LIFE HAS CHANGED
船员的生活方式发生了变化

- Always busy while in port – cargo operation has priority and time is of essence
- 港口装卸作业时很忙，时间就是金钱
- Port State control and Vessel inspections by authorities
- 港口国安全检查和当地政府检查船只

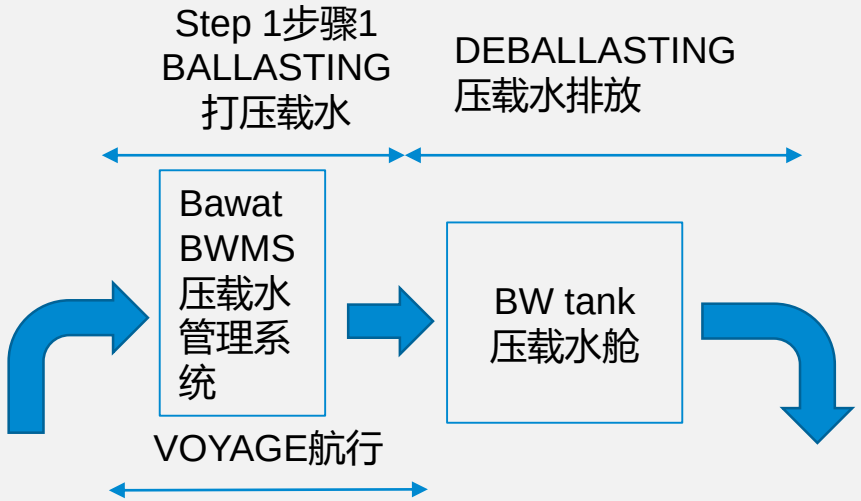
- Bunker operation often conducted while in port – full attention required!
- 在港口进行燃油补给-全程需要监督

- Provision and spares are taken onboard
- 提供备件和配件
- Maintenance and service work conducted.
- 船舶的维护和服务工作

IN-LINE BWMS VS BAWAT BWMS
普通的压载水管理系统 VS BAWAT的压载水管理系统



In-Line BWMS
普通的压载水管理系统
Two Step Treatment Process
二步处理过程



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One step treatment process
一步处理过程

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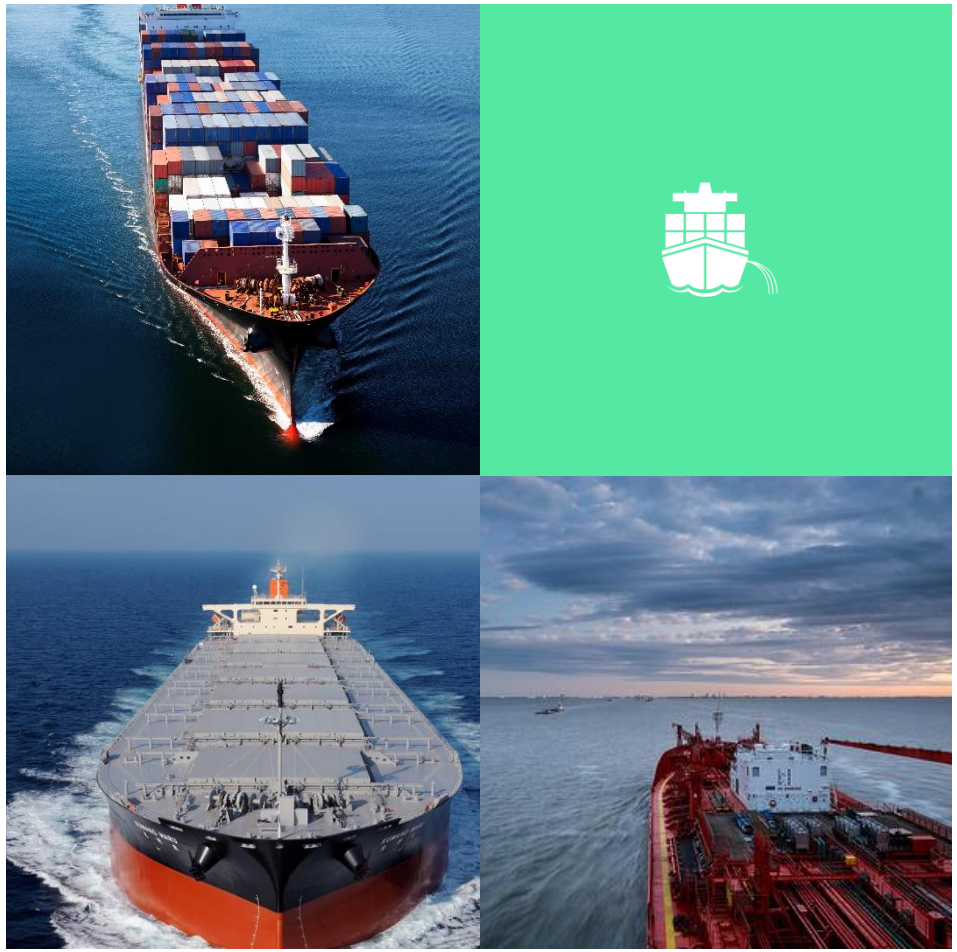
BAWAT BWMS
BAWAT的压载水管理系统

- Ballast water treatment is taken to sea and conducted while sailing – thus reducing risk and workload while in port.
- 压载水处理是在航行时进行的，航行时进行，从而降低了港口的风险和工作量。
- While sailing crew will prepare the vessel for upcoming cargo and ballast operations.
- 船员将为即将到来的货物和压载操作准备船只。
- Depending on the vessel type and trading pattern different operational ballast water treatment methods are valid.
- 根据船舶类型和交易模式，不同的操作压载水处理方法是有效的。



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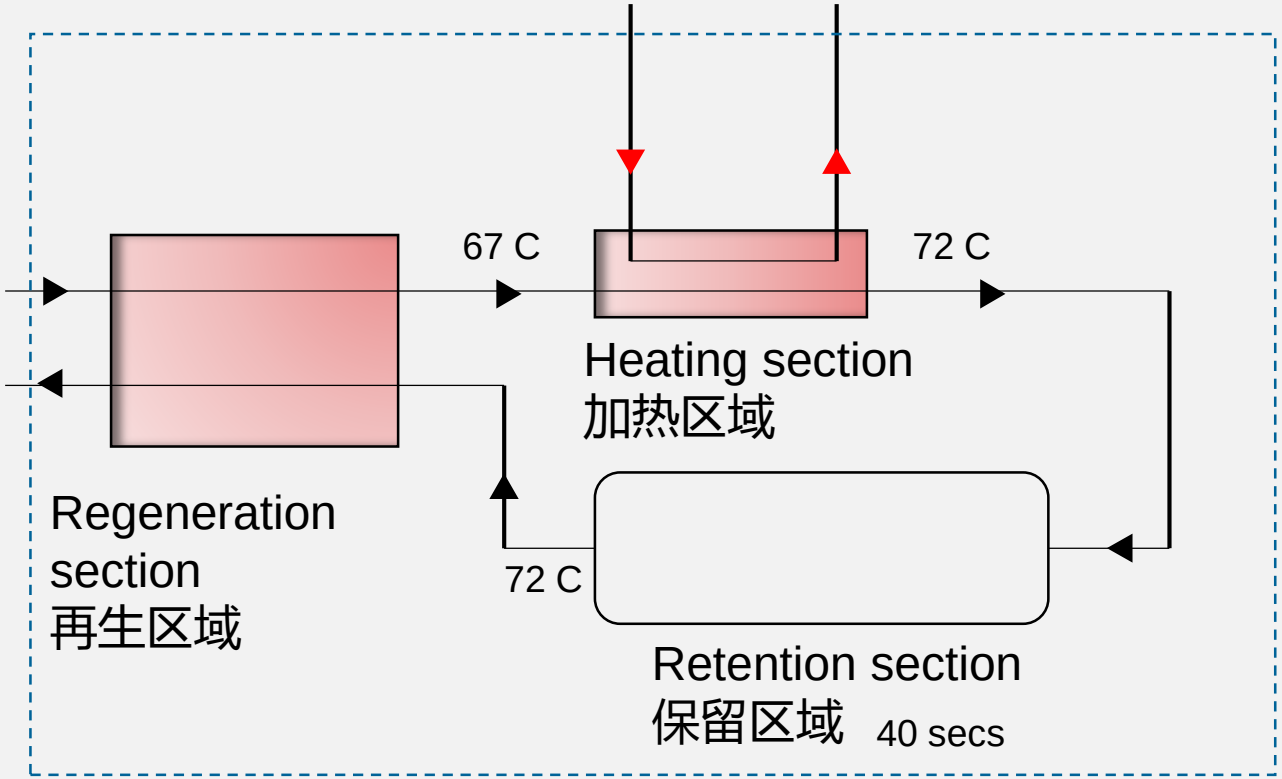
BAWAT PASTEURIZATION TECHNOLOGY
BAWAT巴氏灭菌技术



THERE'S ALWAYS HEAT AVAILABLE
总热量可循环使用

Exhaust gas

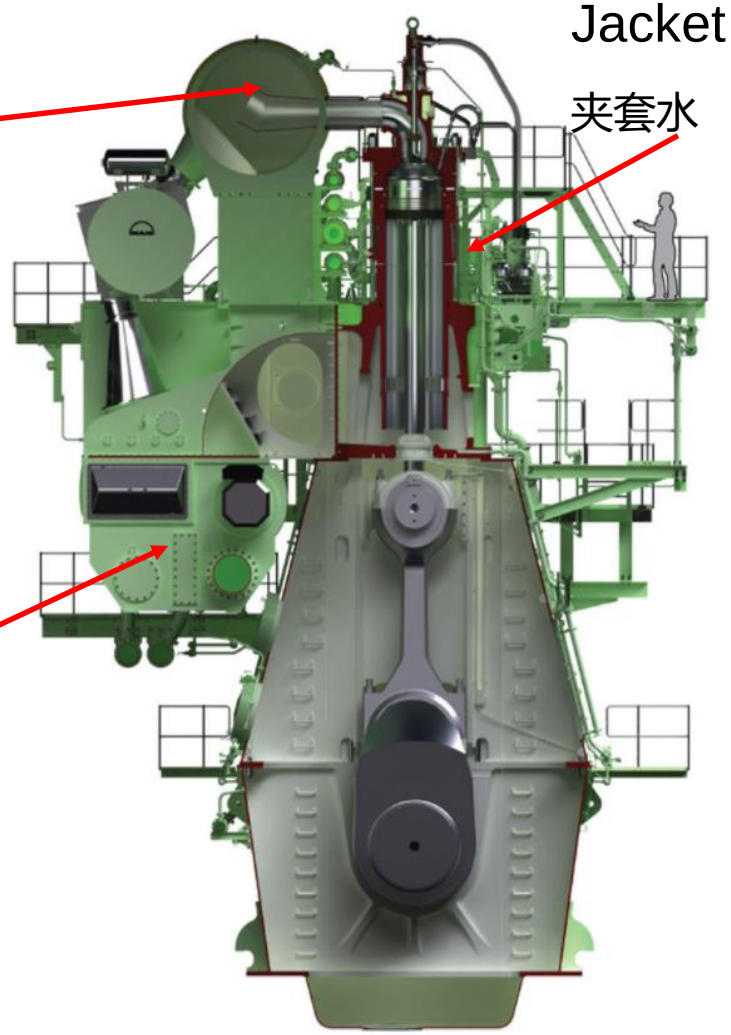
废气

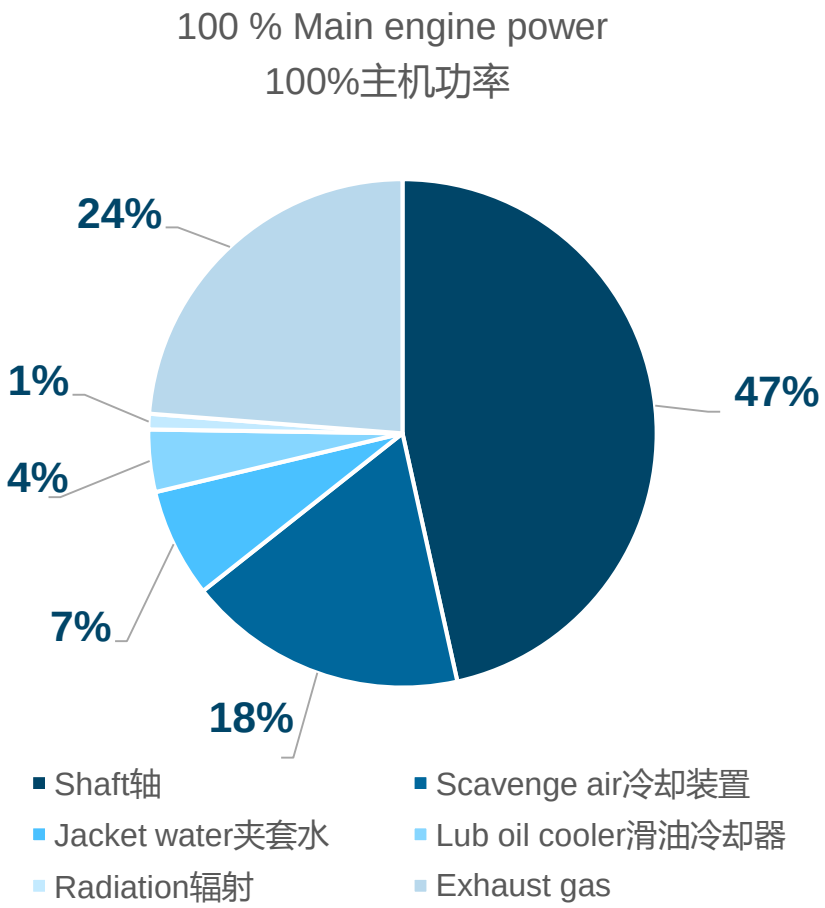
Jacket water

夹套水

Scavenge air

冷却装置





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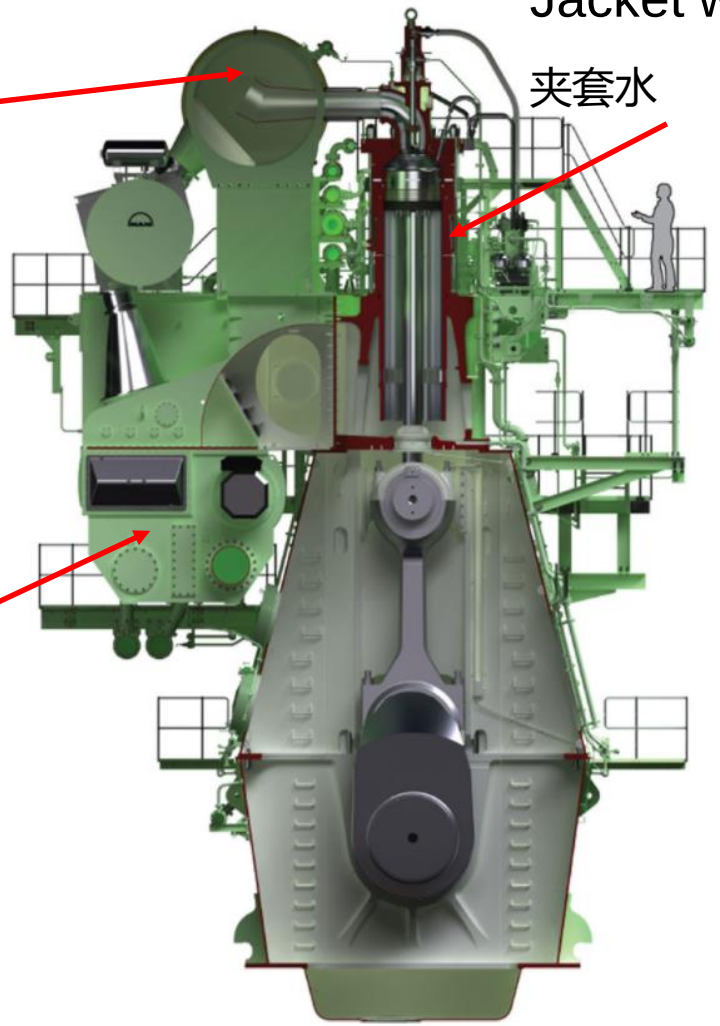
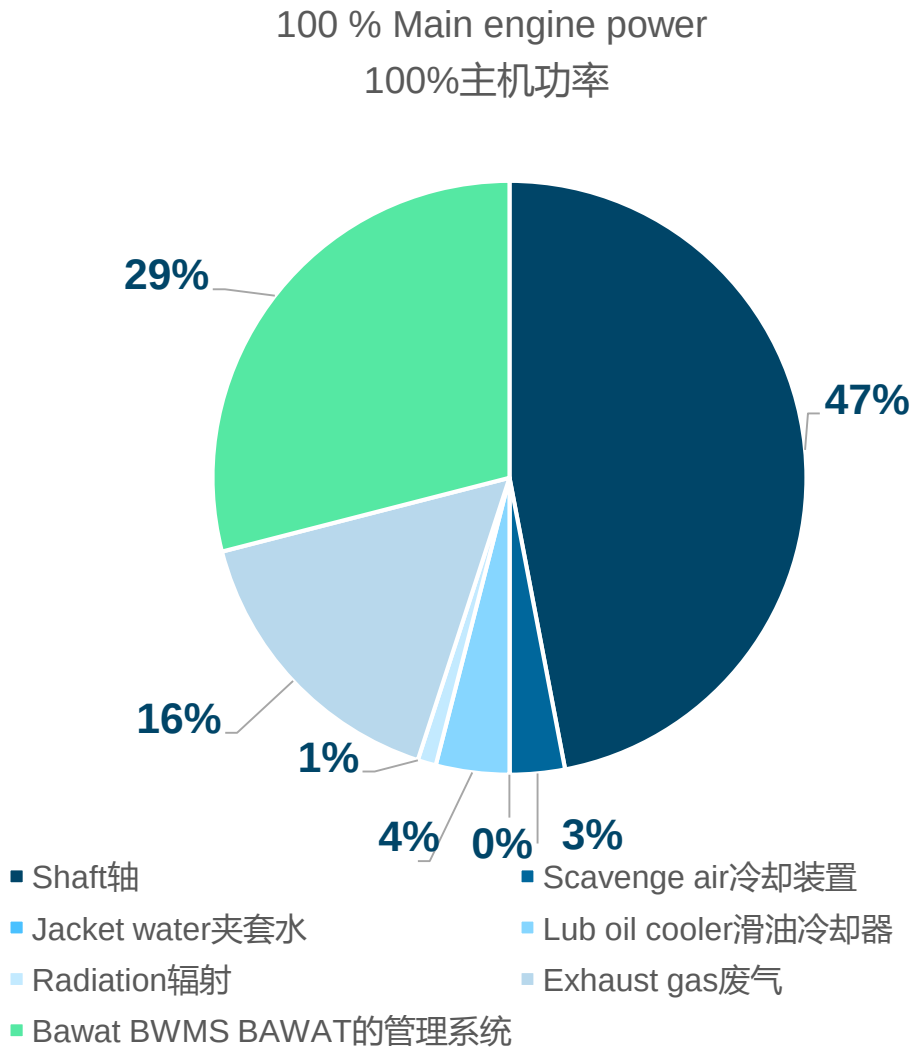


Scavenge air

冷却装置



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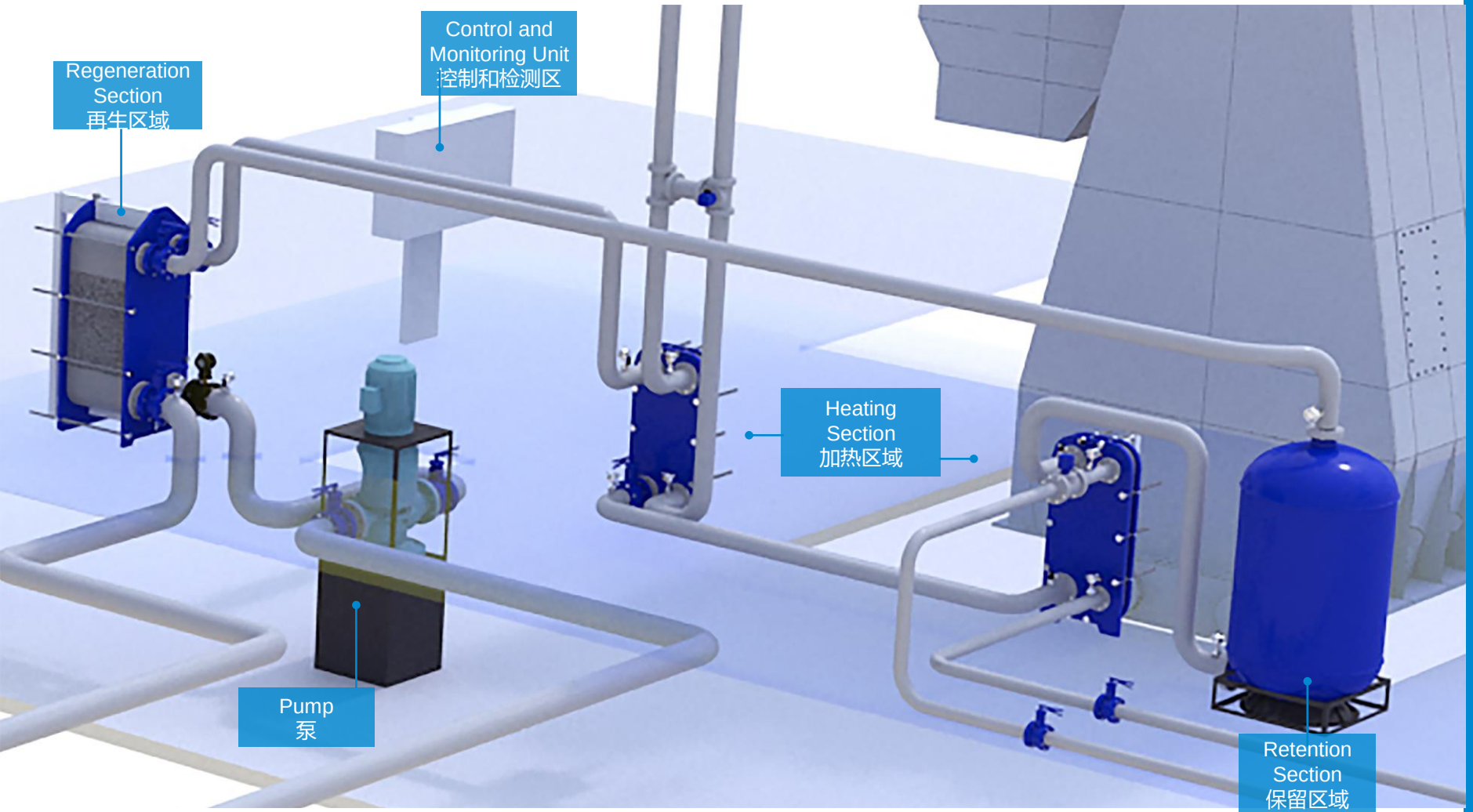
BAWAT BWMS
BAWAT的压载水管理系统



When ballast water has passed through the Bawat system ballast water can be discharged in compliance with regulatory discharge standards

当压载水通过BAWAT压载水处理系统时，可以按照规定的排放标准排放。

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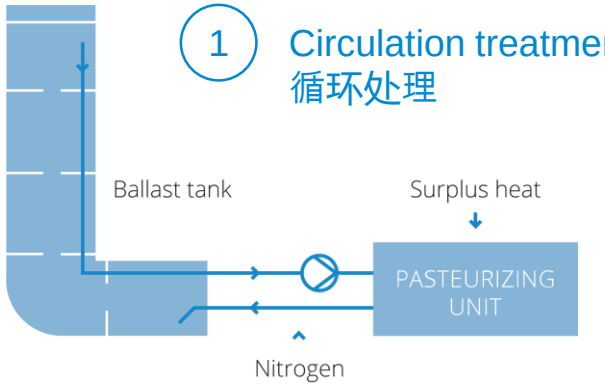
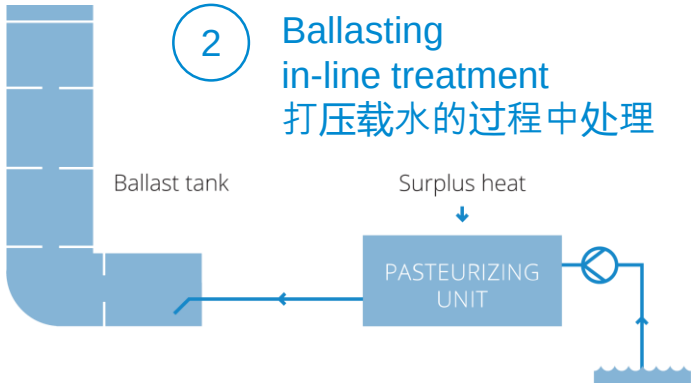
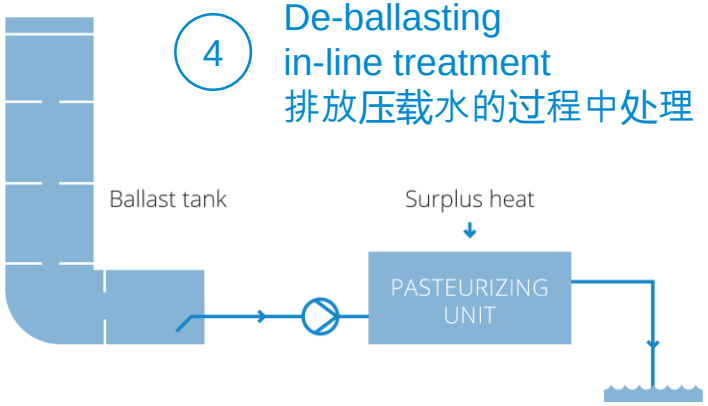
OPERATIONAL METHODS
操作方法







The Bawat BWMS can be applied in different configurations

Bawat 压载水处理系统可以应用于不同的配置

- 'Circulation Treatment' within a ballast water tank.
- 压载水舱内的循环式处理
- From sea chest to a ballast water tank.
- 从海水舱到压载水舱
- From one ballast water tank to another ballast water tank.
- 从一个压载水舱到另外一个压载水舱
- From a ballast water tank to overboard.
- 从压载水舱到船外

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OPERATION
操作

In-voyage treatment means:

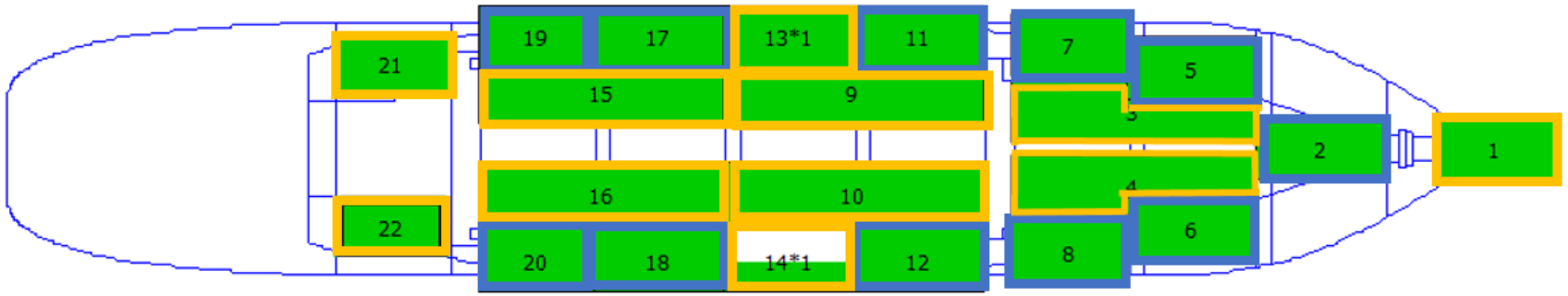
航次中的处理方式意味着：

- Treatment while sailing and not alongside.
- 在航行时处理，而不是在靠岸时
- Preparation of cargo operation scenario in next port - with a margin.
- 在下一个港口准备货物操作方案-有一定的时间富余

How to create most flexibility in ballast operation?

如何在压载水操作中创造最大的灵活性?

- Maximize the amount of treated ballast water onboard.
- 将处理过的压载水的数量最大化
- Minimize the amount of untreated ballast water onboard.
- 减少未经处理的压舱水的数量



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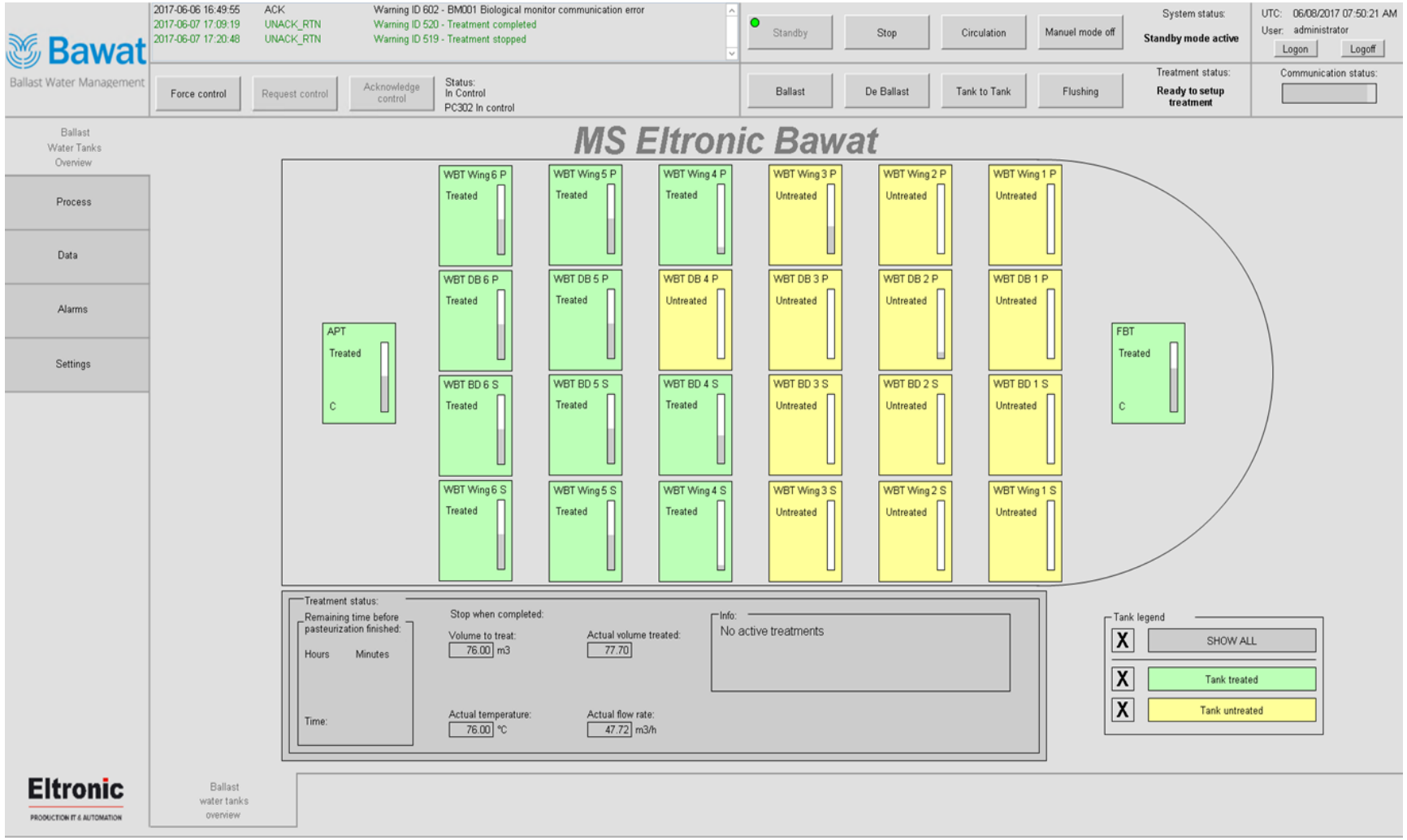
CONTROL INTERFACE
控制接口



Example of control interface
控制接口的例子

The bar on the top of the screen is always visible and contain an alarm banner with most recent alarms/warnings, change of control functions, treatment setup buttons, system status etc.
屏幕顶部的栏总是可见的，并包含一个报警标志，包括最近的警报/警告、更改控制功能、处理设置按钮、系统状态等。

The buttons to navigate between main screens are permanently located on the left side of the screen.
在主屏幕之间切换的按钮永久性地位于屏幕的左侧。

For each main screen, a number of sub-screens are accessible using the buttons on the bottom of the screen.
对于每个主屏幕，可以使用屏幕底部的按钮来访问一些子屏幕。

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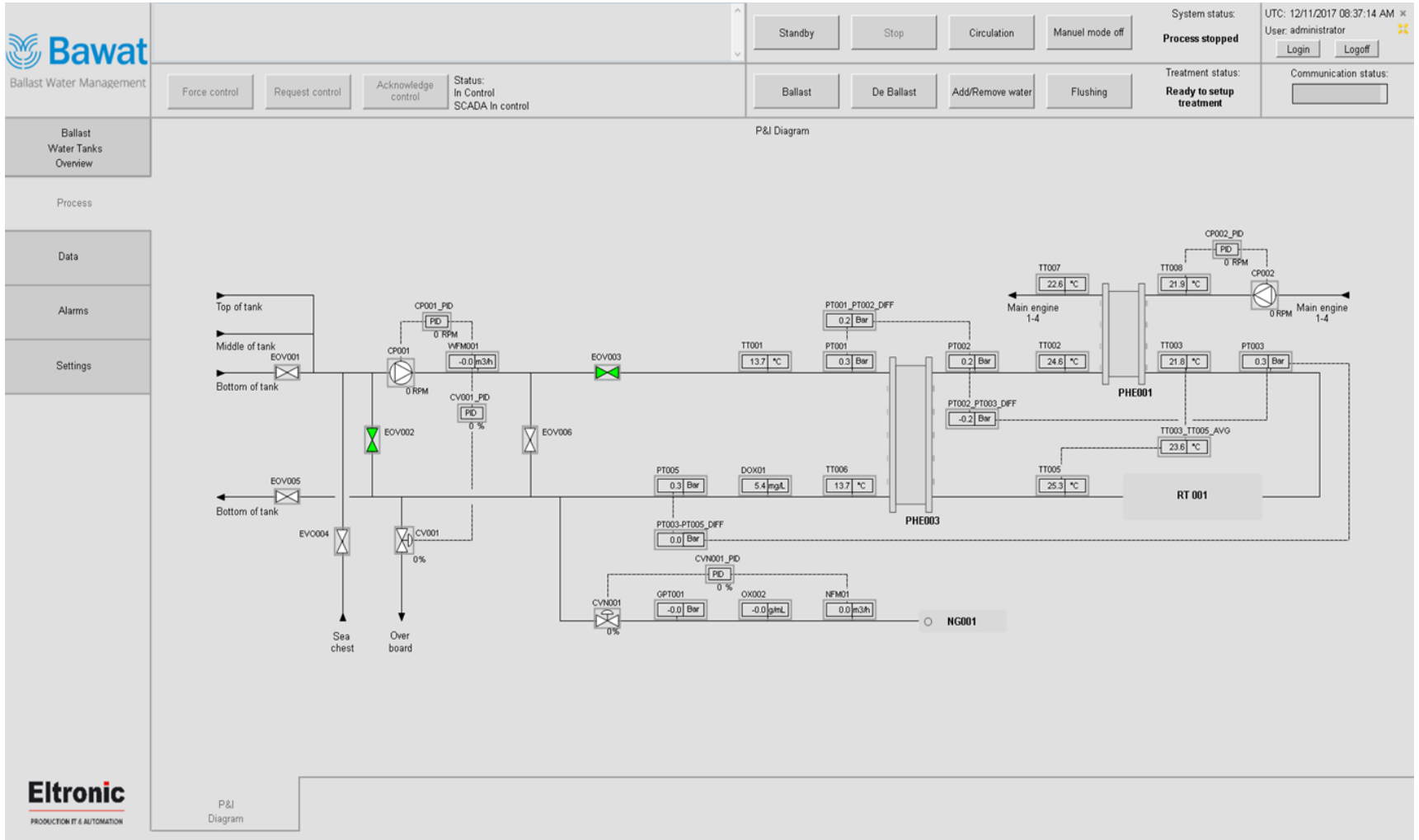

Example System specific settings include flow setup settings, heat source temperature setpoints, valve ramping, valve setup etc.

示例系统的具体设置包括:流量控制设置、热源温度设置、阀门设置、阀门设置等。

A process and instrumentation diagram provides real time data for each sensor, control system regulation loops, and proportional-, integral- and derivative (PID) regulators for the system.

一个过程和仪表图提供了每个传感器的实时数据，控制系统的调节回路，和比例-，积分-和微分(PID)调节系统。

Alarm limits, PID-values for the controllers and transition time for the valves can be modified from this screen.

警报限制、控制器的PID值和阀门的过渡时间可以从这个屏幕上修改。

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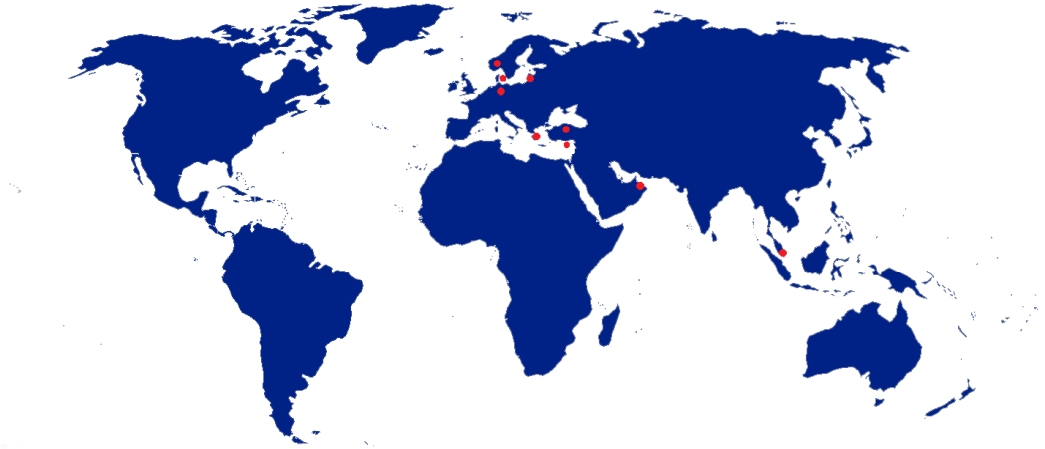
SIMPLIFIED SERVICE & MAINTENANCE
简化的服务和系统维护

- Standard high-end components and straightforward operations
- 标准的高端组件和简单的操作
- World-wide service available (24/7 remote support, spares, annual performance check etc.)
- 全球化的服务(24/7远程支持，备件，年度性能检查等)



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U.S. COST GUARD TYPE APPROVAL
美国海岸警备队的审批

Pre-tests
Readiness Evaluation
检测前准备评估

- Pre-tests successfully carried out during 2017 to optimize process parameters.
- 在2017年成功进行预测试，以优化工艺参数。
- Readiness Evaluation package submitted to USCG.
- 提交给USCG的评估准备包。

Land Based
Tests
岸上测试

- 15 ‘bioefficacy’ tests in 3 salinities.
- 在3种盐度下15种“生物有效性”测试
- Test period: To be completed Q2, 2018. System operated by DHI personnel.
- 测试期:2018年第二季度完成。系统由DHI人员操作。
- Tests supervised by Lloyd’s Register.
- 测试由劳氏船级社监督

Ship Board
Tests
船上设备测试

- Hardware installed commissioning ongoing.
- 硬件安装调试正在进行中
- Tests to commence Q2-2018
- 2018年第二季度开始测试

- USCG TA Expected Q1-2019
- 计划2019年第一季度通过USCG的测试

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BAWAT BWMS INSTALLED IN LPG TANKER
BAWAT 压载水管理系统安装在液化石油气油轮上




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INSTALLATION ONGOING TSH DREDGER
在TSH挖泥船上安装设备正在进行中

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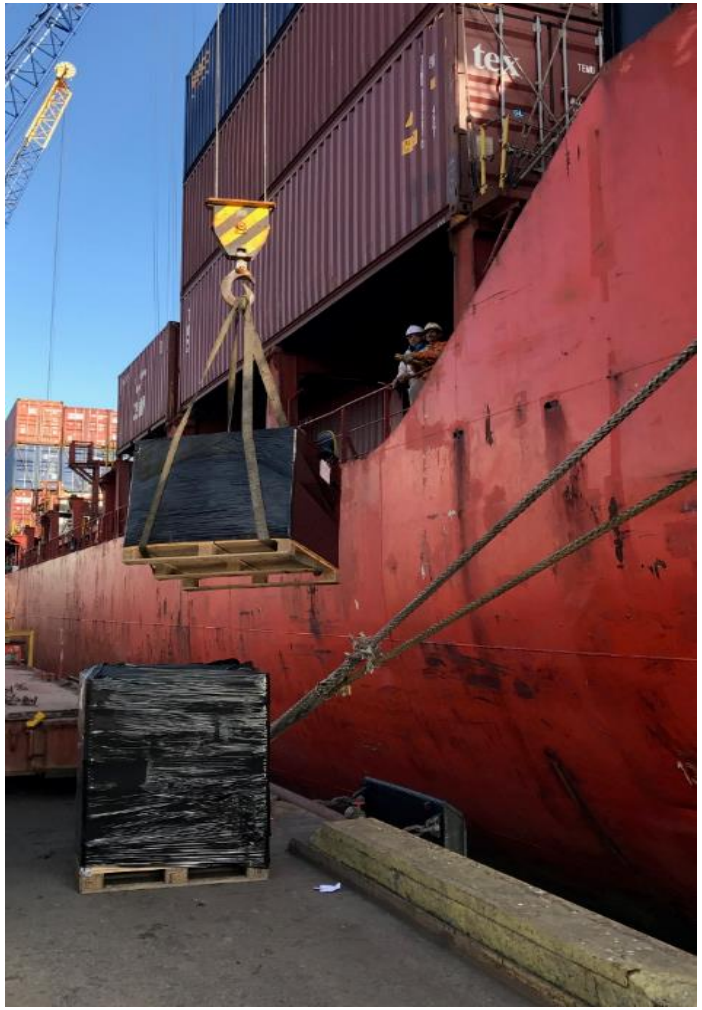
INSTALLATION ONGOING CONTAINER VESSEL
在集装箱船上安装设备正在进行中



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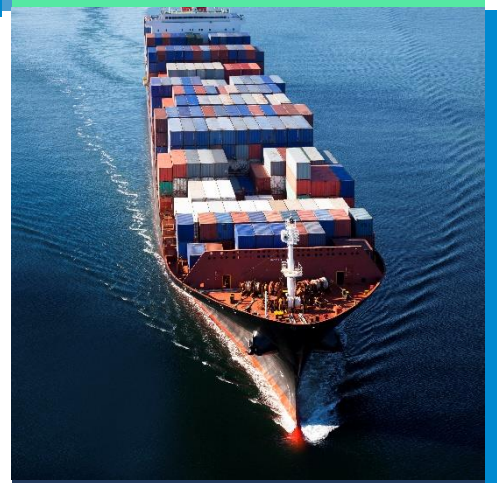
GREEN TECHNOLOGY
绿色技术

- The Bawat BWMS is based on a unique technology that exploits on-board waste energy to treat ballast water in-voyage.
- Bawat BWMS是基于一种独特的技术，利用航行中船舶浪费的能量来处理压载水的技术。
- It is an effective and green technology based on pasteurization and it comes with marked benefits in ballast water management.
- 它是一种以巴氏杀菌为基础的高效绿色技术，在压载水管理中具有明显的优势。



- Efficient in all water turbidities, salinities and temperatures.
- 在所有浊度、盐度和温度的水处理方面都很有效
- Proven standard marine components only.
- 只需合格的标准船用部件。

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STAKEHOLDERS 利益相关者

The Danish Maritime Fund丹麦海事基金

The Danish Maritime Fund was established in 2005. The Fund's objective is to offer financial support to initiatives that can serve to develop the Danish maritime industry. This is done through financial support for research, technology and product development, training, recruitment and other types of initiatives with a maritime focus.
丹麦海事基金成立于2005年。该基金的目标是为能够为发展丹麦海事工业提供提供财政支助。这是通过对研究、技术和产品开发、培训、招聘和其他类的具有海事侧重点的倡议提供相应的财政支持来完成的。
www.dendanskemaritimefond.dk

The Danish Green Investment Fund丹麦绿色投资基金

The fund is provided with up to DKK 5 billion of loan capital to invest in various projects facilitating the sustainable development of society. Environmental considerations and commercial business are two sides of the same coin.
该基金提供多达50亿的贷款资金，用于投资各种促进社会可持续发展的项目。环境因素和商业往来是同一枚硬币的两面。
gronfond.dk

The Market Development Fund市场发展基金

The aim of the Market Development Fund is to promote growth, employment and export, particularly for small and medium-sized enterprises in areas where Denmark has particular strength and potential. These areas include conversion to green technology, health and welfare solutions, design and other create professions, etc.
市场发展基金的目标是促进增长、就业和出口，特别是在丹麦具有特别优势和潜力的地区的中小型企业。这些领域包括转化为绿色技术、健康和福利解决方案、设计和其他创意类的职业等。
www.markedsmodningsfonden.dk

The Danish Nature Agency 丹麦自然机构

Part of the Danish Ministry of Environment, the Danish Nature Agency implements the government's policies concerning nature and environment. The Nature agency aims to secure clean water, protecting and securing nature, planning for cities and landscape, outdoor activities and information to the public about nature, forestry and land management of the state forests, gaming and wildlife management.
丹麦环保部的一部分，丹麦自然机构执行政府关于自然和环境的政策。该机构的目标是确保干净的水，保护和保护自然，规划城市和景观，户外活动和向公众关于大自然的信息，国家管理的森林和土地，游戏和野生动物管理。
www.naturstyrelsen.dk

BAWAT TECHNOLOGY VALIDATED BY HARD TO ACHIEVE EU INNOVATION FUNDING
BAWAT技术通过努力实现欧盟创新基金的融资

Bawat's BWMS is being viewed as a most promising candidate to underpin Europe's competitiveness in the global marketplace.

Bawat的BWMS被认为是欧洲同类产品在全球市场竞争力中的最有竞争力的产品。

The EU Horizon 2020 innovation grant, worth 2.4 million EUR, will enable Bawat to meet the goal of system type approval by the USCG.

欧盟2020年创新计划将提供240万欧元的资金支持，以协助Bawat系统通过USCG审批的目标。

"By having qualified for support from the European Union Research and Innovation Programme (Horizon 2020) we have become part of an exclusive group of innovators. We see this as a validation of our system and of our company. The EU Commission is trusting us to become a solid player in this dawning market," Kim Diederichsen, CEO, Bawat A/S.

Bawat A/S的首席执行官说"做为一个独家创新者群体的一部分,我们有资格获得欧盟研究和创新计划(Horizon 2020)的支持。我们认为这是对我们的系统和公司的认可。欧盟委员会(EU Commission)相信，我们将成为这个新兴市场的坚实参与者。"

- The target for U.S. Coast Guard approval is by Q1 2019.
- 目标是2019年第一季度通过USCG的审批
- This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No Nº756288.
- 这个项目已经收到了欧盟地平线2020研究和创新计划N 756288º协议框架下的资金支持。

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THANK YOU
谢谢

www.bawat.com