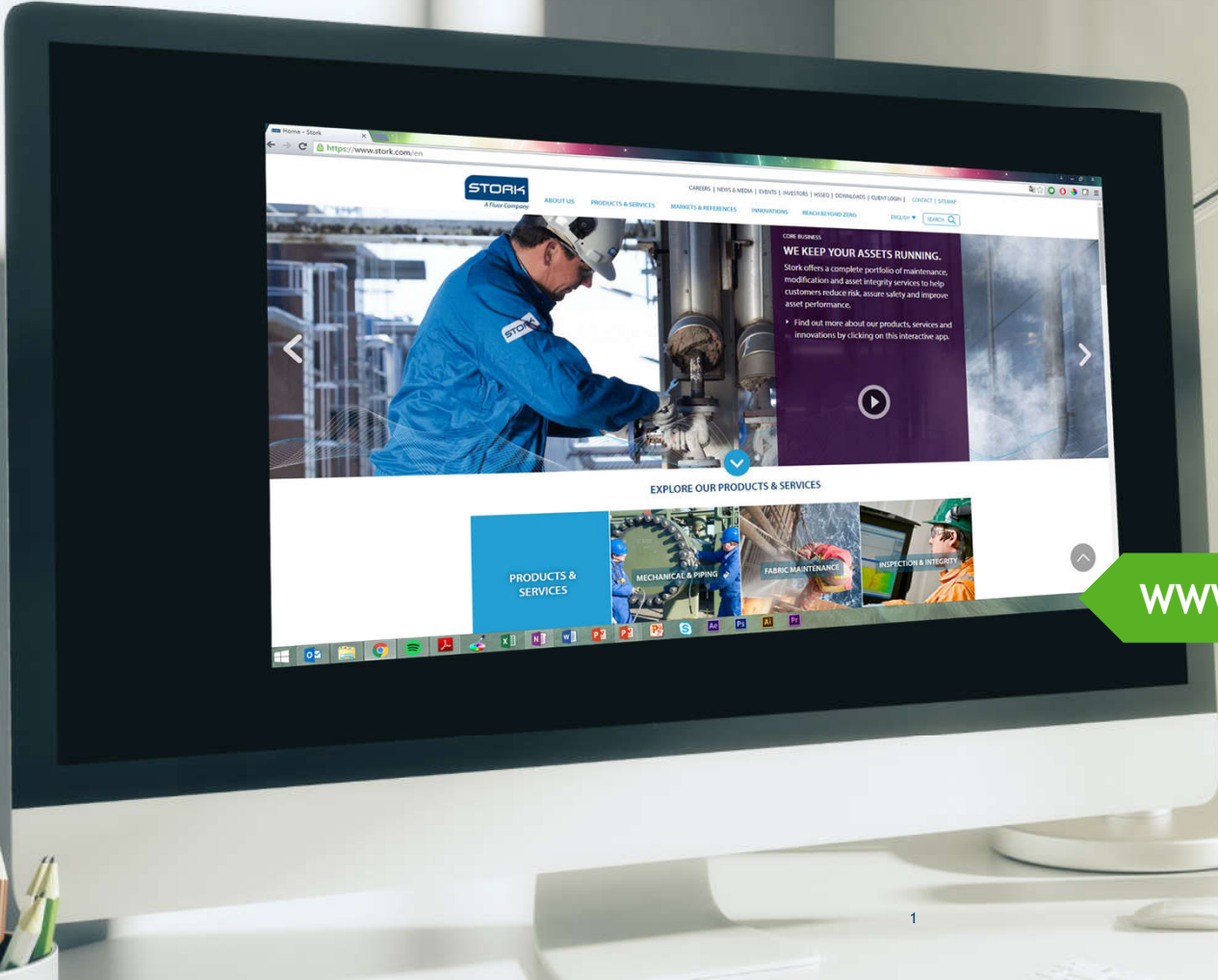


# STORK 施托克技术及服务 ASSET MANAGEMENT TECHNOLOGY

## 世界领先的工业资产管理技术-专题介绍

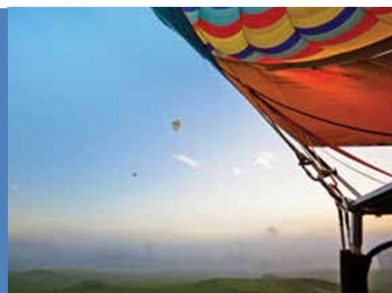


[WWW.STORK.COM](http://WWW.STORK.COM)



## Stork特色的工业资产管理技术 - 优势:

- Stork是世界上少有的能够提供“一站式”资产管理技术及工业技术服务的公司，综合了理论工具、实践经验、评估优化、设计、制造、运行、维保、检修及设备修理、预防性维护、多专业的专有技术及服务，在全球的18,000员工，可提供系统性的资产管理和技术服务，真正为用户创造价值和收益。
- Stork是国际资产管理协会IAM 认证的资产管理技术培训机构，参与了资产管理标准化 ISO55000 的系列设计。
- Stork特色的资产管理技术已在多家著名跨国公司中得到成功应用，如壳牌、BP、道达尔、BASF巴斯夫、DSM 帝斯曼、阿克苏-诺贝尔、拜耳、塔塔、力拓、沙特Sabic等等名企业。并曾对多家大型跨国公司（包括中海油）进行过相关专业培训。



Stork Field Proven Asset Management

ISO 55000 Asset Management



## ASSET MANAGEMENT

CONSULTANCY  
资产管理咨询

## ASSET PERFORMANCE

IMPROVEMENT  
资产性能改进

## PARTNERSHIP

DEVELOPMENT  
和用户共同开发

## COMPLIANCE

& INTEGRITY  
合规&完整性

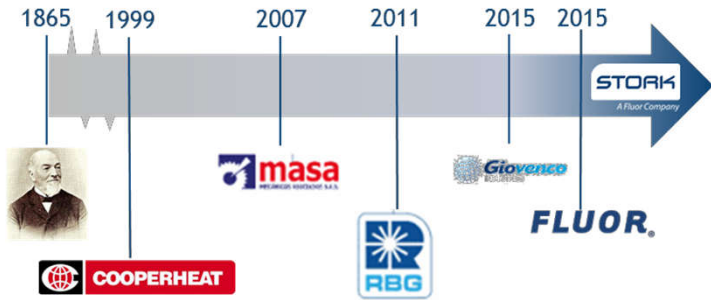
## LEAN

MAINTENANCE  
精益维护

# STORK 荷兰施托克集团概况



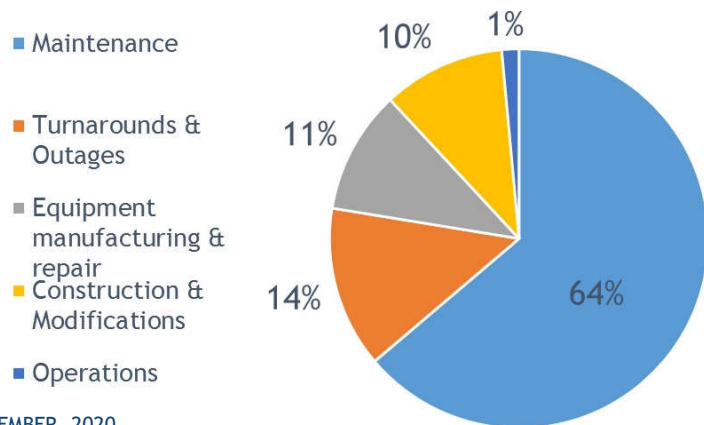
- Operating for over 150 years  
已成立150多年:



- With 18,000 people  
全球18,000 名员工:



- Delivering excellent services  
业务组成:



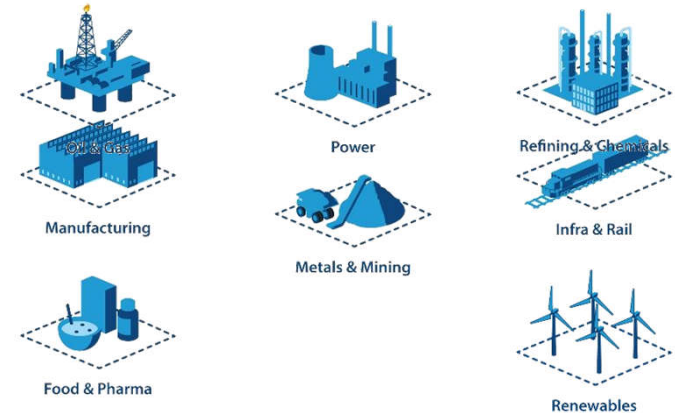
27 NOVEMBER, 2020

partnering with  
**4,000** clients



**\$2 Billion**  
Annual  
revenue

- To a wide range of sectors  
工业领域:



## 1、资产管理技术的价值

目标: 资产性能最优化, 商业价值最大化。

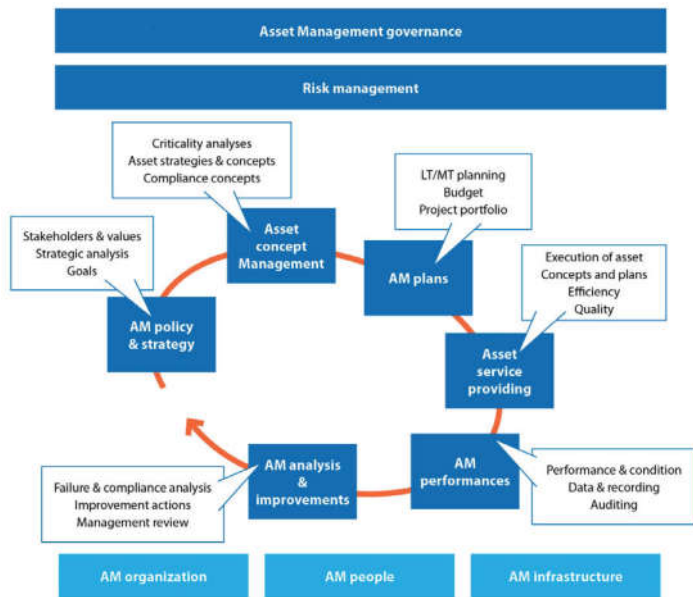
Value propositions designed to optimize the performance of assets and maximizing business value.



## STORK 资产管理技术概述:

### 2、经过现场验证的专业技能, 符合ISO 55000要求

#### Stork's Field proven Asset Management model Stork经实践验证的资产管理模型



For more information you can download the white paper ([www.stork.com](http://www.stork.com)).

#### Stork Asset Management Consultancy

Participated in the Dutch NEN committee for the design of the ISO55000 series and has developed a field proven vision on Asset Management, which is aligned with the requirements of the ISO 55000 series  
施托克参与了荷兰国家标准委员会的ISO55000系列设计, 并开发了一套经过现场验证的资产管理方案, 该方案符合ISO55000系列的要求。

Combining the ISO 55000 series with the field proven expertise in Asset Management assures that best practices will be embedded from the start of the development and/or improvement of the Asset Management System  
将ISO 55000系列与资产管理领域公认的专业知识相结合, 可以确保从一开始资产管理系统的开发到改进就能达到最佳实践效果。

Stork Asset Management Solutions has unique implementation capabilities expressed in field proven change management and project management approaches.  
施托克资产管理解决方案中的改进管理和项目管理方法经过现场验证具有独特的实现功能。

#### Client Benefits 客户受益:

- Maximizing asset performance, optimizing associated expenditures and minimizing risks  
最大化资产性能, 优化相关支出和风险最小化。
- Continuous improvement loops to realize value from your assets & Detect risks and opportunities  
持续改进, 从资产中体现价值挖掘价值并发现潜在风险和机会。
- Implement appropriate measurements in cater for business requirements for the entire asset life cycle  
在满足整个资产生命周期的业务需求同时找到最适当的实施方法。
- Satisfy stakeholders by the most sustainable and optimized way to enable your company to achieve world-class performance in Asset Management  
以最可持续和最优化的发展方式回馈股东和投资者, 并且使公司在资产管理方面达到世界领先水平。

## STORK资产管理技术概述:

### 3、可持续的性能改善 - 资产管理目标和其商业驱动

#### Stork Asset Management Goals Stork资产管理目标



#### Business Continuity 经营可持续性

The integrity of assets, and asset management as a process, must be guaranteed. This mitigates reputational risk and protects the continuity of operations.

要保证资产的完整性和资产管理作为一个整体流程，因为这样可降低信誉风险，并保障运营的持续连贯性。

#### Delivery 交付

Meeting the quality, quantity and planning requirements of these products/services will lead to client delivery and satisfaction

满足产品/服务的质量、数量和计划要求，可提升客户满意度并圆满交付。

#### Profitability 盈利能力

Achieving asset management goals within an optimal expenditures structure – now and in the future – directly contributes to your organization's profitability

在最优支出结构下实现资产管理目标——无论对现在还是将来——都将直接有助于您的组织的盈利能力。

#### Operational excellence 卓越运营

Effective asset management is all about optimization. That also means the minimization of losses, of both the processed and the processing materials (raw materials and energy, assets and labor).

有效的资产管理即优化，也意味着被加工和加工材料(原材料和能源，资产和劳动力)损失的最小化。

#### Sustainability 可持续性

Assets should be managed throughout their entire lifecycle, from the development of the first concept to their final recycling or destruction.

资产要在其整个生命周期中进行管理，从资产概念的产生直至最终的被回收或销毁。

#### Build the future 创造未来

An asset management organization with the skills to continuously innovate and improve will contribute to a successful future for your organization.

拥有持续创新和改进技能的资产管理组织将一定能为您的成功做出贡献。



A Fluor Company

## 4、可持续的性能改善 - 配合以数据驱动的性能管理系统和工业领域丰富的实践经验

### First: Improvements starts with measurement 首先, 改进从测量开始

#### Preventing and eliminating disruptions

##### 预防和消除干扰

We use methods like Reliability Centred Maintenance, Risk- Based Inspections and Safety Integrity Levels to help anticipate disruptions and assure the reliability, availability and integrity of your assets.

我们使用以可靠性为主的维护、基于风险的检查和安全完整性水平等方法来预测中断和干扰, 并确保您的资产的可靠性、可用性和完整性。

We bring you optimal control using asset strategies based on risk management. We use data integration, prognostic analyses, process trend development and ERP systems to ensure that risks, performance and costs are managed effectively.

我们使用基于风险管理的资产策略, 为您带来最优控制。我们使用数据集成、预测分析、过程趋势发展和ERP系统来确保风险、性能和成本得到有效管理。

#### Performance control

##### 性能控制

We use practical experience and in-depth knowledge of systems like Meridium APM, SAP and Maximo.

我们依靠实际经验和系统的深入知识来解构数据, 如 Meridium APM、SAP和Maximo。

### Secondly: Handling over field experience 其次, 现场处理的经验

#### Focus brings control

##### 聚焦控制

Application of transparent, demonstrable and proven work and decision-making processes is crucial to the management of all risks related to asset maintenance.

透明、可被验证和经过实践证明的工作和决策过程对管理与资产维护有关的风险至关重要。

#### Stork performance maintenance

##### 性能维护

We will maintain your installations using our continuous improvement approach, our industry- wide expertise and our up-to-the-minute knowledge. Our performance agreements guarantee a production system that best suits your needs.

我们将使用不断改进的方法, 行业范围内的专业知识和我们最新的技术手段来维护您的设施设备。我们的能力水平可提供最适合您的满足需求的生产系统。

#### ALSO Compliant with company rules

Stork's distinguishing approach - the Compliance ABCs - focuses on the assessment of design compliance, maintenance compliance and management compliance.

**施托克与众不同的方法——合规性ABCs——侧重于三个独立的领域, 即评估设计合规、维护合规和管理合规。**

### Thirdly: Fast forward through increased efficiency 然后, 通过提高效率快速推进

#### Lean in maintenance 精益维护

With Stork LEAN in Maintenance (SLiM), your maintenance costs are reduced without hampering reliability and integrity

使用施托克精益维护方法, 在不影响可靠性和完整性的情况下降低了维护成本。

#### Systematic improvements 系统性改进

Maintenance is only carried out when it is needed: safely and efficiently. First time right without rework. Your people experience a higher level of professionalism and commitment.

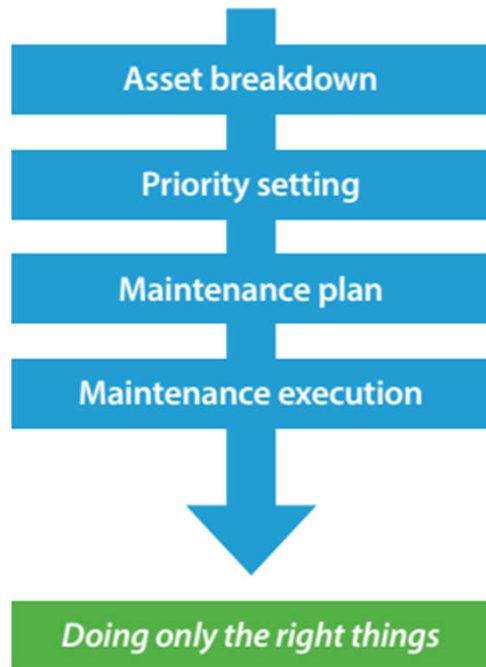
**只有在需要的时候才进行维护:** 这样既安全也有效, 不用返工。你的员工会体验到更高水平的专业和承诺保障。

#### Proven results 被证明的资产管理结果

With the Stork approach, our experts can streamline your maintenance processes, eliminate waste and reduce costs. Stork has the knowledge, global experience, resources and methods to ensure that you succeed in your improvement objectives

**使用施托克方法, 我们的专家可以简化您的维护流程, 消除浪费, 降低成本。**施托克拥有卓越知识、丰富全球作业经验、资源和先进技术手段, 可以确保您成功实现您的改进目标。

## 5、基于风险的可视化维护：精简流程，提高效率，节省人力物力，追求最优的资产性能



### Stork Risk-Based Visualized Maintenance

- Create clarity by visualizing the asset

By visualizing the assets we create a common language from management to execution. This creates clarity. RBVM visually links the business objectives to the execution of the maintenance tasks with a clear description of the ‘how to’. This speeds up maintenance and reduces costly mistakes

通过将资产可视化，我们创建了从管理到执行的通用语言。这将使流程简化。RBVM可视地将业务目标与维护任务的执行联系起来，并清楚地描述了“如何”操作来实现目标。这加速了维护过程并降低了可能的操作失误而造成的高昂代价。

- Simplicity to get fast results

RBVM focuses exclusively on the maintenance process. We use a simple application to facilitate a new way of working.

基于风险的可视化维护着重关注维护过程。我们使用一个简单的应用程序来促进一种新的工作方式。

### RBVM get the most out of maintenance:

- Spare part reduction  
减少备件数量
- Reduction in labor  
减少人力
- Risk reduction  
降低风险

Fanuc  
Fanuc

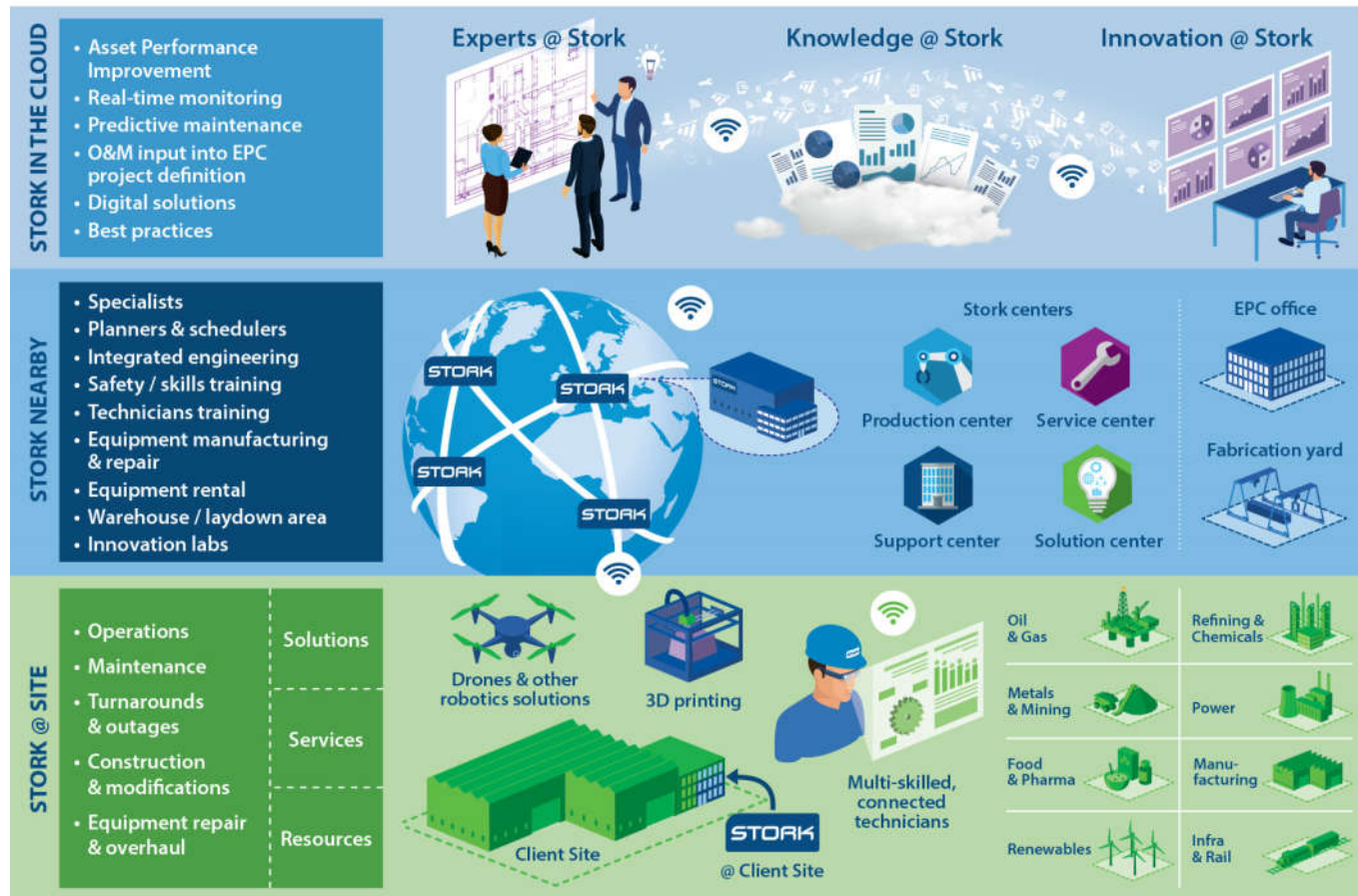
Maintenance Item	Maintenance Strategy	Maintenance Task	Interval (weeks)	Resource	Duration (min)	Spare part recommended
Fanuc R-2000-C 105F	Time based	Exchange calibration batteries	52	M	10	N
Fanuc R-2000-C 105F	Time based	Exchange PLC battery	106	M	10	N
Fanuc R-2000-C 105F	Time based	Clean cooling & inspect cooling fan of cabinet and PLC unit	52	M	30	N
Fanuc R-2000-C 105F	Time based	Visually inspect on cracks of sealing on door	52	M	5	N
Fanuc R-2000-C 105F	Time based	Functional test of push buttons and check lights	52	M	10	N
Fanuc R-2000-C 105F	Time based	Functional test of push buttons on teach pendant, Visually inspect	52	M	10	N
Fanuc R-2000-C 105F	Time based	Visually inspect of relays	52	M	5	N
Fanuc R-2000-C 105F	Time based	Visually inspection on oil leakage of electrical motors	52	M	5	N
Fanuc R-2000-C 105F	Time based	Check clearance on reducer of robot	52	M	10	N
Fanuc R-2000-C 105F	Time based	Visually check plug connection of sensors, No removal of	52	M	5	N
Fanuc R-2000-C 105F	Time based	Visually inspect cables on damages by removal of protection cover	52	M	10	N
Fanuc R-2000-C 105F	Time based	Visually inspect seal of compensation cylinder on oil	52	M	5	N





## 6、STORK价值创造 - 如何最优化用户的资产性能

### STORK VALUE PROPOSITION - HOW WE OPTIMIZE CLIENT ASSET PERFORMANCE



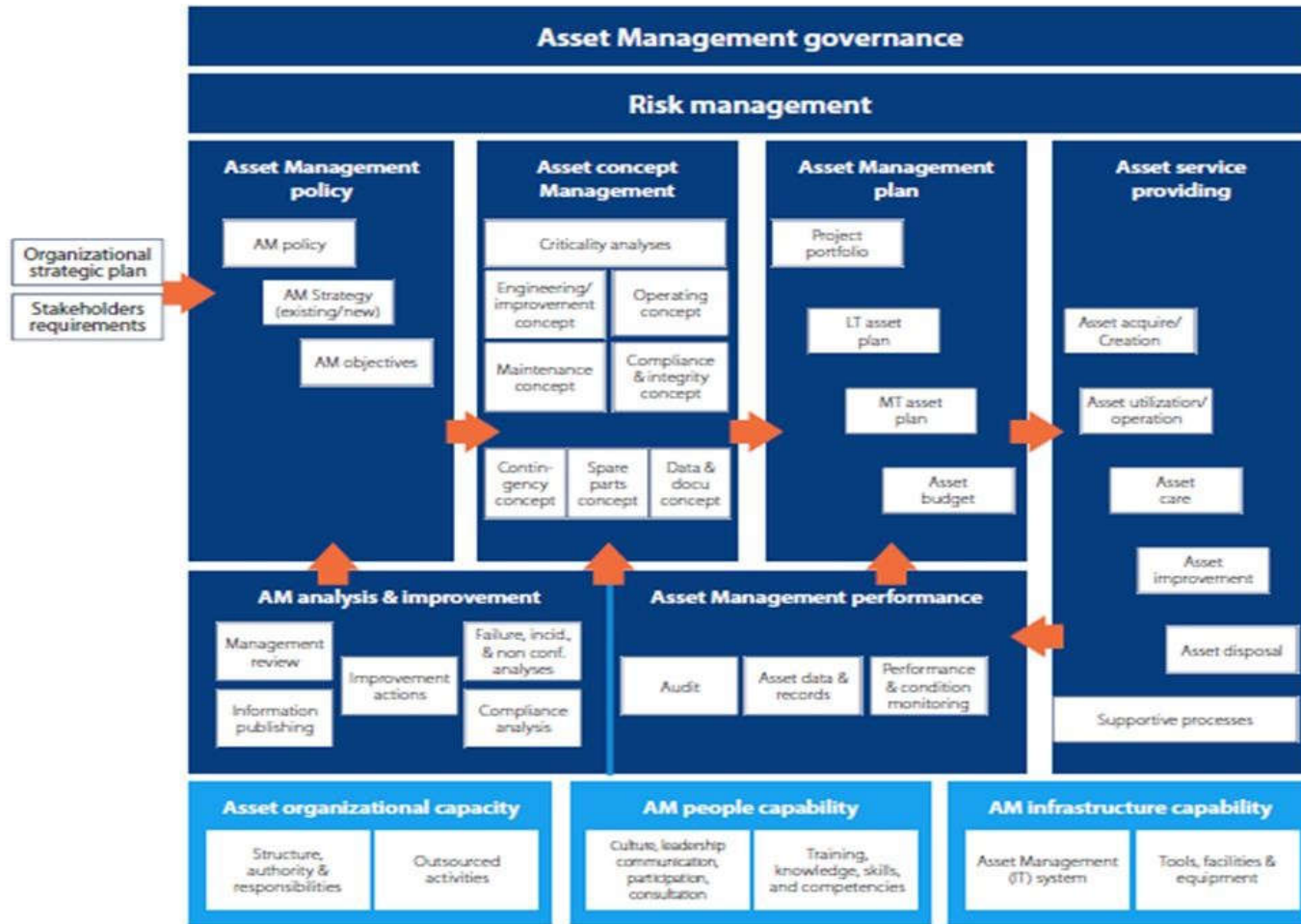


## 7、Stork的资产管理模型

Stork Asset Management Model containing 11 domains :  
施托克资产管理模型包含11项内容:

- Asset Management Governance 资产管理治理体系
- Risk Management 风险管理
- Asset Management Policy & strategy 资产管理方针和策略
- Asset Concept Management 资产概念管理
- Asset Management Plan 资产管理计划
- Asset Service Providing 提供资产服务
- Asset Management Performance 资产管理性能
- Asset Management Analysis & improvement 资产管理分析和改进
- Asset Management Organization 资产管理组织
- Asset Management People 资产管理人员
- Asset Management Means & Infrastructure 资产管理手段和基础设施

资产管理手段和基础设施



## 8、施托克 - 资产管理技术一览



## 9、项目风险管理和投资保障：项目预备和运行前准备



### UpFRONT



**Project / Operations Liaison Leadership**

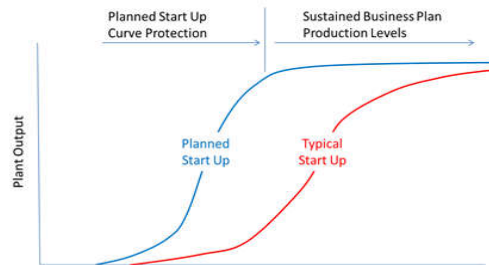
- Overall risk management including audits
- Senior level issues resolution & reporting

**Project Assurance**

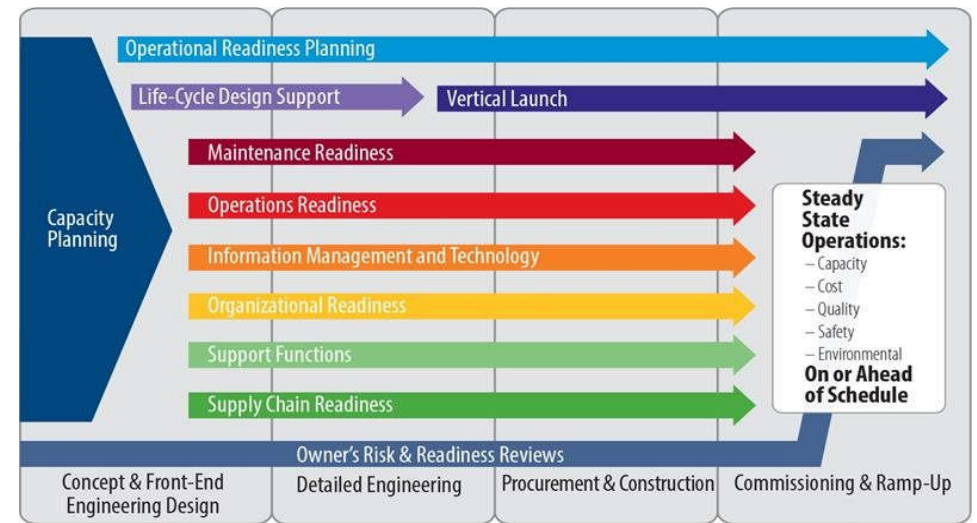
- Design for project cost & life cycle design
- Quality & schedule assurance
- Commissioning & start up assurance

**Operations Readiness**

- Overall detailed plan
- Focused efforts on weak / high risk areas

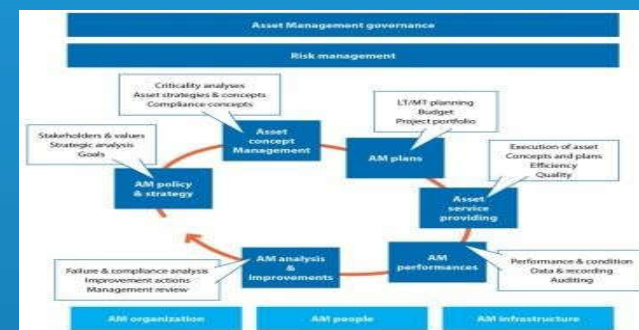


OVERALL PROJECT RISK MANAGEMENT AND ROI PROTECTION



**UpFRONT<sup>SM</sup>**  
**10 Modules**  
**70+ Activities**  
**500+ Deliverables**  
 Sequenced and integrated by project phase

## 1、战略资产管理 – 用户:



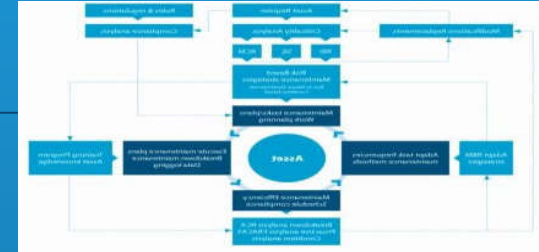
### Stork 所提供的资产管理内容:

- 治理体系；基于Stork资产管理模型的资产管理系统；
- 资产管理方针和策略；
- 风险管理，包括风险评估和脆弱性研究；
- 资产管理评估和审计；
- 资产管理性能建模，差距分析和确定基准；
- 财务管理和生命周期费用；
- 资产管理学会认可的培训；
- Governance; Asset Management (AM) system, based on Stork Asset Management Model
- Asset Management Policy & Strategy
- Risk Management, including risk assessments & vulnerability study
- Asset Management assessments & audits
- Asset Management performance modelling, gap analyses and benchmarking
- Financial Management & Life- cycle costing
- Endorsed Trainer Institute of Asset Management (IAM)

## 2、合规、可靠性和完整性 – 用户:



NAM



### Stork 所提供的资产管理内容:

- 关键评估
- 可靠性设计, RAMS分析
- 合规概念的定义
- 基于风险的维护概念的定义
- 机械完整性概念的定义, 腐蚀管理
- 分析和改善: 可靠性和可用性闭环的最优化
- 老化: 寿命时间延长分析; 长期维护计划
- 可靠性工艺和工具的定义
- 资产性能管理和预防性维护
- Criticality assessment
- Design for Reliability, RAMS Analysis
- Definition of compliance concept (SEVESO, SIL)
- Definition of Risk Based maintenance concepts (RCM)
- Definition of Mechanical Integrity concept (RBI), Corrosion Management
- Analyse & improve: optimization of Reliability and Availability Closing the loop (RCA, FRACAS)
- AGEING : Life time extension (LTARP) analysis; Long term maintenance plan
- Definition of Reliability process & tools
- Asset Performance Management & Predictive Maintenance

### 3、精益维护 – 用户:



Stork 所提供的资产管理内容:

- 基于成熟度模型，对组件维护部门给予指导。
- 维护工艺，任务，竞争力和组织。
- 零备件管理和物流。
- 关闭过程和组织的定义。
- 提供精益维修工具，包括Hands on Tool Time, Value Stream Mapping, 5S, SMED, Reverse RCM, DILO
- 标准化工作;
- OEE最优化 • PMO最优化 • TPM, 操作人员
- Guidance in organising maintenance departments based on maturity model
- Maintenance processes, roles, competencies and organisation
- Spare Parts Management & Logistics
- Definition of shutdown processes and organisation
- Lean Tools : Hands on Tool Time, Value Stream Mapping, 5S, SMED, Reverse RCM, DILO
- Working with standards
- OEE Optimization
- PMO Optimization
- TPM, Operator Care

## 4、性能维护 – 用户



Stork 所提供的资产管理内容:

- 合作建模，特殊定制；
  - 性能测量和改善；
  - 共同管理；
  - 维护合同管理；
  - 资产完整性管理。
- 
- Partnership modelling, tailor made
  - Performance Measurement & Improvement
  - Co-management
  - Maintenance Contract Management
  - Thinking and Doing in Asset Integrity Management



## 5、资产管理系统 – 用户



### Stork 所提供的资产管理内容:

- 资产管理 ICT 系统、应用及工具的建议;
- 资产管理 ICT 系统、应用及工具的实施;
- 资产管理 ICT 系统和工具的改善和升级;
- 建立界面/报告/共管;
- 对于资产管理 ICT 系统和工具的培训, 在现场/通过网络/教室。
- 资产性能管理工具预防性维护, IOT 方案。
- Advice on Asset Management ICT systems, applications and tools
- Implementation of Asset Management ICT Systems, applications and tools
- Improvement and upgrade of Asset Management ICT systems and tools
- Create interfaces/reports/cockpits
- Training in Asset Management ICT systems and tools; on the job / web-based / classroom
- Asset Performance Management Tools Predictive Maintenance, IOT Solutions

## ▪ 灵活性案例 - 通过改进计划减少成本和空闲时间

### References

#### 实施用户:



- From daily/weekly scheduling meeting > scheduling labour  
从每日/每周的日程安排会议中安排工时
- Create weekly forward look ahead and align with Stork back office  
创建每周未来计划与上周回顾，并与Stork后台支持保持一致
- Scheduling department (upscaling/downscaling) and vice versa  
细致到部门计划(升级/降级)，反之亦然
- Upscaling capabilities based on weekly forward look ahead appr. 0-50 FTE, daily upscaling capabilities appr. 0-10 FTE (when "unfortunate event" 0-50FTE)  
基于每周升级情况增加大概至0-50个人工，若有不幸事件发生时，每日增加大概0-10 个人工。
- Downscaling capabilities based on weekly forward look ahead appr. 0-50 FTE, daily downscaling capabilities appr. 0-10 FTE  
基于每周降级功能调整0-50个人工，每日降级功能大概减少0-10个人工

#### 实施结果:

- reimbursable & incentive, appr. 30 FTE, reduction of 'fixed' personnel cost of 15%  
补偿和激励下，大约节省30 个全职人工，“固定”人员成本降低15%
- Unit rates and reimbursable, appr. 25 FTE, reduction of 'fixed' personnel cost 10%  
通过调整单位费率和补偿，大约减少25 个人工，减少“固定”人员成本10%
- BAT, total budget, appr. 30 FTE, reduction of 'fixed' personnel cost 10%  
BAT，总预算，大约减少30 个人工，减少“固定”人员成本10%
- reimbursable & incentive, 2016, appr. 35 FTE, calculated reduction of 20% of "fixed" personnel cost  
补偿与激励，2016年减少大约35个人工，减少20%的“固定”人员成本

## · 改进效率 & 降低成本案例

### References 实施用户:



- Maturity scan before contract to indicate IST situation and potential improvements on efficiency  
在签订合同前进行完整调查，以指出当前的情况和潜在的效率改进
- Efficiency improvements focus on Maintenance process 提高效率的重点在于维护过程
- Efficiency improvement goals part of incentive contract 效率改进目标是合同要求的一部分
  - Hands on Tool time (HoTt) & Hands on Paper (HoP); 手动工具时间(HoTT)和纸上动手(HoP);
  - Potential of clustering work orders; 工作订单聚类的潜力;
  - Chain integration of services (e.g. “revision of a pump”) 服务链集成(如“泵的改型”)
  - Administrative handling (e.g. SAP coupling/sample checksinvoicing) 事务处理(例如SAP耦合/样例发票检查)
- A maintenance plan is present, managed and applied; technical reliability increases 制定、管理和应用维护计划使技术可靠性增加
- Tasks are well plannable and capacity meets the maintenance needs 任务具有良好的计划性并以满足维护需求
- CMMS registration and reporting maintenance execution, failures, tools and materials  
维护管理系统记录注册和报告维护执行、故障、以及使用工具和材料
- Basic maintenance knowledge (scheduling, planning, execution) ensured in processes and systems  
确保流程和系统的基本维护知识(计划，计划，执行)
- Organization in place, coordination maintenance and operations => lessstops 组织到位，协调维护和操作=>少停机
- Applies to rules and regulations, prepared plans for incidents 适用于规章制度，为事故做准备计划

### Results 实施结果:

- appr. 200 FTE, rewarded safety performance, 10% efficiency improvement, 7% HoTT increase, 98% predictability of activities 200 FTE, 大约200个人工，安全性能奖励，效率提高10%，手工工具时间增长7%，活动可预测性98%
- appr. 30 FTE, 12% maintenance cost reduction, 8% availability improvement 30 FTE, 大约30人工，降低12%的维护成本，提高8%的可用性
- appr. 150 FTE, integrated service contract with 10% maintenance costreduction 150 FTE 大约150人工，综合服务合同，降低10%维护成本
- 75% backlog reduction 75%, lead-time reduction 60% 库存减少75%，交货时间减少60%

## · 效力--提升资产性能案例

### References 实施用户:








- Maturity scan before contract to indicate IST situation and potential improvements on effectiveness;  
在签约前进行完整调查，以表明IST的情况和效力的潜在改进;
- Effectiveness improvements focus on improvement and optimising cost drivers and asset performance  
效率改进主要关注成本驱动因素和资产性能的改进和优化
- Effectiveness improvement goals part of incentive contract (measurements during contract)、  
激励合同的有效性改进目标部分(合同期间的度量)
- Maintenance concepts managed and improved, asset performance increases Tasks, knowledge and capacity  
attuned to maintenance concept  
维护理念的管理和改进，增加资产性能管理中对任务、知识和生产力的理念
- CMMS includes maintenance concept software  
维护管理系统包括维护概念软件
- Maintenance knowledge and assets ensured in processes and systems, developing knowledge management  
确保流程和系统中知识和资产维护，并开发知识管理
- Cooperation maintenance and operation, coordination maintenance and engineering (organization reduces/less work)  
合作维护和运行，协调维护和工程(减少组织/减少工作)
- Applies to rules and regulations, preventive measures for incidents in place  
适用于规章制度，事故预防措施到位

### 实施结果:

- 12% asset performance improvement, zero cost level, 5% risk reduction  
资产性能提升12%，零费用水平，风险降低5%-
- 5% asset performance improvement, 20% cost reduction, zero risk change  
资产性能提升5%，费用降低20%，零风险变化-
- 5% asset performance improvement, 15% additional cost, 10% risk reduction  
资产性能提高5%，增加15%额外费用，风险降低10%

▪ GE MERIDIUM APM程序实施经验 - 典型案例

	APM	Advanced analytics	APM implementation
	GE Meridium	Mechanical integrity	Implementation program
	GE Meridium	Reliability & Mech. Integrity	Implementation program
	GE Meridium	Reliability & Mechanical Integrity	pilots
	GE Meridium	Mechanical integrity	APM Strategy, Software selection
	GE Meridium	Reliability & Mech. Integrity	Implementation program

## 1、沙特基础工业公司SABIC

### HOW WE ADD VALUE

#### Challenge: 挑战

The (petro-)chemical industry is driven to maximize their output, to cope with low sales prices and profit margins. That is why this industry is focused on the costs and reliability of their assets. However, this also creates challenges with respect to Safety, Health, Environment, and Quality.

(石油)化学工业追求产量最大化，以应对薄利多销的策略。这就是石油行业关注资产成本和生产可靠性的原因。但这也带来了安全、健康、环境和质量方面的挑战。

#### Result 结果:

- Rewarded safety performance 安全性能回报
- 10% efficiency improvement 10%的效率改进
- 7% increase in Hand-on-Tool-Time (Workforce Productivity) 增加7%的手工工具时间(劳动生产率)
- 98% predictability of activities 98%的活动可预测性
- Significant improvement in the ratio preparation vs execution 在准备和执行比上有显著的改进

### CLIENT



### REFERENCE

Sabic

Asset Management - Stork Performance Maintenance

- Maintenance in fully integrated organisation managed by Stork for execution of mechanical, electrical, instrumentation and Pb testing activities 进行了完全由Stork组织管理的机械、电气、仪器仪表和Pb测试活动的维护工作。
- Shutdown management and execution 停机管理和执行



## 2、英国石油BP公司 - 阿姆斯特丹接收站

### HOW WE ADD VALUE

#### Challenge 挑战:

For the Oil & Gas industry, the adherence to tight environmental and safety regulations – is the most important goal. However, due to the lower demand and prices for oil and gas, those who maintain the assets are now also forced to continuously improve the efficiency and effectiveness.

对于油气行业来说，遵守严格的环境和安全法规是最重要的目标。然而，由于石油和天然气的需求和价格下降，资产的持有者现在也被迫不断提高效率和效益。

#### Result 实施结果:

- Backlog reduction of 25 % 积压减少25%
- Maintenance cost reduction with 12 % 维护成本降低12%
- Satisfied operators, by providing clarity, stability, a quick response time  
通过提供清晰、稳定、快速反应的操作来满足运营商的要求
- Work orders were processed in less time  
(from 65 to 20 days) 工作订单的处理时间更短(从65到20天)
- Safety items were ensured 项目安全得到保证
- Technical availability increased by 5 % 油气可用性增加了5%

### CLIENT REFERENCE



**BP Amsterdam Terminal**  
Asset Management - Stork Performance  
Maintenance

Maintenance in fully integrated  
organization managed by Stork for execution  
of mechanical, electrical,

由Stork负责管理执行机械、电气…等方面的维护工作。



### 3、荷兰AGRIFIRM饲料公司

## HOW WE ADD VALUE

#### Challenge 挑战:

External developments forced Agrifirm to focus on its core business. They therefore desired additional flexibility in its maintenance execution.

外部发展迫使Agrifirm专注于其核心业务。因此，它们希望在维修执行方面具有更大的灵活性。

#### Result 实施结果:

- Agrifirm is able to focus on its production  
使得Agrifirm能够更专注于生产
- Technical availability was increased by 8%  
技术可用性增加了8%
- Maintenance Costs were reduced and controlled by 12%  
维护成本控制并降低了12%

## CLIENT REFERENCE

 Agrifirm - Veghel, Wanssum and Oss  
Asset Management - Stork Performance Maintenance

The technical maintenance was fully outsourced for Veghel, Wanssum, and Oss.  
技术维护全部外包给Veghel、Wanssum和Oss





## 4、荷兰BPF生物公司 BIOPROCESS PILOT FACILITY (BPF)

### HOW WE ADD VALUE

#### Challenge 挑战:

The BPF was established in 2012 by the collaboration between CSM/Purac (now Corbion), DSM, and the TU Delft. To protect the intellectual property of themselves, these parties decided to separate the maintenance function from DSM' central maintenance organization. The challenge for them was: "How should this be realized?"

BPF成立于2012年，由CSM/Purac(现在的Corbion)、DSM和代尔夫特理工大学合作建立。为了保护自己的知识产权，这些创始人决定将维护职能从DSM的集中维护组织中分离出来。他们面临的挑战是：“如何实现这一点？”

#### Result 实施结果:

- Maintenance budget reduction of over € 2.00.000, 维护预算减少超过€2.00.000
- Backlog reduction to 0 work orders 待办事项减少到0个工作任务
- Response time reduced to within a day 响应时间缩短到一天之内
- Modifications were completed 100% on time and within budget. 修改工作在预算范围内100%按时完成。
- Zero safety incidents for 3 years-in-a-row 连续三年零安全事故

### CLIENT REFERENCE



**Bioprocess Pilot Facility (BPF)**  
Asset Management - Stork Performance  
Maintenance

Maintenance in fully integrated organization managed by Stork for execution of mechanical, electrical, ...

由Stork负责管理执行机械、电气…等方面的维护工作。



## 5、道达尔TOTAL比利时工厂 (FELUY - BELGIUM)

### HOW WE

### ADD VALUE

#### Challenge 挑战:

Total (Feluy) – Petrochemicals was designed to produce at 100 % of its capacity.

Due to current market changes production will have to be reduced based on actual customer demand. Therefore production cost has to be reduced and effectiveness to improved by increased workforce productivity

道达尔石油化工产品的设计生产能力是100%。由于目前的市场变化，产量将不得不根据实际需求的需求而减少。因此，必须通过提高劳动生产率来降低生产成本并提高效率。

#### Result 实施结果:

- Yearly maintenance budget reduction by 16 %  
每年维护预算减少16%
- Workforce productivity (HoTT) improved from 34 % to 50 %  
劳动生产率(HoTT)从34%提高到50%

### CLIENT REFERENCE



#### Total Petrochemicals Feluy

Asset Management - Asset management audit & improvement

Asset Management audit, Business case, implementation of improvements, securing improvements

资产管理审计，业务案例，实施改进，确保改进



## 6、荷兰喜力HEINEKEN集团

### HOW WE ADD VALUE

#### Challenge 挑战:

“To develop the world class maintenance standard” to obtain a sustainable high and stable line performance Availability +/+ and TCO -/-

“制定世界一流的维修标准” 以获得持续的高稳定的生产线可用性+/+和 TCO -/-

#### Result 实施结果:

- 5% asset performance improvement  
资产性能提升5%
- 15% additional maintenance cost reduction,  
额外降低15%的维护成本
- 10% risk reduction of Business interruption (uptime)  
业务中断(正常运行时间)风险降低10%

### CLIENT REFERENCE



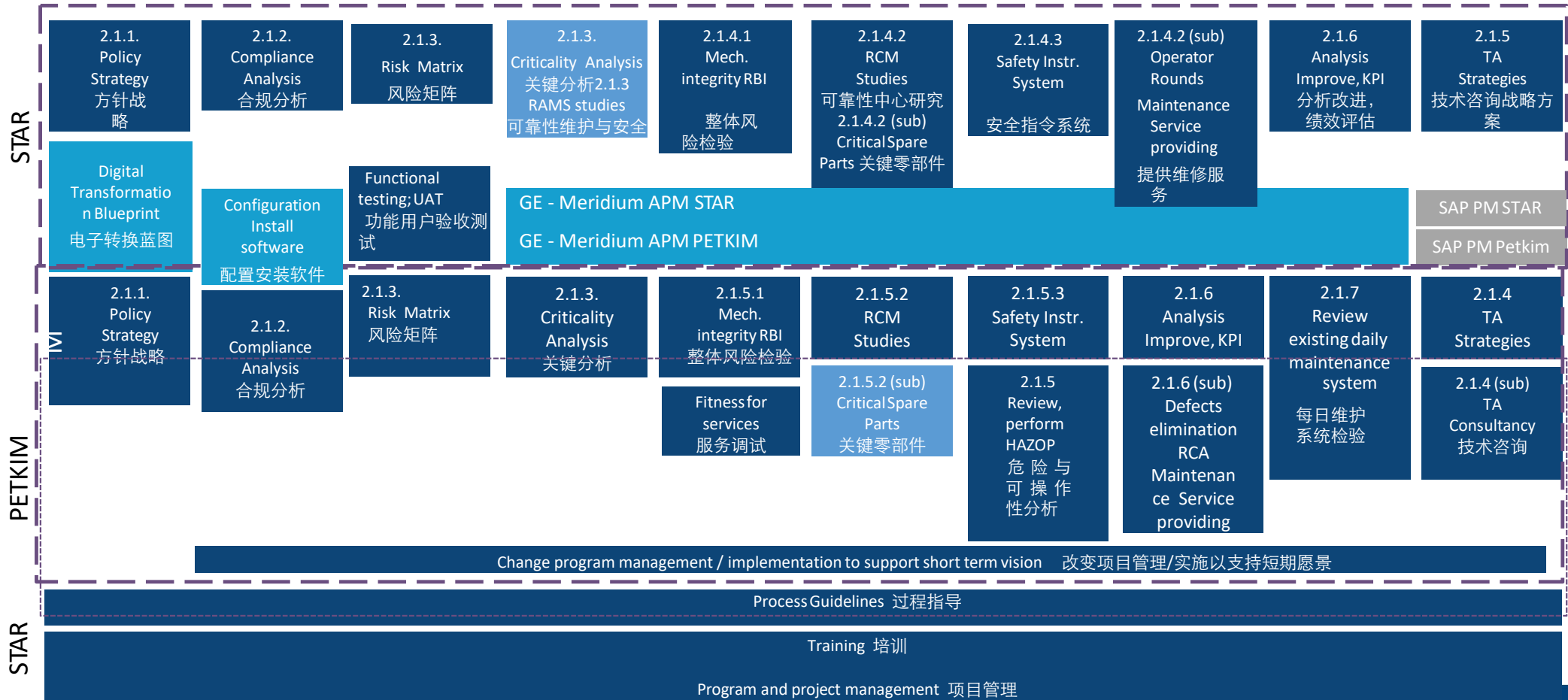
**Heineken**  
Total Productive management (TPM) –  
Supportability

CAPEX – OPEX, Life Cycle analysis, MRO  
Logistics, Reliability improvement,  
implementation on global scale

CAPEX-OPEX, 生命周期分析, MRO物  
流, 可靠性改进, 全球实施



## 7、阿塞拜疆石油公司土耳其APM实施



## 8、土耳其STAR 炼厂 (以及PETKIM公司) : 提供完整性设计 & 维护咨询

### Client

- STAR refinery

### Location

Aligia, Izmir Turkey

### Work performed

 Full Implementation of GE Meridium Asset Performance Management suite new STAR refinery. 新炼厂全面实施GE Meridium资产绩效管理套件。

- APM installation, configuration and implementation
- 应用性能管理软件的安装、配置和实现
- Definition of APM Policy & strategy compliance analysis, verification, digital transformation blueprint
- 定义应用性能管理政策和策略的符合性分析, 验证, 数字化转型蓝图
- Criticality analysis, RAMS study, RCM, RBI, RCA, LCC, spare part management,
- 关键度分析, 包括可维护性和安全性能研究, 可靠性中心维修, 基于风险的检验, RCA, 生命周期成本, 备件管理
- Turnaround Strategy 重整策略
- Continuous improvement 持续改进

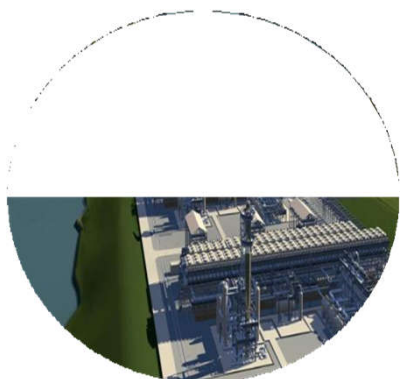
### Client Benefits 客户受益:

- State-of-the-art APM system 最先进的应用性能管理系统
- Risk Based Maintenance strategies 基于风险的维护策略
- Improvement of existing practices and performance 改进现有的实践和性能
- Ambitious business target realization 雄心勃勃的业务目标实现
- Implementation of best practices work processes, systems and technology 实施最佳实践工作流程、系统和技术
- Training and user support 培训和用户支持
- End-to-end system implementation 端到端系统实现

### Services Provided 所提供的服务:

- |   |                |
|---|----------------|
| – Asset Performance Management                  | 资产绩效管理         |
| – Project and implementation management         | 项目及实施管理        |
| – System architecture and integration           | 系统架构与集成        |
| – Reliability Centred Maintenance               | 可靠性为中心的维修      |
| – Risk based Inspections (Mechanical Integrity) | 基于风险的检查(机械完整性) |
| – Maintenance Consultancy                       | & 维修咨询         |
| – Asset Management Policy & Strategy            | 资产管理政策与策略      |
| – KPI Definition & implementation               | KPI定义与实施       |

## 9、美国FREEPORT LNG公司：基于风险的检查RBI服务



### Client

Freeport LNG



### Location

Freeport, TX - USA



### Work performed 工作内容

Stork has assembled a professional, experienced team to work closely with Freeport LNG in developing RBI computer assessments, static equipment and piping Inspection Management Plans and plant design life Corrosion Monitoring in compliance with applicable regulations, codes and best practices

Stork组建了一支专业、经验丰富的团队，与Freeport LNG公司紧密合作，根据相应法规、规范和最佳实践经验，开发基于风险检验的计算机评估、静态设备和管道检查管理计划以及工厂设计寿命腐蚀监测。

### Client Benefits 客户受益：

RBI assessments completed and activities and time frame of automated Inspection Management Plans defined. Project is on-time and within budget. An effective RBI program results in more reliable and efficient plant and equipment operations.

基于风险检验评估已经完成，自动化检查管理计划的活动和时间框架已经确定。项目按时完成，未超出预算。一个有效的基于风险检验的程序可以使工厂和设备运行更加可靠和高效。

### Services Provided 所提供的服务：

- GE Meridium APM implementation
- GE Meridium软件的实施
- Asset Performance Management 资产性能管理
- Project and implementation management
- 项目及实施管理
- System architecture and integration 系统架构与集成
- Risk based Inspections API 580 基于风险的检查API 580
- Planning & scheduling 计划和调整
- Integrity Operating windows 完整的操作窗口

## 10、COVESTRO公司 (原拜耳) 上海漕泾等全球各地项目



### Challenge 挑战:

Improving the reliability of the production assets of Bayer Material Sciences worldwide (Now Covestro) as part GEO4 program : reduction of reactive maintenance by focusing on preventive and predictive maintenance

作为GEO4计划的一部分，提高拜耳材料科学全球公司(现为Covestro)生产资产的可靠性: 通过重点关注预防性和预测性维护，减少应激性维护。



### Client

Covestro - Baytown, Caojing (China), New Martinsville, Leverkusen



### Work performed 工作实施:

- Implementation of GE Meridium Asset Performance Management - Asset strategy Module

GE Meridium资产性能管理-资产策略模块的实现

- Criticality analysis, RCM/FMEA, SAP PM Maintenance plans  
关键度分析，以可靠性为中心的维修 & 故障模式与理象分析，SAP 项目管理维护计划

### Client Benefits 客户受益

- Improved Reliability by 20 %
- 可靠性提高了20%
- Availability Improvement + 5%
- 可用性改善了 5%

### Services Provided 所提供的服务

- ✓ Asset Performance Management 资产绩效管理
- ✓ Project and implementation management 项目及实施管理
- ✓ RCM/FMEA 以可靠性为中心的维修&故障模式与理象分析

## 11、BAYER 拜耳公司全球多处工厂



Bayer CropScience

### Client



Bayer CropScience : Muskegon,  
Kansas City, Frankfurt, Mobile,  
Monheim am Rhein

### Location



Multi-side implementation

### Work performed 工作实施:



Implementation of GE Meridium Asset  
Performance Management - ACA, FMEA,  
RCM, EMP, RBI, Inspection Rounds  
实施GE Meridium资产绩效管理- ACA, 以可靠性  
为中心的维修 & 故障模式与理象分析, EMP, 基  
于风险的检测, 检查次数

- Criticality analysis, RCM/FMEA, SAP PM  
Maintenance plans
- 关键度分析, RCM/FMEA, SAP 项目维修计划
- RBI/Inspection rounds
- 基于风险的检测/轮流检验

### Client Benefits 客户受益:

- Risk Based Maintenance strategies
- 基于风险的维护策略
- Improvement of existing practices and performance
- 改进现有的实践和性能
- Implementation of best practices work processes, systems and technology
- 实施最佳实践工作流程、系统和技术
- Training and user support
- 培训和用户支持

### Services Provided 所提供的服务:

- Asset Criticality Assessment 资产临界评估
- FMEA/RCM Facilitation
- 促进以可靠性为中心的维修&故障模式与理象分析
- Built Equipment Maintenance Plan's (EMP's) 建造设备维修计划(EMP)
- Implementation of Meridium APM for ACA, FMEA, RCM, EMP, RBI, Inspection Rounds
- 实施应用性能管理 ACA, FMEA, RCM, EMP, RBI, 轮流检查
- Equipment Maintenance Plans in SAP PM
- SAP 项目管理中的设备维护计划



## 12、巴斯夫 BASF 荷兰化工厂：为乳化剂和树脂产品切割生产线，提供三年的资产管理服务



### Client 用户

BASF, biggest integrated chemical production site in Belgium



### Location 厂址

Heerenveen, The Netherlands 荷兰



### Work Performed 所执行的工作:

The tools and methodology used included:

- Determining both asset and asset management goals by translating operational strategic planning and stakeholder requirements  
通过转换运营战略计划和涉众需求来确定资产和资产管理目标
- Asset scan and Asset management scan  
资产扫描和资产管理扫描
- Strategy roadmap SWOT analysis  
战略路线图SWOT分析
- Risk weighting based on critical corporate values  
基于关键企业价值的风险加权
- Priority setting  
优先级设置

### Client Benefits 客户受益:

Having clear and practical Asset Management strategies allows BASF to realize quantitative targets on:

**明确而实用的资产管理策略使巴斯夫能够实现以下量化目标:**

- Total technical cost, actual/budget  
技术总成本,实际/预算
- Lump sum capex budget, actual/budget  
一次性的资本支出预算, 实际/预算
- Asset effectiveness (OAE)  
总资产有效性
- Asset effectiveness Technical loss  
资产有效性技术损失

### 用户赞誉:

Mark Lazonder, Asset manager, BASF Heerenveen

*"For our location the implementation of asset management was new ground and we had to find our way into asset management. With the help of Stork we made a roadmap in the form of a strategy to add maximum value as asset management to our organization. Now it is up to us to make it a success!"*



## 13、巴斯夫 BASF 比利时化工厂项目：资产管理综合改进服务



### Client

BASF, biggest integrated chemical production site in Belgium



### Location 厂址

Antwerp, Belgium 比利时



### Work Performed

- Asset management framework  
资产管理框架
- Asset management policy, strategy and processes  
资产管理政策、策略和流程
- Communication, training and awareness campaign  
沟通、培训和宣传活动
- KPI's and reporting  
关键业绩指标和报告
- Development of generic maintenance concepts  
开发通用维护概念
- Workflow management: accompaniment and implementation  
工作流管理: 辅助和实践
- Optimization of the CMMS (SAP)  
优化CMMS (SAP)

### Client Benefits 客户受益:

- The maintenance factor (Maintenance cost / NPV) stabilizes around 2,2 % for the site.  
站点的维护因素(维护成本/净现值)稳定在2%左右。
- Better grip on the unexpected losses . The turnarounds, major part of the Slowdowns, are coordinated site wide  
更好地控制意外损失。对于检修, 误工的主要因素, 得以在现场范围内协调。
- Following the defined processes generates reliable data and transparency which is the foundation for high end projects like the introduction Zero Based Budgeting.  
按照规定的流程生成可靠的数据保障了项目运行透明度, 并且也是引入像“零基础预算”这类高端项目的基础,



## 14、荷兰阿克苏-诺贝尔AKZO NOBEL：提供从资产管理到通用维护的全方位服务



### Client

AKZO NOBEL, largest global paints and coatings company and a major producer of specialty chemicals



### Location 厂址

Amsterdam, the Netherlands 荷兰



### Stork promised:

Stork contributes with full range services from generic services, mechanical and E&I, to numerous solutions and asset management & consultancy

**施托克提供从通用服务、机械、设备与安装到众多解决方案、资产管理和咨询的全方位服务。**

We promise 4 key targets: a zero incident safety approach, high degree plant availability, high degree plant reliability and optimum total costs of ownership.

我们承诺4个主要目标:零事故安全方法, 高度的工厂可用性, 高度的工厂可靠性和最优的总成本。

### Service included 服务内容:

- Continuous improvement plans: increasing hands on tools time (HOTT) affecting total cost of ownership  
持续的改进计划: 使用了Stork专有工具HOTT, 从而影响总成本。
- a local unit project called LORA (lean optimization small rotating services) improved its service  
LORA(对小型转动设备服务进行精益优化)
- Re-structuring resulting in shorter administrative throughput times and mutual development of unit rates.  
重组规划后可在保持或降低单位费率的情况下缩短产出时间

### Client Benefit 客户受益

- An improved maintenance plan Increasing hands on tools time(HOTT)  
改进的维护计划, 增加HoTT.
- Total cost of ownership Improved service structuring  
Shorter administrative throughput times  
总费用降低, 服务结构改进, 生产时间缩短

## 15、 帝斯曼DSM： 为荷兰DAI DELFT制药公司提供设计、建造和维保



### Client

Customer: DAI, member of Royal DSM N.V.



### Location

Delft, the Netherlands



### Work performed 工作内容

Stork provides contract- and technical management, reliability engineering, planning, scheduling and mechanical execution, including on call services. 施托克提供合同和技术管理、可靠性工程、计划、调度和机械执行，包括随叫随到的服务。

The performance based contract targets direct reduction of maintenance costs, as well as a decrease in production loss costs with a technical cause.

基于性能的合同目标是直接降低维护成本，以及降低技术原因造成的生产损失成本。

### Technical Services 技术服务及资产完整性管理

- Business lines involved: Mechanical Services, Industrial Equipment & Services, Consultancy
- 业务范围包括: 机械服务、工业设备服务、咨询
- Process Equipment Product lines involved: Strategy& Processes, Reliability & Integrity, Asset Management & Implementation, High Pressure Equipment
- 工艺设备产品线包括: 战略和工艺, 可靠性和完整性, 资产管理和实施, 高压设备
- Total turnover: € 3.000.000 p.a. Execution period: 2001- Ongoing Total manpower: 60, Peak manpower: 100
- 总营业额: 每年3.000.000欧元; 执行期: 2001年-至今。
- 总人力: 60人; 峰值人力: 100人
- Subcontractor's involved: Spie (partner) 50.
- 涉及的分包商: Spie (合作伙伴) 50 人

### Client Benefit 客户受益

- 30% savings on annual maintenance cost. **每年可节省30%的维护费用。**
- Decrease in production loss costs by technical cause. 降低因技术原因造成的生产损失成本。
- More transparency in status of ongoing improvement. 在持续改进的状况方面更加透明。

## 16、哥伦比亚石油公司：为油气田生产和发电厂，提供资产管理服务



### CONTRACT ESSENTIALS

- Creativity and leadership to implement innovative alternatives; More Value/Less Cost
- Greater awareness of costs
- Improvement plans focused on greater availability of machinery & keeping the maintenance costs under control
- Rational approach to the current conditions of safety and production
- Cost-benefit by program based approach: reducing failures and improve availability
- Proactive maintenance approach

### Customer's Quote:

'Relationship based on same spirit and philosophy of partnership and mutual trust'



### Client

ECOPETROL & EQUION



### Location

Casanare fields, Colombia

油气产量:

100,000 石油日产量; 300 百万标准立方英尺

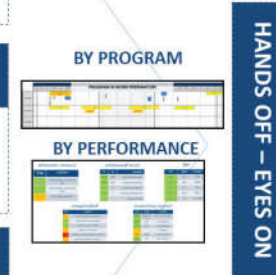


### Asset Management Solutions 资产管理方案

SYNERGY	OPERATIONS	OVERHAULS
<ul style="list-style-type: none"> <li>RELIABILITY ENGINEERING</li> <li>CONDITIONING BASED MONITORING</li> <li>PLANNING AND WORK-PREPARATION</li> <li>MAINTENANCE ENGINEERING</li> <li>SHUTDOWN MANAGEMENT</li> <li>CMMS MANAGEMENT</li> <li>WAREHOUSE MANAGEMENT</li> <li>PREDICTIVE MAINTENANCE</li> </ul>	<ul style="list-style-type: none"> <li>SYSTEMS POWER GENERATION OPERATION</li> <li>ELECTRICAL SYSTEMS OPERATION</li> <li>GAS COMPRESSION SYSTEM OPERATION</li> <li>NW FACILITY ECP</li> <li>RECETOR COMPRESSION EQ</li> <li>FLOREÑA POWER GENERATION EQ</li> <li>GX39 AND FLOREÑA C6 WELL-SITE EQ</li> <li>RE-INJECTION FACILITY EQ</li> <li>GLP CUSIANA (GASPLANT) EQ</li> </ul>	<ul style="list-style-type: none"> <li>RECIPRO MACHINERY</li> <li>ROTATING MACHINERY</li> </ul>
MAINTENANCE	REIMBURSABLES	ADDITIONALS
<ul style="list-style-type: none"> <li>PREVENTIVE AND CORRECTIVE MAINTENANCE</li> <li>"FIRE &amp; GAS" SYSTEMS MAINTENANCE</li> <li>VALVES MAINTENANCE</li> <li>WELL MAINTENANCE</li> <li>COMPONENTS REPAIRS IN CUPIAGUA WORKSHOP</li> <li>LIGHTING SYSTEM MAINTENANCE</li> <li>OCENSA FACILITIES MAINTENANCE</li> <li>FABRIC MAINTENANCE</li> </ul>	<ul style="list-style-type: none"> <li>MAIN COMPONENTS AND SMALL SPARE PARTS ECP (INTERNAL AND EXTERNAL LIGHTING SYSTEMS, MECHANICAL MAINTENANCE)</li> <li>SPARE PARTS REPAIRS OF ELECTRIC AND MECHANICAL MACHINES IN EXTERNAL WORKSHOPS</li> <li>TRAVEL COST AND SPECIALIZED TECHNICAL SUPPORT</li> </ul>	<ul style="list-style-type: none"> <li>OPERATIONAL SUPPORT</li> <li>INTEGRITY (INSPECTION) SUPPORT</li> </ul>

### Client Benefits 客户受益

- Significantly decreased production losses at a rate of 10% per year  
**以每年10%的速度显著降低生产损失**
- Reduce project costs by 32% and 45% of efficiency savings for Ecopetrol and EQUION  
**分别对于Ecopetrol和EQUION减少了32%和45%的项目成本。**
- Reach excellent safety performance throughout the operations  
**在整个运行过程中都达到极高的安全性能。**



## 17、秘鲁：为油田和电站提供资产管理

参与操作和维护超过700项可维修资产(机械、电气及仪器)



### Client

Lots 8 and 92, generate 35% of the country's petroleum  
两油田石油产量占据秘鲁全国的35%



### Work performed

Stork implemented a long term management model for the Wartsilä plants based on three main areas:

Stork为瓦锡兰工厂实施了一个基于三个主要领域的长期管理模式:

- Establish a culture of health and safety (HSE) as a priority, 建立健康和安全管理文化作为优先事项,
- A competent team and the application of strategies 出色的团队与策略的应用
- tools appropriate to the operational requirements of the plants. 适合工厂操作要求的设备和工具。

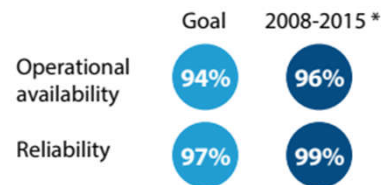
### Client Benefits

We find ourselves faced with established processes in which costs are optimized, risks are controlled and the operational performance exceeds the indicators agreed with the customer:

**成本优化、风险控制、运营业绩均超过客户原定的指标和预期:**

- Reduction in fuel (HFO) consumption by more than \$480,000 in 2014. 2014年燃料(HFO)消耗减少了48万美元以上。
- Proactive focus (98%) on the execution of the maintenance plan. 预先关注(98%)维护计划的执行。
- Overall optimization in the consumption of spare parts in major maintenance by more than \$500,000 in 2014. 2014年重大维修备件消耗总体优化超过50万美元。

Compliance with the operational and management indicators, with accumulated values in excess of the contracted target:  
遵照经营管理指标, 累计价值超过约定目标:



\* Securities July 2015



## 18、荷兰SONAC 食品集团：做维保和资产管理



### Client

SONAC, part of the VION Food Group. VION has over 26,000 employees and has a yearly turnover of €8.9 billion.



### Location

Vuren, the Netherlands



### Work performed 工作内容

A comprehensive maintenance audit followed by the implementation of process and organizational changes aiming for increased cooperation, efficiency and effectiveness.

根据实施过程和组织改革的全面维修审查，以加强合作、提高效率和效益。

A change management process in which Stork explicated the tacit knowledge and the intellectual capital of the ageing Sonac maintenance team.

施托克对老龄化的Sonac维护团队所蕴含的隐性知识和智力资本进行解构和变更管理。

### Client Benefits 客户受益:

- Reduction of 10 FTE's without redundancies  
减少10个功能测试设备，减少冗余
- Reduction of work orders  
减少工作指令
- Increased control of work orders  
加强对工作指令的控制
- Change from reactive into improvement orientated maintenance team  
**从被动的维护团队转变为以改进为导向的维护团队**
- Knowledge transfer within the maintenance team  
维护团队内的知识传播
- Increased joy and satisfaction of work (e.g. significantly reduced sick leave)  
增加工作的乐趣和满意度(例如大大减少病假)

### What Client Say 客户评价:

Mr.Thomas Versterre (Managing Director Sonac):

“..we are now able to execute best-in-class maintenance with less FTE's in a more structured and pleasant way..“

## 19、荷兰KOLB化学品工厂：提供安全完整性水平合规服务



### Client

Dr. W. Kolb Netherlands B.V., a Swiss producer of chemicals



### Location

Klundert, The Netherlands



### Work performed

Stork's experts in combination with the local technical team used a structured process to: identify and classify safety critical issues, allocate and verify equipment, test, inspect and sustain measures.

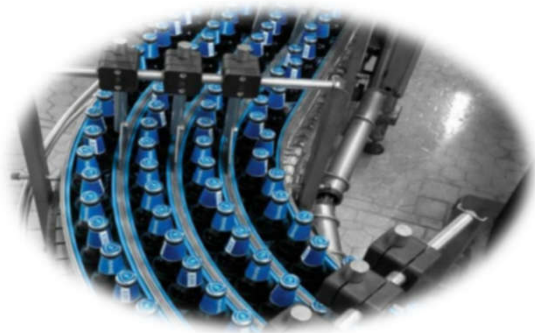
施托克的专家与本地技术团队一起使用结构化的流程：识别和分类关键安全问题，分配和验证设备，测试，检查和实施维护措施。

### Client Benefits 客户受益：

- With a fierce focus on closing the loops (Plan Do Check Adjust), the overall level of SIL knowledge with the customer has increased and improvements in calibration programs, documentation structures and maintenance procedures have been identified and implemented in a matter of months.
- 重视遵从PDCA关闭循环即 计划、实施、检查和调整，客户对安全完整水平的整体知识水平已经提高，在几个月内，确定并实施对校准程序、文档结构和维护程序的改进。
- Kolb has realized their expected outcomes regarding SIL, whilst successfully completing the production capacity expansion and maintaining safe and stable operations.
- Kolb已经实现了关于安全完整水平的预期成果，同时在保持了安全稳定的运行下成功地完成了产能扩大。
- Kolb is now even more effective, efficient and confident in demonstrating their SIL compliance to the auditors.
- Kolb在整体安全等级合规方面能够做到更有效、更高效和更有信心。



## 20、荷兰BAVARIA 啤酒工厂：提高生产线产能和维护SAP工厂模块



### Client

Bavaria, net turnover of over € 400 million



### Location

Eindhoven, The Netherlands



### Work performed 工作内容

Alignment of the production and maintenance processes to enhance production line performance.  
调整生产和维护流程以提高生产线的产能。

Work flow analysis and Stork's best practices in order to implement SAP Plant Maintenance.  
工作流程分析和最佳实践，以实施SAP模块的工厂维护

### Client Benefits 客户受益:

- Production line performance increased by over 5%. This achievement was described as "maximum availability against minimal cost" by the maintenance manager of Bavaria.
- **生产线性能提升5%以上。** Bavaria的维护经理将这一成就总结为“以最小的成本换取最大的可用性”。
- The implementation of SAP Plant Maintenance was on time and on target. This seamless implementation helped Bavaria to reduce their maintenance costs even further.
- 按时完成SAP工厂维护实施。这种无缝安装启用帮助Bavaria进一步降低了维护成本。

## 21、中国海洋石油公司CNOOC: 资产完整性管理培训

Twenty-five managers and engineers of the Chinese National Offshore Oil Corporation (CNOOC) visited the Stork headquarters in Utrecht for a ten-day training course on various aspects of asset integrity management in offshore Oil & Gas production.  
在2014年, 来自中国海洋石油公司CNOOC的25名经理和工程师访问了荷兰Stork总部, 进行了为期10天的关于海洋油气生产的资产完整性管理各个方面的培训。

As a certified trainer, endorsed by the Institute of Asset Management, Stork provided knowledge of asset integrity management in conjunction with partner Nucean. Site visits to Dutch Oil & Gas production sites were part of the program to experience asset integrity management in practice.

作为国际资产管理协会IAM认证的培训机构, Stork提供了资产完整性管理方面知识的系统培训, 并访问了Stork的项目案例 - 荷兰的几家油气生产企业。

### 培训目标:

- Understand latest international concepts and practices in integrity management, so as to clarify the direction of the company's integrity management.  
了解国际上最新的资产完整性管理方面的概念和实践, 以明晰公司资产完整性管理的方向。
- Systematically enhance the management concepts and capabilities of the integrity managers.  
系统地提高管理概念和完整性管理的能力。
- Help with understanding and implementation of the integrity management system the company already developed.  
帮助理解和贯彻公司已发展的完整性管理系统。
- Establish communication channel and platforms with international oil companies.  
建立与国际石油公司的沟通渠道和平台。
- Enhance service skills of the Company how to manage oilfield service companies.  
提高服务技巧, 如何管理油田服务的公司。

Mathon Erps, Knowledge Manager at Stork, explains: "CNOOC was surveying the market for best practices to set up their Asset Integrity System. As a result of the changing strategy of the Chinese government, national companies, among others, are obliged to meet tightened law and regulations.

"During the selection process, CNOOC was looking for a provider who was able to show a proven application of the theoretical knowledge in practice. Based on our proven experience with managing assets for Offshore Oil & Gas customers, our international recognition by the Institute of Asset Management as well as our extensive captured Asset Management related knowledge, Stork turned out to be the right partner to participate."

### Stork 培训经理:

"在培训机构挑选过程中, CNOOC一直在寻找从理论到实践上可信赖被证明的资产管理方面的领先者。基于我们在油气资产完整性管理方面被证明的经验、广泛的专业知识以及国际资产管理协会的认可, Stork 被证明是合适的合作伙伴。"

CNOOC's asset integrity manager and team leader of the training delegation comments: "CNOOC has taken the lead in developing its asset integrity management in China and has achieved a certain degree of success.

From Stork's training and cooperation, we have gained systematic and comprehensive knowledge about asset integrity management not only in theory but also in practice. I believe that it will really contribute to a more effective implementation and that it will enhance our asset integrity management level."

### CNOOC用户评价:

"CNOOC是中国在发展资产完整性管理方面领先的企业, 并已取得了一定程度的成功。通过与Stork的合作及培训, 我们获得了在资产完整性管理方面系统而广泛的知识, 不仅理论方面, 还包括在实践上。我们相信, 它会真正地对更有效地实施资产管理做出贡献, 并将提高我们的资产完整性管理水平"。

