新松智能喷涂爬壁机器人产品介绍

Introduction of the wall-climbing spraying robot

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船舶涂装的作用
The function of ship spraying

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船舶涂装是造船技术中的三大支柱工艺之一， 船舶涂装不仅可以改变船舶的外观，给海洋船舶增添亮丽外表，还可以有效阻止海水对船舶的腐蚀，延长船舶的使用寿命。

Ship spraying is one of the most important technologies in shipbuilding. It gives the ship not only a beautiful appearance, but also rust protection. The life length of the ship becomes longer.

当前阶段船舶涂装存在的问题
The problems in ship spraying currently

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脏 dirty

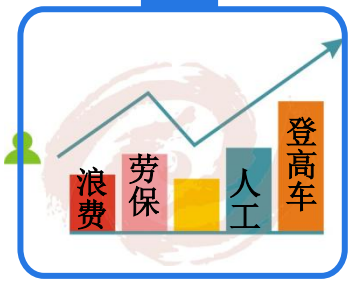
苦、累 toil

危险 dangerous

船舶涂装Ship spraying

有毒 poison

质量不稳定
unstable in product quality



成本高 high cost

效率低 inefficient

船舶涂装存在的问题
The problems in ship spraying currently

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涂装业马上将面临用工荒的问题，目前，要招聘到40岁以下的涂装工人，已经非常困难。

Labor shortage will soon be a problem in ship spraying. It is very difficult to recruit a painting worker who is under 40 years old now.

因此推动涂装技术进步，提升涂装的自动化水平，用机器人将人从恶劣的作业环境中解放出来，提高船舶涂装的经济效益，将是非常紧迫的事情。

So it is a pressing problem to increase the level of automation of ship spraying using robot. People can be released from the hazardous environments and ship spraying will be more economical.

解决方案——智能喷涂爬壁机器人
A solution - a wall-climbing spraying robot

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为了解决这一问题，中科新松研制开发了一款磁吸附喷涂爬壁机器人，该喷涂爬壁机器人集成了网络控制、自动导航、自动路径规划和作业区域智能识别等技术。可在垂直壁面及曲面上灵活移动，实现了在高污染、高强度船体喷涂工作中代替人工作业，同时可大大节省涂料，提高作业效率。

In order to solve this problem we design a wall-climbing spraying robot. It integrates network control, automatic navigation, path planning, and painting area auto-detection. On a vertical wall or curved surface, it can move freely. and was designed to take place of humans to do the hard and harmful painting work on a ship's hull. It is highly efficient and can greatly reduce the amount of coating material used.

喷涂爬壁机器人——系统组成
Wall-climbing painting robot- constituent part

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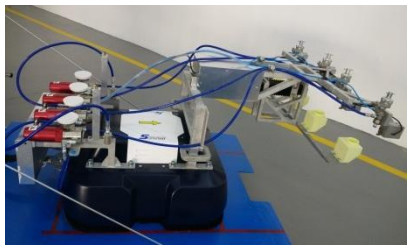

爬壁机器人本体
The robot

控制及电源系统
The control and power system

喷涂爬壁机器人系统
Wall-climbing painting robot system

遥控操作系统
Remote control system

涂装装置 Spray pump

辅助提升装置
Lifting device

喷涂爬壁机器人——主要功能
Wall-climbing spraying robot-main functions

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无线遥控操作功能 wireless remote control

无线遥控操作功能 remote control

通过工业平板电脑进行无线遥控操作，简单直观，易于上手，不仅**可以使操作人员远离喷涂设备和区域，减少油漆对操作人员身体健康的影响**，同时还可以通过较好的视野对涂装效果进行观察，提升涂装质量。

The robot can be remote controlled by a panel. And the operation is very easy. The operator can keep a safe distance so as to avoid getting sucked into the toxicity. And a large view can be gotten to watch the quality of the spraying coat.

喷涂爬壁机器人——主要功能
Wall-climbing spraying robot-main functions

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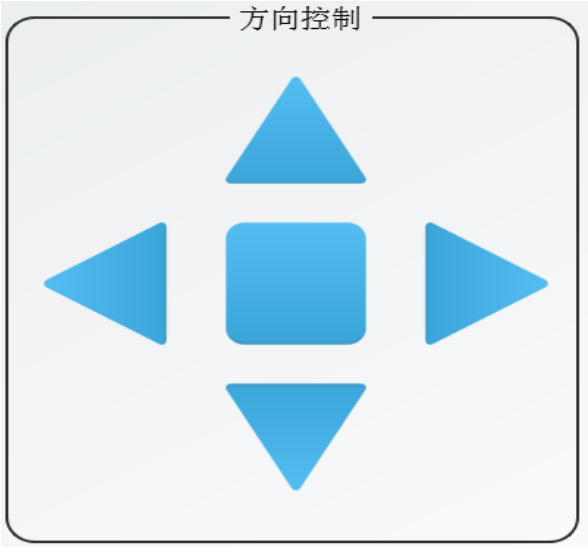
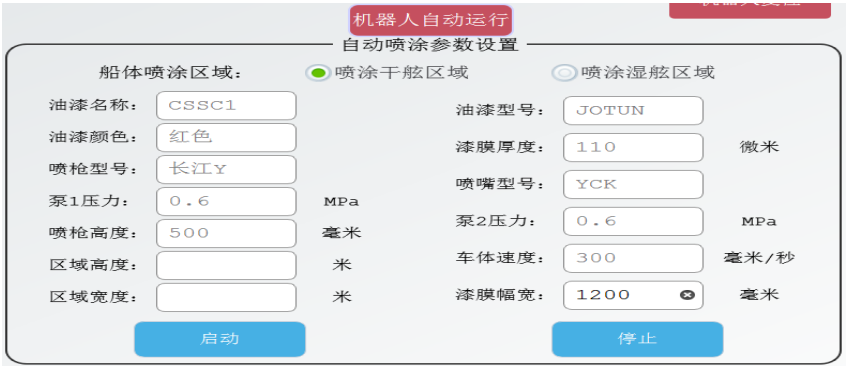
手动、自动控制模式
Automatic and manual operating mode

手动自动控制模式

具有手动和自动两种控制模式，降低工作人员劳动强度，操作方便灵活。

Two operating mode, automatic and manual, can be obtained for users. It makes it easily to operate the machine.





喷涂爬壁机器人——主要功能
Wall-climbing spraying robot-main functions

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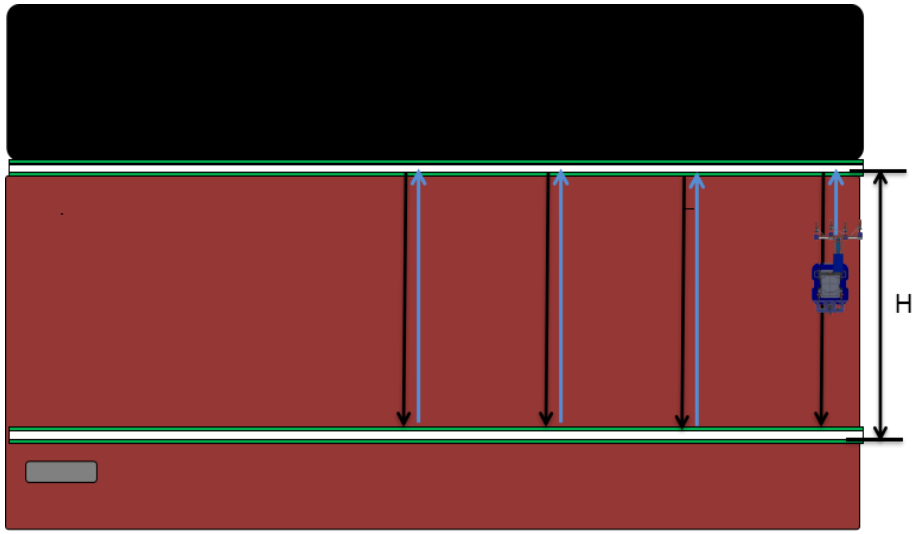
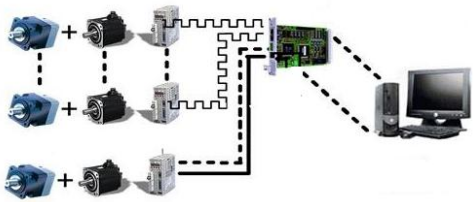
工作区域自动识别及涂装路径规划功能
Path planning, and painting area auto-detection

工作区域自动识别及路径规划

在自动工作模式下，机器人可以通过色带的识别来确认工作区域并给出作业路径。

In automatic mode，the robot can recognize the working area through detecting the colour-bars and then plan a working path.



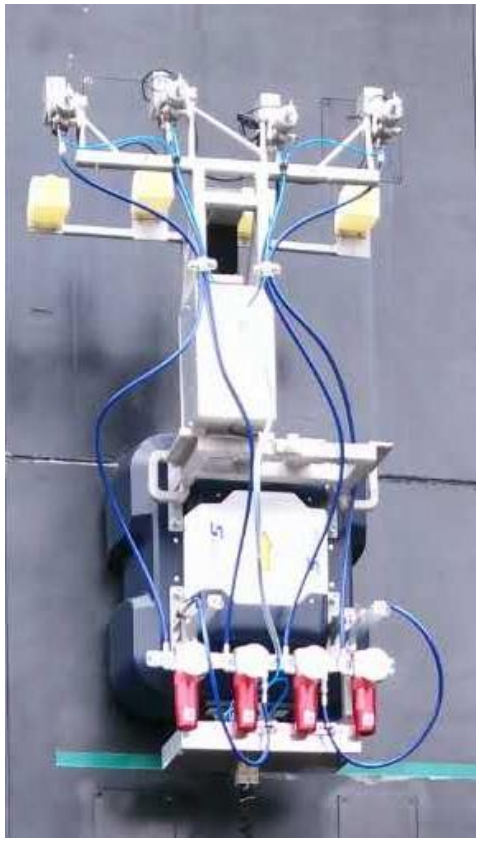


内置防坠器功能
Built-in falling protector

内置防坠器功能

通过对机器人自身运动状态的实时监测，及时判断是否具有打滑现象，一旦发现，控制器将发出指令，使内置防坠器动作，确保设备及机器人安全。

The motion state of the robot is monitoring by itself in the working period. Once an accident occur， the built-in falling protector act to insure the safe of the machine.



喷涂爬壁机器人——主要功能
Wall-climbing spraying robot-main functions

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故障自诊断功能
Self-diagnostic function

故障自诊断

在设备出现故障时会**自动提供故障代码和故障位置原因信息**，帮助操作或维护人员迅速找到故障原因和排除故障的方法。

While fault occurs , the machine can give the operator a fault-code and the part name. Then the operator can resolve the problem quickly.

喷涂爬壁机器人——主要功能
Wall-climbing spraying robot-main functions

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喷涂数据管理功能
spraying data management

喷涂数据管理功能

可以对历史喷涂数据进行记录、管理。可以作为备查信息，也可以作为下次喷涂作业的参考信息，提升喷涂质量。

The spraying data management system can remember all the datum of the historic working. And all the datum can be used to improve the spraying works and improve spraying quality.

喷涂爬壁机器人——主要参数
Wall-climbing spraying robot-main parameters

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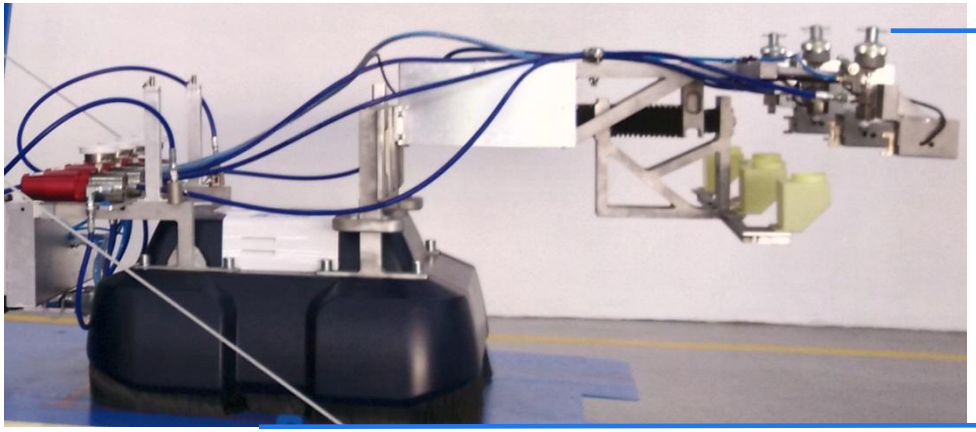
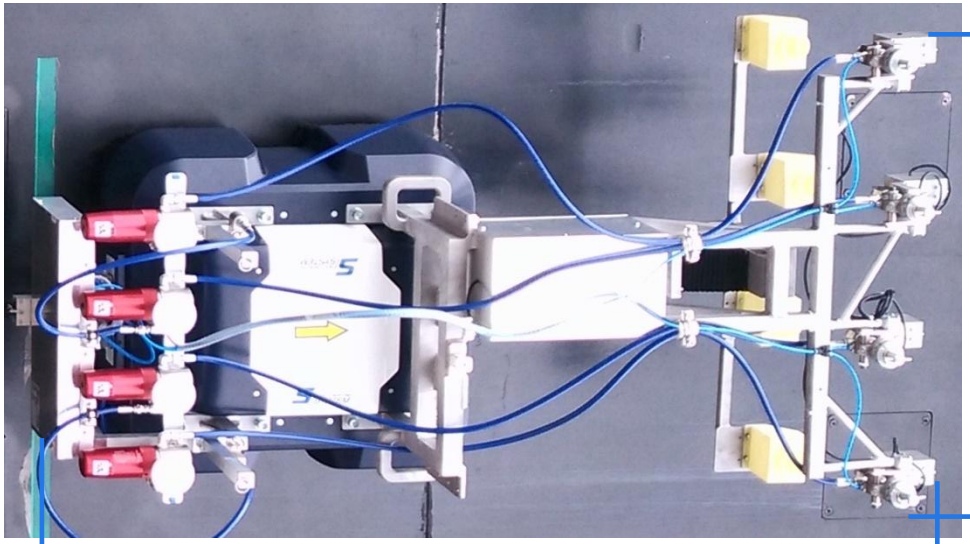
本体外形尺寸outline dimension

本体重量:
160kg
Weight:
160kg



780mm



1050mm

1550mm

喷涂爬壁机器人——主要参数
Wall-climbing spraying robot-main parameters

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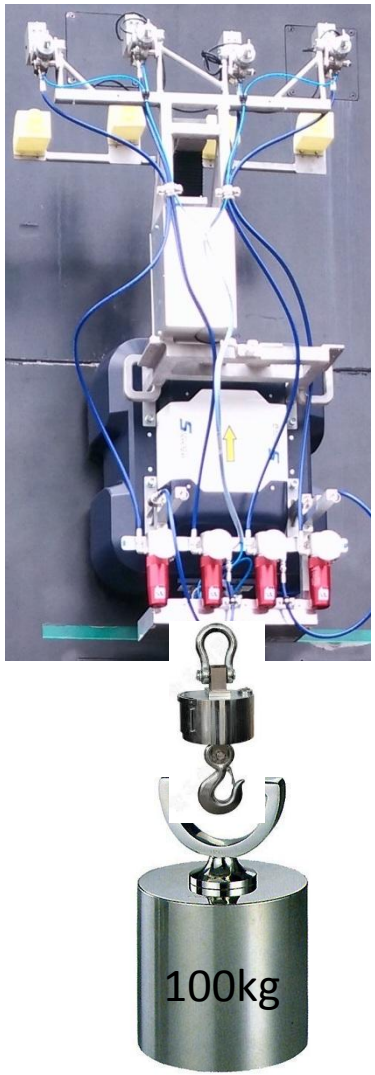
额定负载能力

Rated load



喷涂爬壁机器人——主要参数
Wall-climbing spraying robot-main parameters

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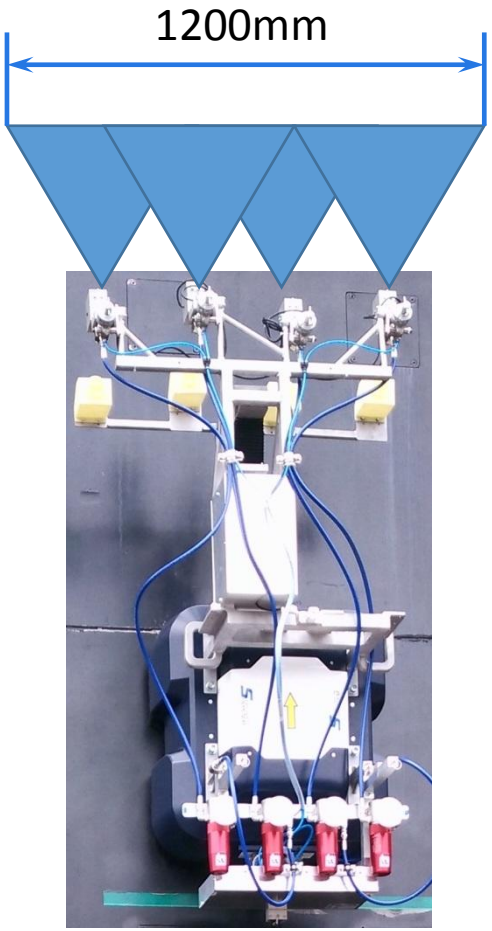
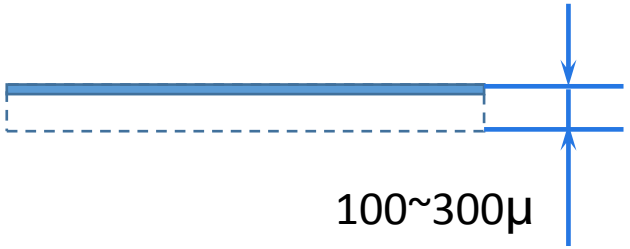
单次喷幅宽度
Width of single spraying



漆膜厚度
Thickness of the film



速度：0.3~0.5m/s
Speed: 0.3~0.5m/s

喷涂爬壁机器人——主要参数Wall-climbing spraying robot-main parameters

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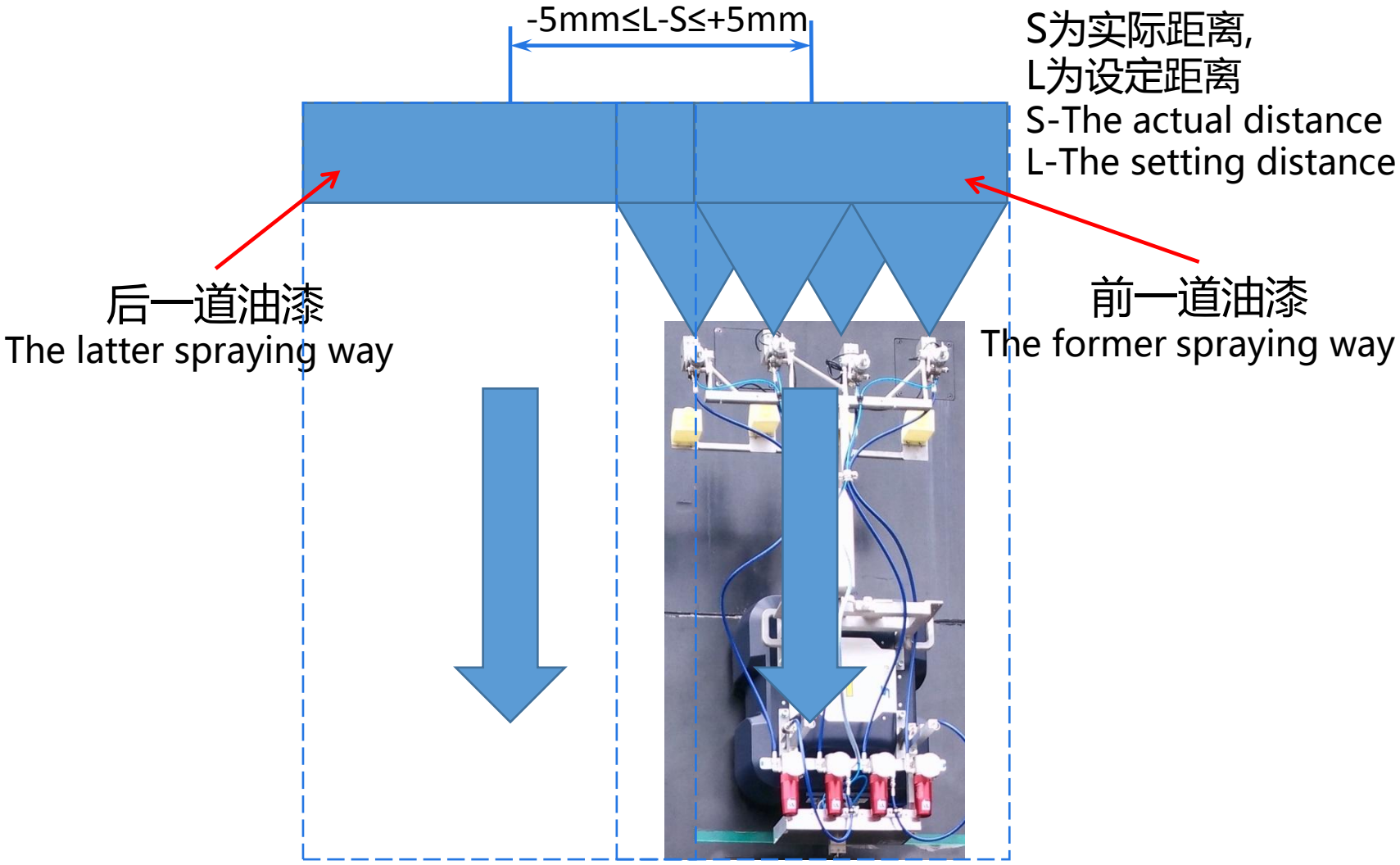
控制精度 Precision



喷涂爬壁机器人——主要参数
Wall-climbing spraying robot-main parameters

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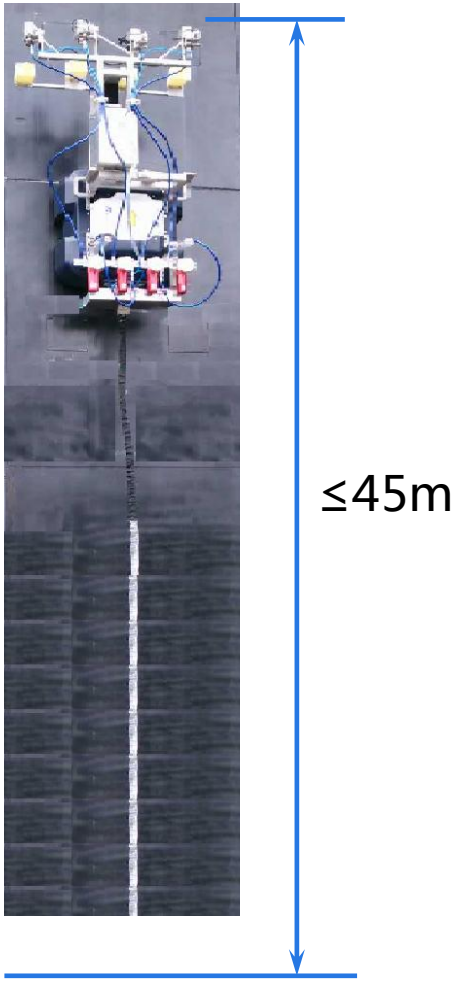
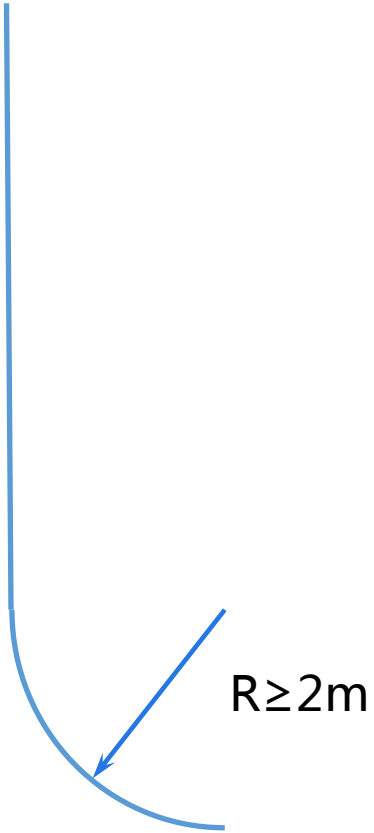
工作高度
height of the working area



最小爬行曲率半径
Minimum radius it can pass



喷涂爬壁机器人——优势
Wall-climbing spraying- benefits

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干干净净、有尊严
neat and tidy and dignified

招工不再难
Recruiting become easy

轻松 relaxed

脚踏实地，不再危险
safe

喷涂爬壁机器人系统

远离有毒气体
Apart from poisonous gas

稳定高质量
High quality

节省油漆 save paint

效率高 high efficiency

喷涂爬壁机器人——施工案例
practical case

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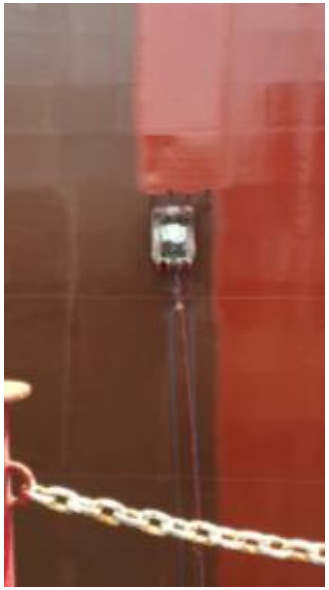
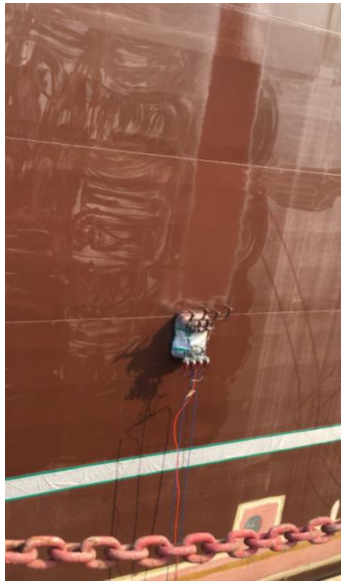
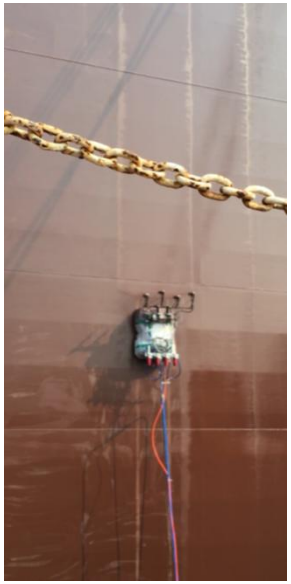

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THANKS!

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