



MAN EngineVault

MAN PrimeServ

A close-up photograph of a hand plugging a black USB drive into a port on a dark blue device. The USB drive has a silver metal tip with two small square holes. Below the port being used, there are three other similar ports. A bright green light is visible in the lower right corner of the image.

Engine network security

Optimized equipment

Your partners for retrofit solutions

Reliability, greater efficiency and compliance with new environmental legislation are just some of the benefits our advanced retrofit solutions provide.

Keeping your equipment consistently up-to-date

Your existing engines, machinery, auxiliary systems, instrumentation and control systems might be aging, but that does not mean they cannot keep delivering value. Our comprehensive, tailored retrofit solutions can bring your assets up to date and keep them there, through continuous development and modernization.

Available for a wide range of engines, propulsion systems and turbochargers, our retrofits and upgrades will help you improve efficiency, boost performance, save on fuel and lube oil, while lowering maintenance costs and enabling more flexible operation.

MAN PrimeServ retrofits will also help you comply with increasingly stringent environmental regulations and put your operations on the road to energy transition and decarbonization. And they will benefit your employees by improving crew safety, making equipment easier to operate and lowering emissions onboard.

For reducing emissions from diesel engines, consider our dual-fuel retrofit solutions. In addition to improving your environmental performance, these retrofits can help you save fuel and reduce operating costs.

MAN EngineVault

Shield your ME engine network against cybersecurity attacks

Cybercrime is a fast-growing threat in many industries. Recent studies predict the total cost of cybercrime to exceed USD 6 trillion by 2021. And ransomware attacks – not uncommon in shipping – are increasing by 350% a year. These attacks can be perpetrated through online hacking, or carried out onboard via simple physical means, such as USB flash drives*.

Cybersecurity in our industry is not as tightly regulated as in aviation, for example – although this will change on January 1, 2021, when the IMO, SIRE and SOLAS start requiring operators to address the issue. Insuring against cyberattacks is not standard practice either, and insurance policies do not normally cover acts of war, terrorism or employee malice – which very well could be the source of a cyberattack.

Yet attacks occur on a regular basis, and the cost of prevention is negligible compared to the damage an attack can cause.

MAN EngineVault gives you the best possible protection of your main engine network from online and physical cyberattacks. Unique in the industry, it combines state-of-the-art software and hardware to provide firewall protection, comprehensive whitelisting and application-layer protection that seals off your engine network from virtually any threat – including on-board attacks via compromised USB flash drives and other physical media.

Benefits

The benefits of MAN EngineVault protection include:

- Uniquely effective protection against cybercrimes
- Lower risk of service disruptions and off-hire periods
- Greater safety for crews, and protection of physical assets
- Compliance with regulations and IMO requirements
- Peace of mind – ensure business continuity and protect your reputation

* Cisco 2017 Annual Cybersecurity Report; Official Annual Cybercrime report – Herjavec Group 2019

Unrivalled protection

No cybersecurity solution on the market today rivals MAN EngineVault's protective capabilities. Arm your vessel with MAN EngineVault, and you can rest assured that your engine network is fully protected – even as you benefit from MAN connected engine technologies and ensure compliance with IMO requirements.

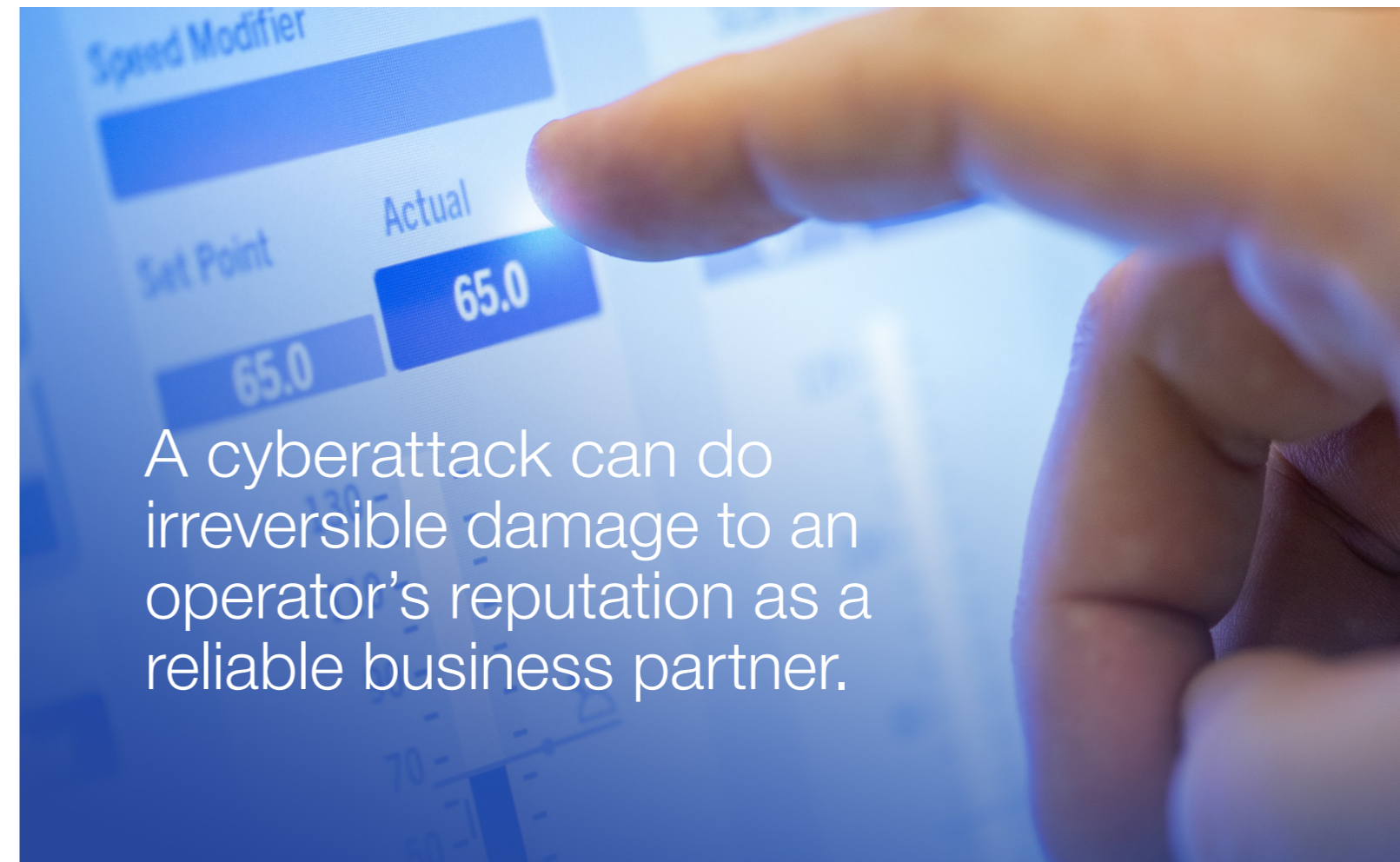
Three critical components

MAN EngineVault protection involves three main security components:

- Full network hardening via port protection, encryption of all data received and transmitted, and advanced network segment segregation
- Critical hardware protection via the latest state-of-the-art main operating panels for the engine control and management systems
- Cutting-edge application-layer protection and extensive whitelisting that only allows MAN-certified software on your engine network

If an attack should succeed despite the above measures, MAN EngineVault can immediately return your engine network to its last known safe state.

The service includes a complete new hardened engine network as well as an upgrade of your Engine Control System to the latest version for your engine type. Moreover, EngineVault prepares your engine network for additional retrofit upgrades.



A cyberattack can do irreversible damage to an operator's reputation as a reliable business partner.



Additional to securing your engine network, MAN EngineVault further enables you to implement the following retrofit solutions:

MAN EcoTorque

Saves fuel and maintains a good cylinder liner condition by changing the governor settings to avoid frequent and rapid load changes.

MAN Load Optimizer

Improves cylinder liner condition and reduce excessive wear by limiting and controlling the load changes.

PMI Adaptive Cylinder Control

Fully automatic closed loop process control of each individual cylinder saving fuel and optimal engine performance in all load ranges.

Dynamic Limiter Function

Improves engine and ship acceleration, maneuverability and crash-stop by adjusting the operating parameters.

ECS EasyDetect

Simplifies troubleshooting and improves the reliability of all related electronics by separating the common power supply.

PrimeServ Assist

Optimizes the efficiency and availability of MAN equipment by analyzing on your live data.

MAN Security Update Service

for MAN EngineVault

Protecting your engine with MAN EngineVault is a huge step towards greater security for your vessel, crew and operational continuity. Keeping your security shield up to date is equally important. This is what MAN Security Update Service for MAN EngineVault is all about.

This automated service makes sure your MAN EngineVault installation keeps its protective edge, without having to install updates manually or worry about not being protected.

The MAN Security Update Service:

- Automatically ensures the highest level of cybersecurity protection at all times
- Warns you against incoming attacks via 24/7 intrusion monitoring
- Protects against the latest viruses, spyware, malware, ransomware and other online threats
- Protects against onboard vessel threats from USB flash drives and other physical media

Not connected to the internet?

If you think your engine is safe because it is not connected to the internet, you might want to think again. The greatest security threat you may face is an infected USB flash drive inserted into an onboard computer by an unwitting crew member. Such attacks can render your vessel inoperable for days.

MAN PrimeServ

Service with passion



MAN PrimeServ is the dedicated MAN Energy Solutions service brand. Via a network of over 100 service centers worldwide, MAN PrimeServ provides 24/7 service across the globe. Our range of services includes technical support, consulting and OEM spares, as well as maintenance, repair and comprehensive individualized service plans.

365
days a year

24
hours a day



MAN PrimeServ's aim is to provide

- Prompt delivery of high-demand OEM spare parts within 24 hours
- Fast, reliable and competent customer support
- Individually tailored O&M contracts
- Ongoing training and qualification of operators and maintenance staff
- Global service, 24 hours a day, 365 days a year
- Diagnosis and troubleshooting with our high-performance Online Service



MAN Energy Solutions and legacy brands

MAN PrimeServ is our brand name for high-quality aftersales support for the entire MAN Energy Solutions product portfolio. Through refinements to our products and repair techniques, we ensure and enhance our technological leadership and technical expertise as an Original Equipment Manufacturer (OEM) for the brands united under MAN Energy Solutions.

Worldwide service

100

Service centers worldwide

We offer retrofitting and upgrade services to bring engines and turbochargers already in service up to the very latest standards of performance and efficiency.

Represented in all key markets and major ports, with a network of more than 100 service centers, and with skilled field service managers at the ready to provide first-class technical support, MAN PrimeServ is fully primed to provide 24/7 service, wherever you are. In power plants, marine engines & systems and turbomachinery, offering reliable technical support when you need it most, our service solutions include OEM spare parts, engine and machinery maintenance and repairs, customized service agreements and individual consulting.

efficiency. Through cutting edge digital technology we're able to hike performance and minimize downtimes, while our remote connections enable live data analysis, ensuring quick, effective solutions. MAN PrimeServ Academies provide expert training courses around the world, developing the operational and maintenance skills required.

For more information please visit www.man-es.com/services

For existing equipment our holistic retrofit and modernization solutions keep your engines or turbochargers up-to-date and at optimal levels of reliability, availability and economic



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