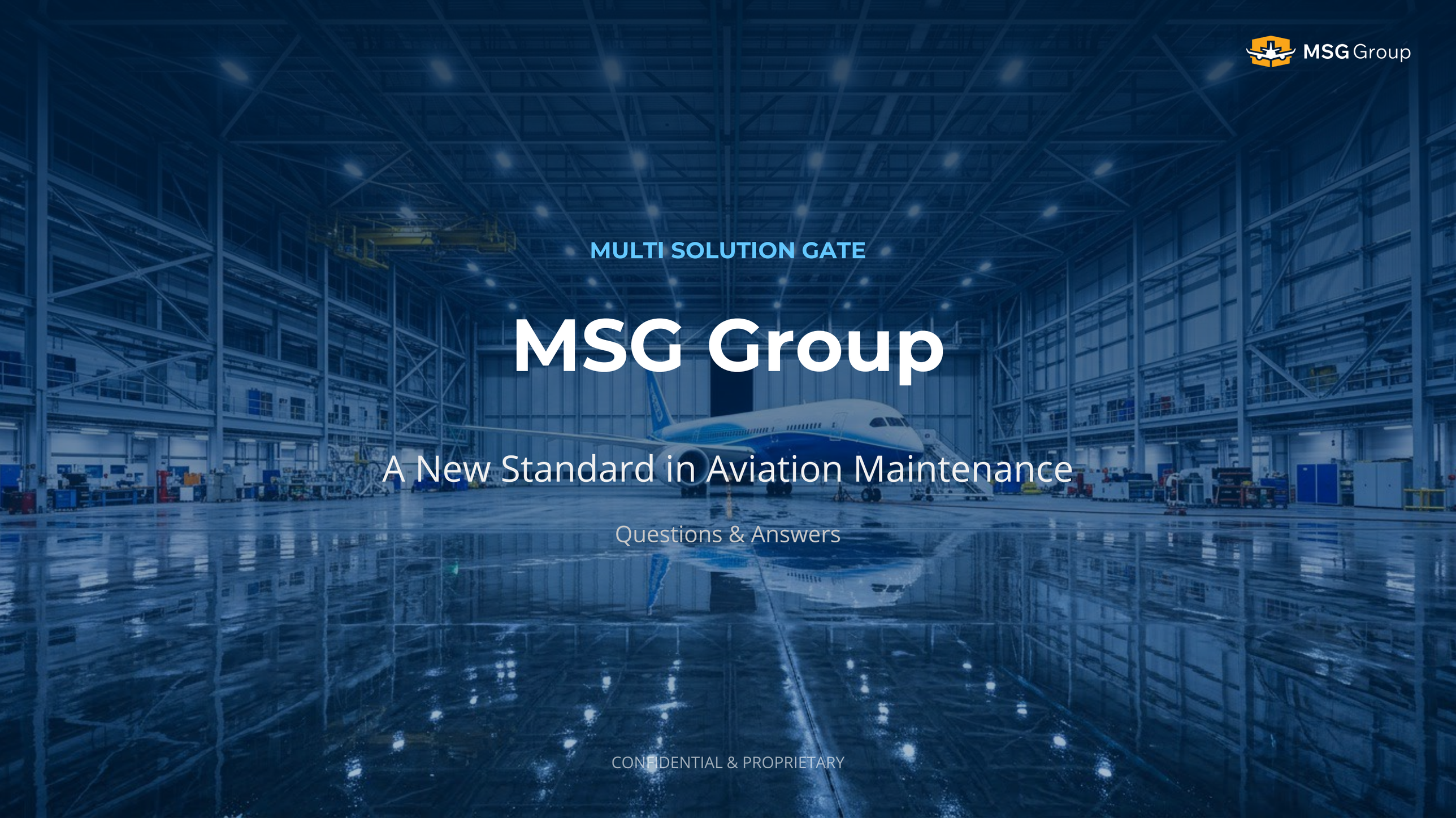


MSG Group

MULTI SOLUTION GATE

MSG Group

A New Standard in Aviation Maintenance

Questions & Answers

Award-Winning Innovation

Our Journey

Development of the Multi Solution Gate concept began in 2015, focusing on automated aircraft washing and related aviation maintenance services.

Following years of engineering, testing and prototype development, MSG Group is now entering the commercial introduction phase and engaging with selected aviation industry partners globally.

EU Horizon 2020 Seal of Excellence

MSG Group received the prestigious EU Horizon 2020 Seal of Excellence, recognizing the innovation potential and quality of the project following independent evaluation under the European Union's research and innovation program.

MSG Group Support Team

MSG Group management, technical and commercial teams remain available throughout the evaluation, planning, installation, commissioning and operational phases of every project.

Our objective is to ensure successful implementation and long-term operational performance for every customer.

Comprehensive Capabilities

A single automated system for multiple maintenance tasks

1

Washing & De-icing

Automated exterior washing and full de-icing operations.

2

Engine Flushing

Precision flushing of engines for peak performance.

3

Future Capability – Aircraft Inspection

MSG Group is currently evaluating future aircraft inspection technologies that may be integrated into the platform to support maintenance planning and visual inspection processes.

4

Ground Equipment

Washing/de-sanding of military & support vehicles.

Demonstration Facility: MSG Group maintains a demonstration installation in Norway that supports ongoing development, testing and customer evaluations.

How The System Works

1

Fully Automated Washing Process

- Aircraft In → Washing → Aircraft Out
- Automated touchless cleaning cycle begins, exits clean
- Only two operators required

The first fully automated touchless aircraft washing process in aviation history, operating similarly to an automated car wash but specifically designed for aircraft.

2

Articulating Boom System

The system utilizes automated articulating booms designed to maintain a safe operating distance from the aircraft surface while providing efficient and complete coverage.

3

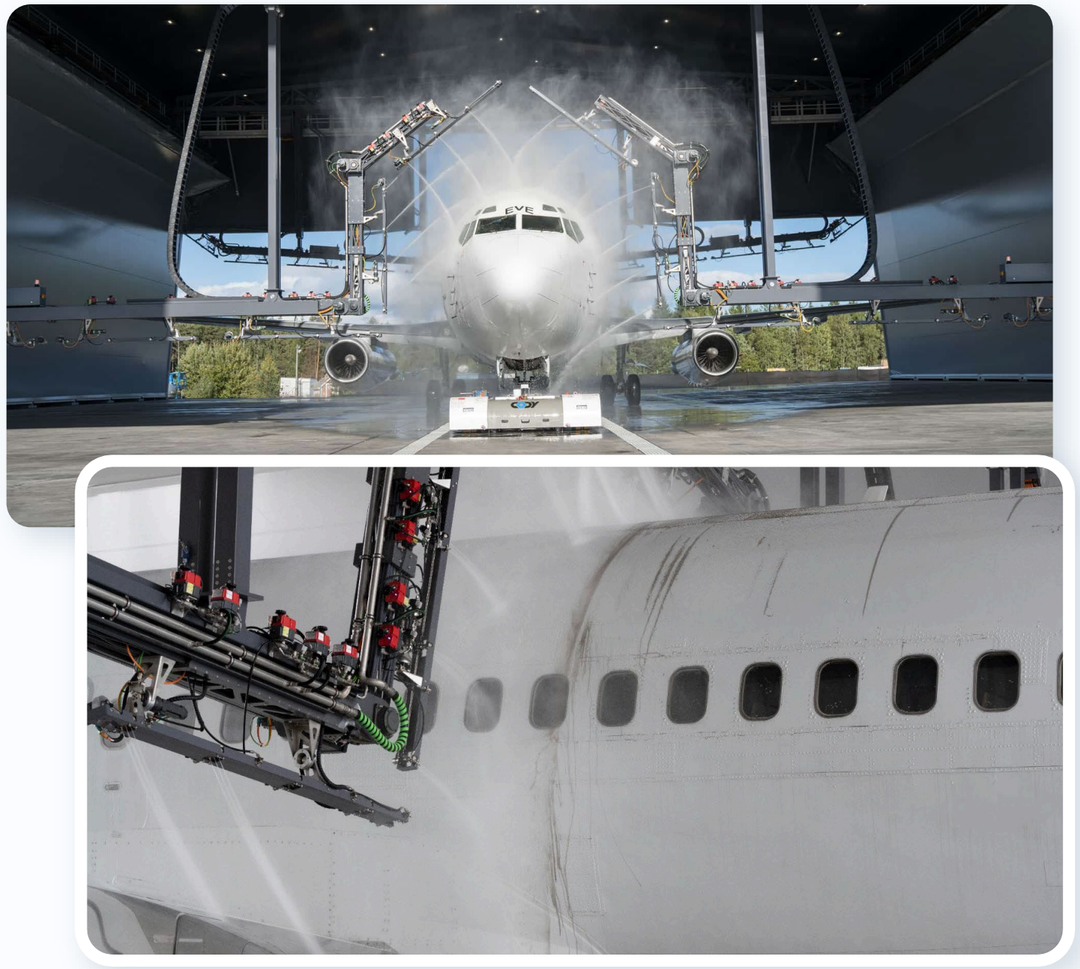
Touchless Technology

- 100% brushless operation
- No physical contact with aircraft surfaces
- Protects paint, sensors, antennas, composite structures and critical components
- Eliminates risks associated with conventional manual washing

4

Environmental Closed-Loop System

- Closed-loop water management system
- No contaminated wastewater discharge
- Environmentally responsible operation supporting airport sustainability
- Significantly reduces water consumption vs traditional methods



Costs & Support Programs

Installation

~$20M

Approximate cost for a complete installation.

- Depends on configuration
- Delivery includes hangar
- Significantly cheaper if existing hangar is used

Infrastructure

The customer holds responsibility for site preparation.

Requirements:

- Ground preparation
- Water connections
- Power supply connection
- Airport utility integration

Maintenance & Service Programs

Maintenance can be provided through local certified partners or MSG Group.

Standard
Remote support, Quarterly preventive inspections, 8-hour response target

Premium
Remote monitoring, Monthly preventive inspections, 4-hour response target

Enterprise
Dedicated support, On-site technician availability, Uptime service agreement

Customized Program
Tailored service agreement based on customer requirements

MSG Group

Potential Customers

A multi-faceted market approach serving key aviation stakeholders

Airlines

Airports

Ground Handling

MROs

Infrastructure Investors

Operational Efficiency

Automatic Aircraft Recognition & Wash Profile Selection

The system automatically adapts operating parameters according to the aircraft type and selected service program, ensuring consistent cleaning performance while minimizing operator involvement.

Operational Staffing

Typical operation requires only two personnel:
- One operator
- One assistant

This significantly reduces manpower requirements compared with conventional aircraft washing methods.

Supported Aircraft & Equipment

Commercial Aviation
- **Wide Body Aircraft:** Airbus A330, A340, A350, A380, Boeing 767, 777, 787
- **Narrow Body Aircraft:** Airbus A220, A318, A319, A320, A321, Boeing 737 Family, COMAC C919
- **Regional Aircraft:** ATR 42 / ATR 72, Embraer E-Jets, Bombardier Dash-8, Mitsubishi SpaceJet

Private Aviation
- Corporate aircraft, Business jets, VIP aircraft

Military Aviation
- Fighter aircraft, Transport aircraft, Tankers, Maritime patrol aircraft, Helicopters

Ground Equipment
- Airport buses, Ground Support Equipment (GSE), Military support vehicles, Service vehicles

Contractual & Financial

Typical Project Timeline

Project duration will depend on local infrastructure requirements, permitting, construction scope and customer specifications. Typical implementation schedules are expected to range between 12 and 18 months.

30% | Signing & LOI
No cost for LOI. Delivery timeline confirmed.

30% | Engineering & Project Development
Detailed engineering, site assessment and project planning phase.

30% | Delivery & Install
Construction and equipment installation.

10% | Final Approval
Testing, training, and operational handover.

Hangar Requirements (Meters)

Aircraft Class	Wingspan	Height
Narrow Body	42 m	14 m
Wide Body	68 m	18 m
Heavy Military	62 m	18 m
Helicopters	28 m	10 m
Fighter Aircraft	15–20 m	6–8 m

Operational Clearance Requirements

For safe operation and maintenance access, a minimum clearance of approximately 5 meters on each side of the aircraft should be considered when planning facility dimensions.

Military & Helicopter Applications

MSG technology can also support: Fighter aircraft, Military transport aircraft, Maritime patrol aircraft, Helicopters, and Military ground vehicles.

These applications require significantly smaller facilities and lower infrastructure investments than commercial wide-body installations.

System Advantages

Environmental

Designed to support environmental best practices

Closed-loop water management concept intended to reduce water consumption and wastewater generation.

Minimal Water Consumption

- Approximately 8 liters of fresh water required to wash a Boeing 777
- More than 95% water recycling through the closed-loop system
- Significant reduction compared with traditional aircraft washing methods

Efficiency

Rapid Aircraft Cleaning

The system is designed to significantly reduce aircraft cleaning time compared with conventional manual methods. Actual cleaning times will depend on aircraft type, contamination level and customer requirements.

Efficient Engine Flushing

Engine flushing procedures are designed to support faster turnaround and reduced labor requirements compared with conventional processes.

Performance

Potential Fuel Efficiency Benefits

Industry studies have shown that maintaining clean aircraft surfaces and engines can contribute to improved aerodynamic and engine performance. Actual fuel savings will vary according to operating conditions and maintenance practices.

Asset Preservation

Regular cleaning and maintenance may contribute to reduced corrosion risk and help preserve aircraft appearance and surface condition over time.

Future Maintenance Support Opportunities

Future inspection and data-analysis capabilities may provide additional maintenance planning benefits as the platform evolves.

Thank You

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