



MSG Group

MARKET OPPORTUNITY ANALYSIS

Automated Aircraft Washing, Engine Washing, De-Icing,
De-Sanding & Future AI Inspection



The global aircraft exterior cleaning and detailing market is experiencing strong long-term growth

✈ Market Drivers

- ▶ Fleet expansion worldwide
- ▶ Increasing environmental regulations
- ▶ Rising labor costs
- ▶ Growing pressure to reduce aircraft downtime
- ▶ Increased focus on fuel efficiency & sustainability
- ▶ Water conservation requirements

Market Outlook

2024 Market Size

USD 1.2 Billion

2033 Market Size

USD 2.1 Billion

Forecast CAGR

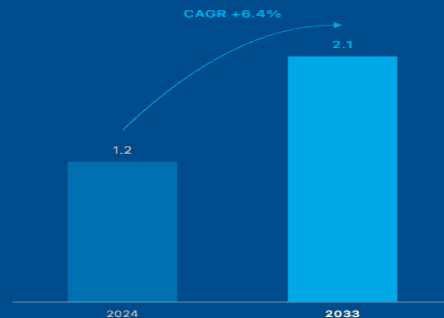
7.5%

MSG Group is uniquely positioned to capitalize on these trends through its automated touchless aircraft servicing technology.

Market Growth

- ▶ 2024: USD 1.2 Billion
- ▶ 2033: USD 2.1 Billion
- ▶ CAGR: 7.5%

Market Size Growing to \$2.1B by 2033
USD Billion



Key Growth Regions

- 1 Asia-Pacific
- 2 North America
- 3 Europe
- 4 Middle East

Note: Asia-Pacific represents the fastest-growing aviation region globally, supported by rapid airline expansion, airport construction, and fleet modernization.

Why the Market is Growing and New Airport Development

✈️ Global Aviation Expansion

- ▶ Commercial fleet expected to increase from ~26,000 to >48,000 aircraft by 2044.
- ▶ Passenger traffic continues to grow worldwide.
- ▶ Airlines are investing heavily in fleet modernization.
- ▶ Airports expanding capacity to accommodate future demand.

🏗️ New Airport Development

Major airport projects are under development in:

- Philippines
- Vietnam
- India
- Saudi Arabia
- UAE
- Indonesia

→ Impact on Airlines

Aircraft operating in coastal and polluted environments are exposed to salt, dust, and pollution.

- ▶ Increased corrosion risk
- ▶ Reduced aerodynamic efficiency
- ▶ Increased fuel consumption
- ▶ Higher maintenance costs
- ▶ Reduced aircraft availability
- ▶ Potential reduction in component life

✓ Benefits of Regular Cleaning

- ✓ Improved fuel efficiency
- ✓ Better aircraft appearance
- ✓ Reduced corrosion
- ✓ Lower maintenance costs
- ✓ Extended asset life

AIRCRAFT CORROSION: A MULTI-BILLION DOLLAR CHALLENGE

Coastal Airport Exposure

→ Coastal Airport Exposure

Aircraft operating near oceans and coastal regions are continuously exposed to:

- ▶ Salt contamination
- ▶ High humidity
- ▶ Airborne pollutants
- ▶ Sand and dust particles

✓ Impact on Aircraft

- ▶ Accelerated corrosion
- ▶ Increased maintenance costs
- ▶ Reduced component lifespan
- ▶ Increased aircraft downtime
- ▶ Reduced operational efficiency

MSG Advantage: Frequent touchless washing helps remove contaminants before corrosion can develop, supporting longer asset life and lower maintenance costs.

⚙️ Why Cleaning Matters

- ▶ Aircraft surface contamination increases aerodynamic drag.
- ▶ Engine contamination can reduce operational efficiency.

✓ Potential Benefits

- ▶ Up to 1.5–2.0% fuel efficiency improvement
- ▶ Reduced CO₂ emissions
- ▶ Lower operating costs
- ▶ Improved airline sustainability performance

Example: For a large airline fleet, even a small reduction in fuel consumption can translate into millions of dollars in annual savings.

CURRENT INDUSTRY CHALLENGES

Traditional Aircraft Washing Limitations and Industry Need

Manual Cleaning

8-12 tech

High labor costs

Time Intensive

4-8 hours

Extended downtime

Water Usage

**Large
consumption**

Environmental concerns

Physical Contact

Direct touching

Risk to paint & sensors

Inconsistent Quality

Human factor

Variable results

Industry Need

The aviation industry requires a modern solution that delivers:

- ✓ Faster turnaround
- ✓ Reduced manpower
- ✓ Lower environmental footprint
- ✓ Greater safety
- ✓ Consistent cleaning quality

✈️ Current Touchless Solutions

✈️ Automated Exterior Aircraft (Commercial or Military)

Washing

❄️ De-Icing Operations

▶ De-Sanding Operations

▶ Ground Support Equipment Cleaning

▶ Airport Vehicle Cleaning

✈️ Other Solutions

⚙️ Engine Washing & Flush

🚀 Future Expansion

🔍 AI-Based Aircraft Inspection

▶ Predictive Maintenance Integration

▶ Digital Aircraft Health Monitoring

PERFORMANCE ADVANTAGES

MSG vs Traditional Methods

Performance Indicator	Traditional	MSG Solution
Exterior Wash Time	4-8 Hours	Approx 20 Minutes
Engine Wash	Several Hours	55-90 Minutes
Manpower	8-12 Staff	2 Staff
Water Usage	3,000-10,000 L	300 Liters
Aircraft Downtime	High	Reduced by 95-99%

✓ Result

- ✓ Faster turnaround
- ✓ Higher aircraft availability
- ✓ Lower operating costs
- ✓ Higher profitability

Traditional Model vs MSG Model

Traditional Model (Cost Center)

- ▶ Labor intensive
- ▶ Time consuming
- ▶ Limited profitability

MSG Model (Revenue Generator)

- ▶ Automated operations
- ▶ High throughput
- ▶ Recurring revenues
- ▶ Additional service opportunities

Revenue Streams

- ▶ Aircraft Washing & Engine Washing
- ▶ De-Icing & De-Sanding
- ▶ Airport Vehicle Cleaning
- ▶ Future AI Inspection

MSG Touchless Technology

No brushes

No physical contact No abrasion

No damage risk to sensitive surfaces

Safe for composite aircraft

Safe for antennas and sensors

Safe for advanced coatings

Benefits

- ✈ Improved safety
- ✈ Reduced operational risk
- ✈ Repeatable cleaning quality
- ✈ Reduced maintenance exposure
- ✈ Future-ready technology

Water Conservation

Traditional Wash:

3,000–10,000 Liters

MSG Wash:

Approximately 300 Liters

Strategic Benefit

Environmental compliance is becoming a key purchasing factor for airports and airlines worldwide.

Closed-Loop Technology

- ✓ Water recycling
- ✓ Minimal discharge
- ✓ Reduced environmental impact
- ✓ Supports ESG objectives
- ✓ Supports airport sustainability programs

Turning Aircraft Washing Into A Profit Center

Revenue & Costs

Revenue Per Aircraft:
USD 1,275

Variable Cost:
USD 275

Net Profit:
USD 1,000

Operating Model

Daily Capacity:
24 Aircraft / Day

Annual Capacity:
8,760 Aircraft / Year

Annual Gross Profit:
USD 8.76 Million

Estimated Payback: 18–36 Months (Depending on utilization rate and service mix.)

Theoretical Operational Capacity

30-Minute Cleaning Cycle

Aircraft Per Day:

48

Aircraft Per Year:

17,520

Potential Annual Profit:

USD 17.52 Million

Additional Revenue Opportunities

- ✈ Engine Wash Services
- ✈ De-Icing Services
- ✈ De-Sanding Services
- ✈ Military Aircraft Servicing
- ✈ Airport Vehicle Cleaning



Global Aviation Trends

- ▶ Global fleet growth accelerating
- ▶ Rising labor costs
- ▶ Water restrictions increasing
- ▶ Airports focusing on ESG
- ▶ Airlines seeking fuel savings
- ▶ Demand for automation growing
- ▶ Airport expansion projects worldwide

MSG is positioned at the intersection of all these growth drivers.

Key Customer Segments





Airports

- ▶ International Airports
- ▶ Regional Airports
-   ▶ Airport Operators

Airlines

- ▶ Flag Carriers
- ▶ Low-Cost Carriers
- ▶ Cargo Airlines
- ▶ Charter Operators

Aviation Services

-   ▶ MRO Facilities
- ▶ Ground Handling Companies
- ▶ Aircraft Cleaning Contractors
-   ▶ Military Aviation Organizations

GLOBAL AIRPORT DEVELOPMENT (2024-2030)

Major Infrastructure Investments Drive Demand

Region	Key Projects	Est. Investment	Timeline	Status
Middle East (UAE/KSA)	Al Maktoum Int'l / King Salman	USD 150B+	2024-2032	Ongoing
Asia-Pacific (India)	Noida Int'l / Navi Mumbai	USD 12B+	2024-2028	Ongoing
Asia-Pacific (Vietnam)	Long Thanh Int'l	USD 16B+	2025-2030	Construction
Asia-Pacific (Philippines)	New Manila Int'l (Bulacan)	USD 14B+	2024-2027	Construction
North America	JFK / LAX / ORD Upgrades	USD 40B+	2023-2030	Ongoing

STRATEGIC ROLLOUT PLAN

Phase-by-Phase Global Implementation

Phase 1: Foundation

- ▶ Prototype testing & validation
- ▶ Initial pilot programs at key hubs
- ▶ OEM certifications and approvals
- ▶ Initial strategic partnerships

Phase 2: Expansion

- ▶ Commercial launch in MENA / APAC
- ▶ Scaling manufacturing capabilities
- ▶ Rollout of De-Icing solutions
- ▶ Establishing regional support centers

Phase 3: Global Scale

- ▶ Full global market penetration
- ▶ Introduction of AI inspection tech
- ▶ Integration with predictive maintenance
- ▶ Expansion to military applications

INVESTMENT HIGHLIGHTS

Transforming Aircraft Servicing Into A Profit Center

- ✓ Large Global Market
- ✓ Strong Market Growth
- ✓ Proven Sustainability Benefits
- ✓ High Revenue Potential
- ✓ Recurring Service Income
- ✓ Global Expansion Opportunities
- ✓ Attractive IPO Story

Based on publicly available industry research and aviation forecasts

Market Research & Forecasts

Market Research:

- ▶ Verified Market Research
- ▶ Fortune Business Insights

Aviation Forecasts:

- ▶ Boeing Commercial Market Outlook
- ▶ International Air Transport Association (IATA)
- ▶ International Civil Aviation Organization (ICAO)

✓ Market Drivers Evaluated

- ▶ Fleet Growth
- ▶ Passenger Traffic Growth
- ▶ Sustainability Requirements
- ▶ Water Conservation
- ▶ Fuel Efficiency
- ▶ Airport Infrastructure Expansion
- ▶ Aircraft Maintenance Trends

Disclaimer: This presentation contains MSG Group's independent analysis and interpretation of publicly available industry research and aviation market forecasts.

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Transforming Aircraft Servicing Into A Revenue-Generating Aviation Infrastructure Platform

Thank you for your time and consideration.