Mitsubishi Regional Jet (MRJ)

Mitsubishi Aircraft Corporation

The Mitsubishi Regional Jet (MRJ) is a next-generation regional jet which offers both global top-class operational economy and outstanding cabin comfort. The MRJ is being developed and sold by Mitsubishi Aircraft Corporation with the vision of “applying advanced mainline jet technology to the creation of the new standard for next-generation regional jets, while offering unprecedented value for the environment, passengers and airlines.”

By featuring a cutting-edge aerodynamic design, noise analysis technology and state-of-the-art engines, the MRJ significantly reduces fuel consumption, noise and emissions. With its outstanding operational economy and environmental compatibility, the MRJ contributes to enhanced airline competitiveness and profitability. The MRJ has a four-abreast seat configuration with large overhead bins, and also features a slim seat that offers passengers heightened comfort unprecedented in conventional regional aircraft.

1. Features of MRJ

(1) Outstanding operational economy

The MRJ achieves significantly lower operating costs than currently operating regional jets due to reduced fuel consumption, noise and emissions. The employment of a newly developed, fuel-efficient, next-generation engine, in addition to technologies of advanced aerodynamics and composite materials, provides a reduction in fuel consumption of more than 20% compared with other regional jets currently in operation. With these achievements, the MRJ will contribute to enhanced airline competitiveness and profitability.

The MRJ is powered by PurePower® PW1200G engines by Pratt & Whitney (**Figure 1**), which will deliver significant operational economy and environmental compatibility through increased efficiency. The engine has a low-pressure spool rotating at high speed for peak efficiency, while the fan operates at slower speeds for significantly less noise. In addition, the improved efficiency results in fewer engine stages and fans, which leads to the reduction of engine weight and operating cost.

Figure 1 Cross-sectional view of engine

(2) Comfortable cabin

The modern and stylish cabin of the MRJ provides new value in regional jet interior comfort comparable to mainline aircraft (**Figure 2**). Passengers will fly in comfort, as the MRJ offers plenty of head and leg room, the largest overhead bins in the class, a lavatory for passengers with reduced mobility and comfortable slim seats.

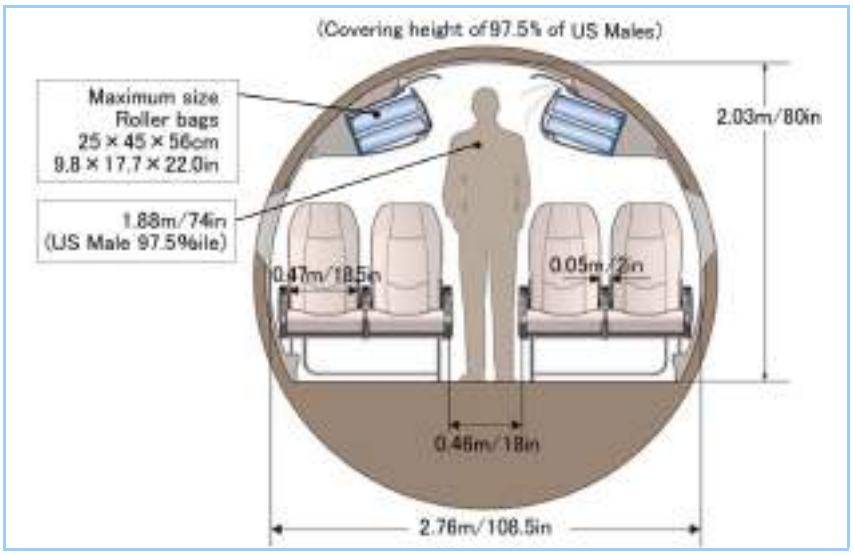


Figure 2 Cabin cross section

(3) Environmental compatibility

The MRJ meets the latest noise regulations (ICAO Chapter 4) and emission requirements (ICAO CAEP6), and is the most quiet and clean regional jet in the class (**Figures 3** and **4**).

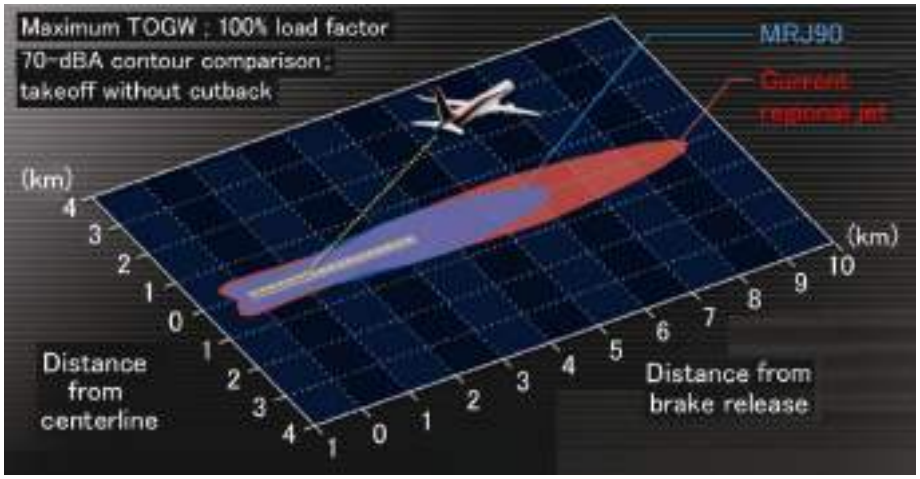
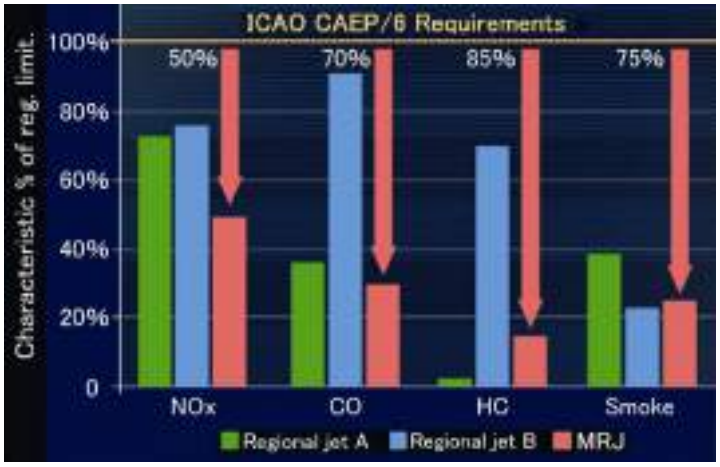


Figure 3 Comparison of noise foot print between MRJ and current regional jet



ICAO: International Civil Aviation Organization

CAEP: Committee on Aviation Environmental Protection

CAEP6: Aero-engine emission standard established at the 6th CAEP/ICAO (2004)

Figure 4 Comparison of hazardous emissions between MRJ and other current regional jets

(4) Principal characteristics

Table 1 shows the specifications of the MRJ90 and MRJ70.

Table 1 Principal characteristics

MRJ90

		MRJ90STD	MRJ90ER	MRJ90LR
Passengers		92 (Typical single class)		
External dimensions (L×W×H)	m (ft)	35.8 × 29.2 × 10.4 (117.4 × 95.9 × 34.2)		
Engine thrust	kN (lbf)	78.2 (17600) × 2		
Maximum takeoff weight	kg (lb)	39600 (87303)	40995 (90378)	42800 (94358)
Maximum landing weight	kg (lb)	38000 (83776)	38000 (83776)	38000 (83776)
Range (at full passenger payload)	km (nm)	1670 (900)	2400 (1290)	3310 (1780)
Maximum operating Mach number		M 0.78	M 0.78	M 0.78
Takeoff field length (MTOW, SL, ISA)	m (ft)	1490 (4890)	1600 (5250)	1740 (5710)
Landing field length (MLW, Dry)	m (ft)	1480 (4860)	1480 (4860)	1480 (4860)

MRJ70

		MRJ70STD	MRJ70ER	MRJ70LR
Passengers		78 (Typical single class)		
External dimensions (L×W×H)	m (ft)	33.4 × 29.2 × 10.4 (109.6 × 95.9 × 34.2)		
Engine thrust	kN (lbf)	69.3 (15600) × 2		
Maximum takeoff weight	kg (lb)	36850 (81240)	38995 (85969)	40200 (88626)
Maximum landing weight	kg (lb)	36200 (79807)	36200 (79807)	36200 (79807)
Range (at full passenger payload)	km (nm)	1530 (820)	2730 (1470)	3380 (1820)
Maximum operating Mach number		M 0.78	M 0.78	M 0.78
Takeoff field length (MTOW, SL, ISA)	m (ft)	1450 (4760)	1620 (5320)	1720 (5650)
Landing field length (MLW, Dry)	m (ft)	1430 (4700)	1430 (4700)	1430 (4700)

2. Sales (contract) results

As of September 2014, sales contracts for a total of 375 MRJ aircraft (firm contracts for 191 aircraft, optional contracts for 160 aircraft, and purchase right contracts for 24 aircraft) have been concluded with five companies in three countries (**Table 2**), and airlines and aircraft leasing companies around the world expect early flight demonstration of the MRJ, including verification of its flight performance. Through the acquisition of airworthiness for the entire world by obtaining type approval in Japan, Europe and the U.S. simultaneously, Mitsubishi Aircraft Corporation is proceeding with development and sales activities so that various customers in all over the globe can operate the MRJ.

Table 2 Breakdown of aircraft for which sales contracts have been concluded

	Firm contract	Optional contract	Purchase right contract
All Nippon Airways Co., Ltd.	15	10	
Trans States Holdings, Inc. (US)	50	50	
SkyWest, Inc. (US)	100	100	
Air Mandalay Limited (Myanmar)	6		4
Eastern Air Lines Group, Inc. (US)	20		20
Total	191	160	24