Backgrounder

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Boeing 777-300ER and 777-200LR Worldliner

The 777-300ER (Extended Range) and 777-200LR Worldliner (Longer Range) are two new long-range airplanes that Boeing developed to offer airlines additional flexibility in serving the nonstop routes that passengers demand. The 777-300ER entered service in May 2004 and the 777-200LR followed in March 2006.

Largest Long-range Twin-engine Jetliner

The 777-300ER extends the 777 family's span of capabilities, bringing twin-engine efficiency and reliability to the long-range market. The airplane carries 365 passengers up to 7,930 nautical miles (14,685 km).

Boeing incorporated several performance enhancements for the 777-300ER, extending its range and payload capabilities. Excellent performance during flight testing, combined with engine efficiency improvements and design changes that reduce drag and airplane weight, contributed to the increased capability. The benefits were also applied during development of the 777-200LR and the 777 Freighter.

Longest Range Commercial Airplane in the World

One of the newest members of the 777 family, the 777-200LR Worldliner has the capability to connect virtually any two cities in the world nonstop. It will carry more passengers and more revenue cargo farther than any other jetliner. Also, the 777-200LR can carry a full cargo load on routes where other airplanes are payload limited. This gives airlines the capability to carry the same number of passengers farther, and with additional revenue-generating cargo.

Provisions for up to three optional fuel tanks have been added in the aft cargo area of the 777-200LR to be able to fly a range of 9,395 nautical miles (17,395 km) with full passenger payload (301 passengers). The 777-200LR adds value to the 777 family, and particularly complements the popular 777-200ER. On long-range routes served by the 777-200ER, the 777-200LR provides an additional 47,250 pounds (21,430 kg) of revenue cargo capability.

The 777-200LR also serves as the platform for the Boeing 777 Freighter, the world's largest, most capable twin-engine freighter. The first 777 Freighter entered service in February 2009.

Technology

Approximately 35 percent of the 777-300ER and 777-200LR Worldliner design has been changed from earlier 777 models, although passengers won't notice it. New value-added technology has been added to make the world's most technologically advanced airplane even more high-tech. Each wing has been extended by 6.5 feet (1.98 m) by adding raked wingtips to improve overall aerodynamic and fuel efficiency. The raked wingtips help reduce takeoff field length, increase climb performance and reduce fuel burn.

The body, wing, empennage and nose gear of the airplanes were strengthened and new main landing gear, wheels, tires and brakes were installed. New semi-levered landing gear permits takeoffs on shorter runways. The struts and nacelles were modified to accommodate the significantly higher-thrust engines. The airplanes are powered exclusively by the General Electric GE90-115BL engine, the world's largest and most powerful commercial jet engine, producing 115,300 pounds (52,300 kg) of thrust (derated to 110,100 pounds [49,941 kg] on the 777-200LR).

Tail-strike protection is standard on both models. This software feature helps prevent inadvertent scraping of the tail on the runway at takeoff or landing by commanding elevator movement if the airplane's attitude exceeds preset limits.

Economics

The Boeing 777-200LR and 777-300ER have seat-mile costs that are 18 to 20 percent lower than the A340-500 and A340-600 models. Fuel burn is considerably lower—21 to 22 percent lower per seat for the longer-range 777s—when compared to the A340-500 and A340-600. The 777 also uses advanced technology that lowers maintenance costs and makes maintenance more efficient.

For example, on a typical ultra-long-range route, such as Dubai to Los Angeles, the 777-200LR can carry 21 more passengers and 20,400 pounds (9,250 kg) of additional cargo, compared to the A340-500. The twin-engine 777-200LR also consumes nearly 6,000 gallons (22,700 l) of fuel less per flight.

Overhead Space Options

Both the 777-300ER and 777-200LR offer overhead crew and attendant rest areas in the fuselage crown above the passenger cabin. Most airplanes have crew rest areas either in the passenger cabin or in the cargo compartment. By moving crew and attendant quarters off the main deck, 777 operators can free as many as four-to-seven revenue passenger seats.

Alternatively, using overhead crew rest areas frees up room for additional capacity in the cargo compartment, up to six LD-3 containers. This revenue-generating capability is another innovation the competitor's airplane, the A340, cannot match because of the A340's constrained cross-section design.

Comfort

All 777 models have the Boeing Signature Interior, the most spacious passenger cabin ever developed. With its spacious cabin, airlines operating the 777 can offer wider seats, wider aisles, more headroom and more seating flexibility.

In fact, during a recent worldwide survey frequent business travelers preferred the 777 to other airplanes on long-haul routes, including the A330 and A340.

The 777's award-winning interior has large overhead compartments that provide passengers with increased stowage capacity. Outboard as well as center stowage units are designed to open downward for convenient loading. When closed, the stowage units

fit neatly into the streamlined contours of the interior architecture to allow ample overhead clearance. A six-foot-two inch (1.88-m) passenger can pass easily under the center bins.

Like other members of the 777 family, both the 777-200LR and the 777-300ER offer the widest seats in all classes when compared to the A340. First-class passengers on all 777 models have 21-inch-wide (53 cm) seats, which allow passengers to enjoy the same level of comfort as on the 747. The business-class seats are 20 inches (50 cm) wide—the same width as the A340's first-class seats. In economy class, 18.5-inch-wide (47 cm) seats—the widest in the industry—are standard compared to 17.2-inch-wide (44 cm) seats on the A340.

Technical Characteristics		
	777-300ER	**777-200LR Worldliner**
Passengers Typical 3-class configuration Seating ranges from six to 10 abreast with two aisles	365	301
Cargo	7,120 ft^3 (201.6 m^3) includes up to eight pallets, and 20 LD-3 containers	Total volume 5,330 ft^3 (150.9 m^3) includes up to six pallets and 14 LD-3 containers, plus 600 ft^3 (17 m^3) bulk cargo Up to three optional body fuel tanks each replacing two LD-3s
Engines Maximum thrust	GE90 –115BL 115,300 lb (512 kn)	GE90 –110B1L 110,100 lb (489 kn)
Maximum Fuel Capacity	47,890 U.S. gallons (181,280 L)	Basic - 47,890 U.S. gallons (181,280 L) With three optional fuel tanks: 53,515 U.S. gallons (202,570 L)
Maximum Takeoff Weight	775,000* lb (351,530 kg)	766,000* lb (347,450 kg)
Maximum Range	7,930 nautical miles (14,685 kilometers) Typical city pairs: Los Angeles-Sydney New York-Hong Kong Singapore-London Paris-Los Angeles Dubai-New York (Approximately 15 hours)	9,395 nautical miles (17,395 kilometers) Typical city pairs: New York-Singapore Perth-London New York-Auckland Chicago-Sydney Miami-Taipei (Approximately 19 hours)
Typical Cruise Speed at 35,000 feet	0.84 Mach	Same
Basic Dimensions Wing Span Overall Length Tail Length Interior Cabin Width Diameter	 212 ft 7 in (64.8 m) 242 ft 4 in (73.9 m) 61 ft 5 in (18.7 m) 19 ft 3 in (5.86 m) 20 ft 4 in (6.19 m)	 Same 209 ft 1 in (63.7 m) 61 ft 9 in (18.8 m) Same Same

* Highest available weight, loading restrictions apply
** Optional enhanced capability

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