

# Foreign Aerospace Firms Tie Up with Domestic Industry

By Hayden Stewart

Leading aerospace firms from the United States and Europe are forging alliances with Japanese manufacturers and other firms throughout the Asia-Pacific Region.

U.S.-based Boeing, for one, increasingly produces aircraft with partners in Japan, China, and other Asian nations, reports Lawrence W. Clarkson, senior vice president of Planning and International Development. Boeing commands about 60% of the market for commercial aircraft with greater than 100 seats.

"These ventures have been driven by several factors," says Clarkson, "including the need to linkup with suppliers who can deliver the highest quality components at the best prices; the need to share the high costs and risks of developing a new airplane; and the need to preserve market access by accommodating the national interests of customer nations."

Amongst Boeing's many partners, Japanese firms stand out. They have earned Boeing's respect as a supplier, program partner, and a source of funds. Japanese firms supply components for each of the company's commercial jetliners and are risk-sharing partners in two of its mainstay aircraft.

"Japanese aerospace companies are superb at meeting our requirements," explains Craig T. Martin, director of International Public Relations at Boeing. The company's motto is "Cost, Quality and Delivery."

Although Boeing does not choose a supplier in order to gain market access, cooperation with Japanese and Asian suppliers may help to secure orders from airlines in the Asia-Pacific Region where travel by jetliner and the demand for aircraft is growing steadily.

A report by Boeing, "Current Market Outlook," states that Japan and Asia presently account for 25% of worldwide air travel, but may account for more than 40% of world-wide growth over the next 20 years.

If the Asia-Pacific markets for air

travel and aircraft develop in tandem, Japanese and Asian airlines should account for a significant percentage of new aircraft orders over the next 20 years.

Japan is already the world's second largest market for aircraft, following the United States. Boeing estimates that Japanese airlines will spend US\$70 billion on new jetliners over the next 20 years.

During the same period, "Current Market Outlook" states that worldwide demand will reach US\$980 billion, or approximately 14,000 jetliners.

Japanese manufacturers can help Boeing to secure orders from local airlines. Says Clarkson, "Since they have invested in our projects, they join our sales campaign."

"Harmony is also very important," adds the vice president who believes that Japanese airlines are keen to purchase aircraft with some local content. However, he acknowledges that there is not a direct connection between orders from Japanese airlines and local content.

The nation's two largest airlines—Japan Airlines (JAL) and All Nippon Airways (ANA)—are special customers for Boeing. Says Clarkson, "JAL is our largest 747 customer, and ANA is the largest international customer for the 767."

Whether or not cooperation leads to orders in Japan, concludes Clarkson, "We value this relationship with Japanese industry, and I am confident that link will grow even stronger in the years ahead."

Boeing's rivals—Europe-based Airbus Industrie and U.S.-based McDonnell Douglas—also purchase components from Japanese makers. They command about 30 and 10% of the market for large commercial aircraft respectively.

Airbus and McDonnell Douglas still work with Japanese makers less than Boeing, although executives from Airbus are now pressing Japanese mak-

ers to participate in their development programs.

## Zealous partners

Japanese companies are eager to cooperate with Boeing and other foreign aircraft makers. International cooperation is an important venue for saving jobs, they report, because Japan's Defense Agency is now reducing its orders in the post-Cold War era. Japanese firms currently produce more military aircraft than products for the private sector.

Japan's largest aircraft maker is Mitsubishi Heavy Industries (MHI). Its aerospace division has approximately 8,000 employees, followed by similar divisions at Kawasaki Heavy Industries (4,500), and Fuji Heavy Industries (3,000).

These companies have long produced U.S.-designed military aircraft under license for the Japan Self-Defense Forces (JSDF). According to a spokesman for MHI, his company's aerospace division depends on the JSDF for about 70% of its revenue.

Governments have introduced measures to limit the production and export of military goods in Japan, but these regulations have also constrained the commercial businesses of MHI and its counterparts.

Firstly, the United States imposed a moratorium on aircraft production in Japan from 1945 to 1952. During these years, makers in other countries achieved significant technological breakthroughs.

Secondly, Japan's government continues to ban the export of military goods. By contrast, American and European aerospace companies have long profited by selling such aircraft overseas.

Thirdly, Japanese defense spending is limited to only 1% of its country's gross national product (GNP). In some Western nations, by contrast, defense spending has reached about 5% of GNP, including lucrative contracts for local





Boeing values the business it receives from Japanese airlines. T. Imai, JAL's vice president for engineering and quality control in the U.S., is seen here shaking hands with Lyle Eveland, 777 manufacturing operations director on January 30, 1995, and launching production of JAL's first 777.

aerospace firms to develop technologies with both military and commercial applications.

Unless Japanese firms now overcome these disadvantages and expand their commercial businesses, defense cut-backs may threaten employment and discourage young engineers from working in aerospace.

Kobayakawa Shinya, senior managing director of the Japan Aircraft Development Corporation (JADC), estimates that government procurement is already down by 10 to 15%. The JADC is a group of eight aerospace manufacturers and users who are nurturing the nation's commercial aerospace industry.

Financial assistance from Japan's government had at one stage made the commercial production of aircraft in this country possible. Unfortunately, explains Kobayakawa, Japan has discontinued production of its only commercial venture—the YS-11.

The YS-11 is a twin-turbo-propelled aircraft which seats 60 passengers. From 1965 to 1974, Japanese compa-

nies built a total of 182 planes.

"Physically it was a good plane," comments the spokesman at MHI, "but domestic airlines wanted a bigger plane at that time."

MHI also believes that it was a mistake for Japan to produce the YS-11 by itself. "Japan can build its own planes," says the spokesman, "but we do not have the marketing strength to sell them effectively."

After makers ceased production of the YS-11, Japanese firms focused their commercial business on producing components for overseas companies, primarily for Boeing. "This supplier relationship dates back to 1969," says Lawrence W. Clarkson, "when Mitsubishi Heavy Industries began producing parts for the 747."

Japanese companies now supply every Boeing jetliner with components. Most recently, MHI, KHI, and FHI signed contracts with Boeing this March to produce parts for the upcoming 737 series of aircraft that will seat between 108 and 190 passengers.

## Current projects

In addition to the supplier relationship with Boeing, Japanese companies have also undertaken risk-sharing ventures on two of the company's mainstay programs—the 767 and 777.

Boeing and Japanese companies signed their first joint program agreement in 1978. This memorandum led to the development of Boeing's popular 767—a 180 to 224 seat aircraft.

Japanese companies helped to finance the 767 program and supply such items as fuselage panels, aerodynamic fairings, landing gear doors and inspar ribs, which together equate to approximately 15% of the value of the airframe.

The 767 program is profitable and should continue into the future. According to Boeing and its partners, airlines have already taken delivery of nearly 600 and hold orders for approximately another 100.

Encouraged by the successful 767 program, Boeing and Japanese firms agreed to work more closely together on their next project—the 777, a 350 to 400 seat aircraft.

MHI, KHI, FHI, and other Japanese firms produce about 20% of this plane and provided "a comparable amount of the capital" to develop it, according to Boeing spokesman Martin.

The 777 program currently employs about 2,000 workers within Japan's three major aircraft makers, while 440 Japanese engineers at one time participated in design work. Japanese firms are responsible for most of the fuselage panels and doors, the wing center section, wing-to-body fairing, and wing in-spar ribs.

Boeing and its partners delivered the first 777 to United Airlines this May. So far, airlines have ordered 144 plus options, including orders from Japan's three major carriers—JAL (20 aircraft), ANA (15) and Japan Air Systems (7).

Boeing is again satisfied with its Japanese partners, confirms Martin.

The JADC, other Japanese organizations, and Boeing report that interna-



tional programs like the 767 and 777 will assume greater importance in the post-Cold War era. Says Clarkson, "In the years ahead, I think it's safe to say that most—if not all—new commercial jetliners will be the product of an international effort."

The Society of Japanese Aerospace Companies (SJAC), an association of domestic aerospace firms which work with aircraft, engines and materials, agrees with Clarkson's prognosis. The society sponsored a show, the Japan Aerospace Exhibition, at Makuhari Messe, Chiba Prefecture this year to promote international cooperation.

### Future projects

At the SJAC's exhibition, spectators could witness the growing link between Japanese aircraft makers and foreign companies. Executives spoke about two possible projects: the YSX and an unspecified very large commercial aircraft.

Boeing and Japanese companies are discussing cooperation on the production of a new aircraft—the YSX, an 80 to 100 seat regional jet.

Companies hope to sign an agreement within this year, but Clarkson has already announced that the YSX would probably be "a Japanese-led program" with final assembly in Japan.

The JADC initiated the YSX program in order to transform Japanese companies from junior partners into companies who can better design, make, and market aircraft. The association has been conducting feasibility studies on the program since 1989.

Kobayakawa reports that the JADC has already secured ¥2 billion from Japan's government to begin development of the YSX. However, this figure may represent only a nominal percentage of the plane's final development costs.

Although the YSX would have many competitors, including Boeing's 737, Kobayakawa is confident that it will succeed. He hopes that airlines would order around 50 per year.

Airbus Industrie also used the show in Makuhari Messe to court Japanese companies as partners in a prospective program to develop an aircraft with more

than 600 seats. Currently, the largest commercial aircraft—Boeing's 747 can carry up to 500 passengers.

Proponents of the "super-jumbo" argue that airlines will need such a very large aircraft to handle rapid growth in air travel. Boeing's "Current Market Outlook" estimates that air travel will grow by an annual average rate of 5.2% through 2013.

Developing a very large plane is expensive and risky, however. It may currently cost over US\$1 billion to develop a 100-seat commercial aircraft, while Airbus reports that a next-generation vessel with 600 or more seats would require an investment of US\$9 billion.

Sean Lee, a press relations manager with Airbus, reports that his company cannot afford to pursue the program by itself.

Airbus first asked Japanese companies to join their project—dubbed the A3XX—about three years ago, but Japanese companies have not yet responded to this request.

At the exhibition in Makuhari Messe, Airbus Vice President Adam Brown repeated his hope that Japanese companies will join the Airbus program. He offered Japanese companies a risk-sharing position of between 10 and 30% in the plane.

The A3XX would be Airbus' first risk-sharing agreement with Japanese industry. Lee explains that Airbus has been unable to cooperate with Japanese industry in the past, because these manufacturers "are already locked into agreements with Boeing for the construction of aircraft with between 100 and 500 seats."

But Airbus hopes that things are turning around. Says Brown, "Japanese industry is also starting to participate in our programs, with Kawasaki producing fuselage panels for the new A321 and Sumitomo Precision Products supplying landing gear jacks for the A330 and A340."

If Japanese companies do not join the project, says Lee, Airbus will seek other partners in the Asia-Pacific Region.

Brown estimates that the A3XX will sell for about US\$180 million each, although even Airbus questions the

practicality of such an expensive aircraft. The company initially estimated that airlines will require 860 super-jumbos over the next 20 years, but managing director Jean Pierson more recently acknowledged that only two airlines are currently showing sufficient interest in the A3XX.

Boeing has expressed similar skepticism about its own program to develop a super-jumbo. Says Clarkson, "There's a demand for a very large commercial transport, but not sufficient in the near term to launch such a program. In my personal opinion, I doubt this project will be launched in the next two years, given the amount of money that would have to be invested."

Boeing is continuing to study the production of a super-jumbo within a consortium, however, possibly including Airbus and Japanese companies. Says Clarkson, Japan "would also very likely play a substantial role in building a 'super-jumbo' aircraft in the 600 to 800 seat category—if such a project proves economically and technically feasible."

### Win-win agreements

Japanese aerospace firms are using these international alliances to expand their commercial business, although they will remain dependent on sales to the Defense Agency for some time. Says Kobayakawa, output for the commercial sector could ultimately exceed production for the Defense Agency but it "would take a very long time."

For the time being, current projects are sufficient to stabilize output and employment. Along with ongoing programs for the Defense Agency, says Kobayakawa, "The YSX is enough to occupy most of the engineers for some time."

Cooperative development may also create jobs in the United States and Europe. Says Boeing's Martin, these projects are necessary to effectively build and sell aircraft. He adds that "Boeing makes seven jobs in the United States for every job that we create overseas." ■

*Hayden Stewart, an American economist with a master's degree, is a freelance writer/researcher on business and economics.*