Embraer: Always thinking ahead

Mauro Kern
Embraer executive vice president of engineering and technology

If you ask an executive of the Brazilian Aerospace Corporation (Embraer) what is the company’s strategy for success, he might well point to an iPhone. Like that coveted technological device, the success of Embraer aircraft is not based on research and development alone. What also matters is knowing how to integrate into one product advanced technology scattered throughout the world to meet market needs as they arise. “You have to be at the right time with the right product for the right market segment,” says Mauro Kern, executive vice president of engineering and technology. Today, the company earns in a year the combined total of what it made from 1969 through 1994, when it was privatized. And it might have made more if it had not had to dismiss 4,200 employees when the crisis hit global markets. The US$5.3 billion the company recorded in 2010 came from contracts around the world and from a burgeoning private jet market, where in five years Embraer shot up to third, behind Bombardier and Cessna. Kern explains how Embraer got where it is and how it intends to sustain its success.

The Brazilian Economy — Embraer is often cited as an example of an innovative company. What puts the company among the top global competitors in a high-technology market?

Mauro Kern — Embraer’s success is due to producing the right product at the right time for the right market segment. In the 1970s our first airplane, the Bandeirante, took advantage of the deregulation of U.S. air transport, and later deregulation in many other countries, which stimulated development of regional aviation. Then in the 1980s and 1990s the growth of regional aviation required a 50-seater plane, and the big debate was whether it should be a turboprop or a jet. After several studies, we decided on a jet, and the ERJ 145 aircraft was an outstanding success, particularly in the U.S., because agreements between pilot trade unions and airlines limited plane size to 50 seats for regional lines. Embraer actually arrived in
this segment a little after Bombardier. But we were able to increase ERJ 145 production fantastically to meet demand, and our competitor was not. To do that, we had to do some things differently. For example, we decided to paint the fuselage separate from the wing and not wait till the entire aircraft was assembled.

Is that when sharing the risk of new projects with suppliers started?
Yes, it started even before Embraer was privatized when we began work on the ERJ 145. The practice then was to pay for the development of each component or system and then hire different suppliers, something Embraer could not afford. Some partners agreed to bear the cost of development in exchange for a stake in our program. Without such partnerships the aircraft would not have been possible. It was something different, and driven by necessity. This model expanded in the late 1990s and early 2000s. At that point, the agreements between pilot trade unions and U.S airlines began to

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limit airline growth, so we made the bold decision to build a family of low-cost aircraft from 70 to 110 seats and began to market to leading companies. The Embraer 170 and 190 airplanes have been successful — we have delivered more than 700. Meanwhile, our supplier partners have brought in increasingly integrated solutions. This has become the standard business model for the entire market.

Even though Embraer has been consolidating its domestic supply chain, its dependence on imports is still high — 85% of the components are bought abroad. What are the big problems in attracting foreign suppliers and developing local suppliers?

Brazilian industry and foreign firms located here are still finding it difficult to develop fully. We have undertaken initiatives to bring outside vendors to settle in Brazil, such as Belgium’s Sonaca and German’s Liebherr. But it is not easy, mainly because of the tax issues, though there have been major steps in exemptions — for example, an imported component is tax-exempt if it is used in a plane that is exported. However, foreign companies have difficulty operating in Brazil because of the complexity of fiscal operations, logistics, and customs and the “Brazil cost” (high airport and usage fees, Siscomex, infrastructure, etc.).

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Also, our competitive advantages are negatively affected when the Brazilian real appreciates against other currencies, particularly the U.S. dollar, even though increasing the domestic content is good for everyone, Embraer and the country. We need a consolidated system for developing technology for the entire supply chain, using all the mechanisms for promoting and supporting it, such as Funding of Studies and Projects (FINEP); different tax treatment; and measures to lower the Brazil cost.

How likely is it that, like Bombardier, Embraer will produce larger aircraft (130–150 seats)?

Today’s family of aircraft is still quite young and doing well in the market. Bombardier devised regional aircraft in the early 1990s, Airbus in 1980, and Boeing in 1960. We are able to wait to see how our competitors position themselves before launching a new product. One factor that stimulates all manufacturers to bring new aircraft to market is the new generation of engines with substantial fuel economy. After studying alternatives, we will make the right choice to have the right product for the right business segment.

Competitors are emerging in markets where Embraer is a leader, like Japan’s Mitsubishi and companies in Russia.
and China. How are you preparing for increased competition?
In a way Embraer has become the main adversary for all these companies. The most successful 100-seat aircraft worldwide is the Embraer 190. Other countries that decided to produce aircraft have decided not to compete with Boeing and Airbus but enter the market segment immediately below, where we operate. China has an extraordinary captive market for aircraft. Russia also has a large protected market, with barriers to entry for imported aircraft, and has significant knowledge and aeronautical technology for both commercial and military aviation. Japan has no tradition in the industry but has great technological strength. So we look at all of them with great respect. These are national, not company, projects with very strong government support.

What is Embraer’s competitive edge?
We operate in a market segment that tends to grow organically over time, though other players will take market share — the commercial aviation market is quite competitive. We need to keep at the technology forefront. We wait until we have a good reading of the market and a differentiated product. It is not just a matter of making bigger aircraft indiscriminately; the edge lies in creating smart solutions for specific market segments. That’s how in a few years we have grown in the executive private jet market. The Legacy was our first product, and then the Phenom 100, the most economical plane for eight passengers. We are designing the Legacy 500 and 450 and already have the Legacy 650 and the more sophisticated Lineage for up to 19 passengers.

How is your strategy supported by the factory you just opened in the U.S. to produce the Phenom, and the decision to build the Legacy in China after the attempt to produce the Embraer 190 was shot down?
The Phenom 100 is quite small, the customers are often individual users, and the U.S. is its main market. It makes sense to do final assembly there because the transportation cost from factory to customer is a considerable factor in total cost.

In our plant in China we produced 41 Embraer 145s for local airlines — a success for us and our partner, Avic. It was Embraer’s first step in that thriving market. China’s fast growth requires larger aircraft for regional transport. We could not get approval to build the Embraer 190 there; the Chinese government wants to eventually reserve that market for domestic products. This does not prevent us from selling the Embraer 190 in China now, and we will continue doing so. Another market surging...
in China is executive jets. Our first agreement has not yet been finalized; there are a lot of details to be worked out with our partner there and the Chinese government, but the market is very favorable for the Legacy.

Where is Embraer currently directing its research and development?
We want to understand future geopolitics and economic, energy, and environment scenarios — how air travel demand will evolve in 5, 10, 15, and 20 years, issues of infrastructure, air traffic control, airports, bottlenecks. We are also monitoring likely technology developments. Our technology development strategy is to consider all these dimensions.

Some issues are obvious: climate change, which is increasingly constraining aircraft emissions; oil shortages; security issues, in terms of both flight safety and criminal activity. Of course, we also are concerned with technology, comfort and convenience for passengers, and financial issues related to key customers. With all this in mind, in 2010 we invested US$150 million in research and development.

Embraer has significantly expanded its defense and security products. Last year, it spun off its defense unit into a separate company, which then bought stakes in companies concerned with communications systems, surveillance, and protection of such strategic areas as borders. What are your expectations for this new business?
We see great potential in the areas of defense and security. Aircraft are highly complex systems, and there are synergies with the defense and security markets. It is a natural process of diversification to increase the technological content of products the company can market using its core capabilities.

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