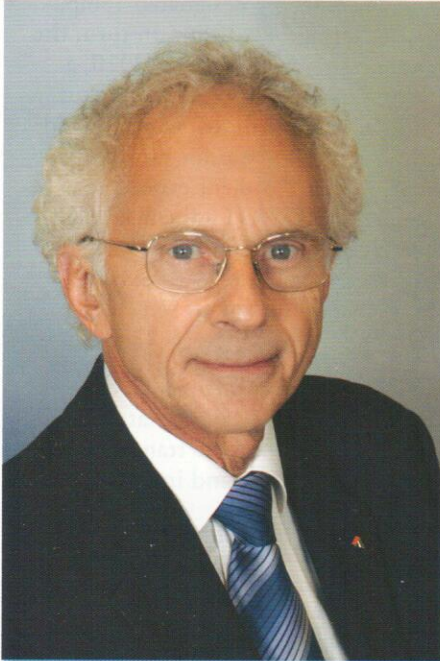


# High Honors for a True Innovator: An Interview with Jacques Combault

In a ceremony in Paris earlier this year, Jacques Combault received the highest decoration his native France bestows, the National Order of the Legion of Honour.

By Jerry Guerra, The JAGG Group



When Jacques Combault was in high school, he wanted to be a surgeon. His love of mathematics and the physical sciences redirected him toward engineering, however, and he graduated in 1965 from Ecole Centrale Lyonnaise with a master's in engineering.

The medical world's loss was the bridge design and construction industry's gain.

In a ceremony in Paris earlier this year, Jacques received the highest decoration his native France bestows, the National Order of the Legion of Honour. It was, as his mentor, former boss and long-time friend Jacques Mathivat said, "the crowning achievement of [his] brilliant career."

Brilliant indeed. In a career spanning more than 40 years, Jacques provided design and technical leadership on some of the world's most renowned bridge projects. His awe-inspiring portfolio includes the Sunshine Skyway Bridge in Tampa, the Brotonne Bridge on the Seine River in France, the Rion-Antirion in the Gulf of Corinth, Greece, and the Sutong Bridge Project in China. A frequent collaborator with legendary bridge designer Jean Muller, he was twice nominated as *ENR* magazine's Man of the Year.

Jacques' long list of honors and recognitions includes the presidency of the influential International Association for Bridges and Structural Engineering (IABSE), completing his three-year term in October. He is also known for far-reaching innovations in prefabricated concrete and steel-concrete composite bridges, and for his understanding and early acceptance of computer-aided design technologies in bridge design.

Since 1988, he has taught in the Civil Engineering and Construction Department at the National School of Civil Engineering in France.

In 2005, Finley Engineering Group (FINLEY) of Tallahassee welcomed him as technical director. "Jacques is a true innovator in his field," says Craig Finley, founder and managing principal of the bridge design and construction consulting firm. "In his five years with us, he has contributed not only valuable technical advice on our design and construction consulting work, he has called on his vast bank of knowledge and years of experience to help mentor and train our staff."

With this knowledge and experience in mind, here are Jacques Combault's thoughts on several topics related to bridge engineering:



The Brotonne Bridge in France, completed in 1977, is the world's oldest cable-stayed bridge with concrete aprons. Jacques Combault calls it "the father of the Sunshine Skyway Bridge."

**What is happening internationally with bridge design and construction that can translate to projects here in Florida?**

**JC:** In France and other countries, the design and construction team works closely together from the very beginning. The idea is always to come up with the best and most economical way to build large structures, especially bridges. In this way, we bring a kind of good knowledge and understanding of what has to be done on the site in terms of safety, visibility, economy. With the three groups working together – not only the design and construction team, but also the price team, we can determine the most economical approach.

Another area is what is called in the United States, value engineering. In France, normally the project budget is made by the French Administration, but companies are allowed to produce alternatives that are more economical, either because they are more in line with the methods the contractor is accustomed to using, or they are new ideas, concepts or innovations.

A final point is to use the right material in the right place on the right project. This is another important part of finding the best concept and the best way to build the structure. This is exactly what FINLEY is doing and, because I believe so strongly in this, why I'm working as Technical Advisor there.

**Aside from more collaboration in project delivery, is there anything else happening overseas that isn't happening here?**

**JC:** I think that in France and also in many countries in Europe, we use more structural steel composite bridges, which are not always accepted in the U.S. We could make some progress in this area. Also, we could promote new concepts regarding corrugated steel web, which makes the structure lighter and the prestressing forces more efficient. I don't see this being done very often in the U.S., but definitely in France and Asia.

I haven't seen cable-stayed or suspension bridges emphasized enough in the U.S. There are so many ways to make a cable-stayed structure fine, elegant, and economical; there are a lot of possibilities. So many big bridges need to be replaced or built, so this has huge potential.

**You're mentoring others now, including many engineers at FINLEY, but who were your mentors early in your career?**

**JC:** I was fortunate that just after graduation, I went to work for the firm Campenon Bernard. I received a warm welcome and was quickly put to work by what I refer to as a magic trio: Jean Chaudesaigues, Jean Muller and Jacques Mathivat.

Jean Chaudesaigues, was, at the time the Technical Director of the company. He was a real Technical Director and an imposing man, with a foolproof way of showing it; he sat his guests down in a

very comfortable, very low chair facing his impressive and suddenly very high desk, allowing them to feel the power of his function. Not a letter left the Technical Division without its author first initializing it and rereading it before signing it. Woe to the unfortunate soul who made a typographical error. Jean Chaudesaigues is no longer with us, but I have adopted his excellent habit, and take great care in my correspondence. I can't help but think of him each time I receive an email chock full of typos or I correct an engineering student's paper.

Jean Muller impressed in another way —his fabulous and untiring imagination.

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The Rion-Antirion Bridge in Greece, officially the Charilaos Trikoupis Bridge, is the longest multi-span cable-stayed bridge in the world. It is the result of close interaction between concept and construction methods.



The Sutong Bridge in China broke new ground in the field of cable-stayed bridges and received the 2010 Outstanding Civil Engineering Achievement award (OCEA) from ASCE.

The corridor will also encourage denser growth patterns and transit-oriented development around the HSR line and regional transit systems, versus outward urban sprawl. This will aid in growth management in the region and could save as much as one million acres of undeveloped land, according to one study by the University of Pennsylvania's Urban Design Studio.

HSR is also the most efficient mode of travel compared to traditional modes by car or plane. FDOT estimates the line between Tampa and Orlando "will result in a net reduction of carbon monoxide emissions by close to 150 tons per year" and will also help reduce the nation's reliance on foreign oil.

Moreover, the system will provide more options for travelers and ultimately contribute to a more livable, sustainable Florida.

For more information on Florida's HSR program, visit [www.floridahighspeedrail.org](http://www.floridahighspeedrail.org).

#### About the Author:



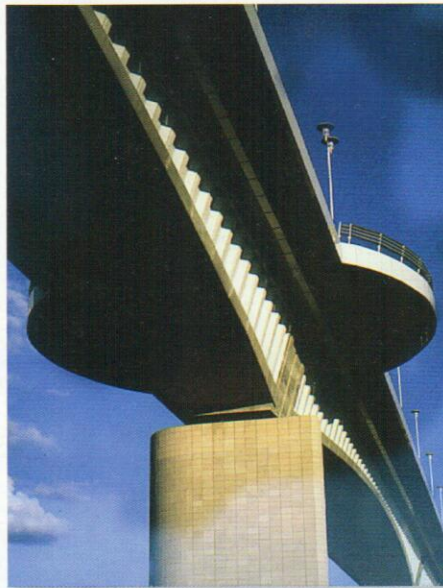
Jennifer L. Stutts, CPSM, is a communications specialist at RS&H. Ms. Stutts can be reached at 813-636-2649 or email at [Jennifer.Stutts@rsandh.com](mailto:Jennifer.Stutts@rsandh.com).

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The Dole Bridge in France is the first composite steel-concrete bridge with corrugated steel webs built by the balanced cantilever construction method.

This was somewhat troubling to those who did not have as much imagination, but it did create among the various planning teams a certain competitive spirit. He could come up with such elegant, audacious solutions, so quickly just after seeing a project. For me, he is the indisputable inventor of the pre-fabricated segments that are now mass-produced by the millions across the globe, especially in China.

Jacques Mathivat gave me the taste for a job rigorously well done: well-prepared meetings, solid justifications and well-structured publications. He likes to say that one of his main qualities is to surround himself with competent collaborators, but he trusted me and gave me the opportunity to head up the planning of several major projects, some of the most exciting challenges of their day, and I thank him for that. He also opened the door for me to teach higher education.

#### Looking back on it now, how do you perceive your career?

**JC:** Bridges are my passion. They have become my chosen area of expertise because they are both technical and a little complicated. There's great joy in doing what one believes is profoundly important.

At the risk of sounding pretentious, I am very proud of the things I have been able to do. It would be impossible to rate my greatest satisfactions in a top 10 list, so I'll list the most recent ones.

I'm proud to have questioned and then revised the project of the magnificent bridge over the Gulf of Corinth, linking Rion and Antirion in Greece, with the help of eminent specialists and the support of the site director. Without these changes, the most important of which are listed below, the project could not have come to be.

- We replaced the traditional concrete columns with steel pipes because the owner did not want to be dependent on the only company capable of providing the concrete columns. I have to admit that I suggested the metallic tubes without knowing how we would justify them!
- We completely remodeled the pylons and simplified their base, immersing them 65 meters deep, in order to be earthquake resistant and easier to make.
- We suspended the deck to the right of the pylons and, thanks to an amazing group effort, created the first and only bridge free to swing and move on the ocean floor during a major earthquake.

I am proud to have been part of the five-person committee of experts, representing five continents, named by the Transportation Ministry of the People's Republic of China to evaluate the feasibility of the Sutong Bridge over the Yang-tse-Kiang, today the world's longest cable-stayed bridge with a central span of 1088 meters.

I am proud to have worked with FINLEY on a prize-winning solution to a challenging motorway exchange problem in the heart of Miami. We won the bid and the Jury Prize for our project of a prefabricated deck.

#### What else is important for bridge engineering and construction professionals?

**JC:** For me the most important quality is common sense. I have taught principles and I have perfected complicated calculations, but at the end of the day, nothing can replace good, common sense.

#### About the Author:

Jerry Guerra is a principal with The JAGG Group ([jguerra@jagg-group.com](mailto:jguerra@jagg-group.com)), a communications and strategic consulting firm to the engineering, architecture and construction industries.