

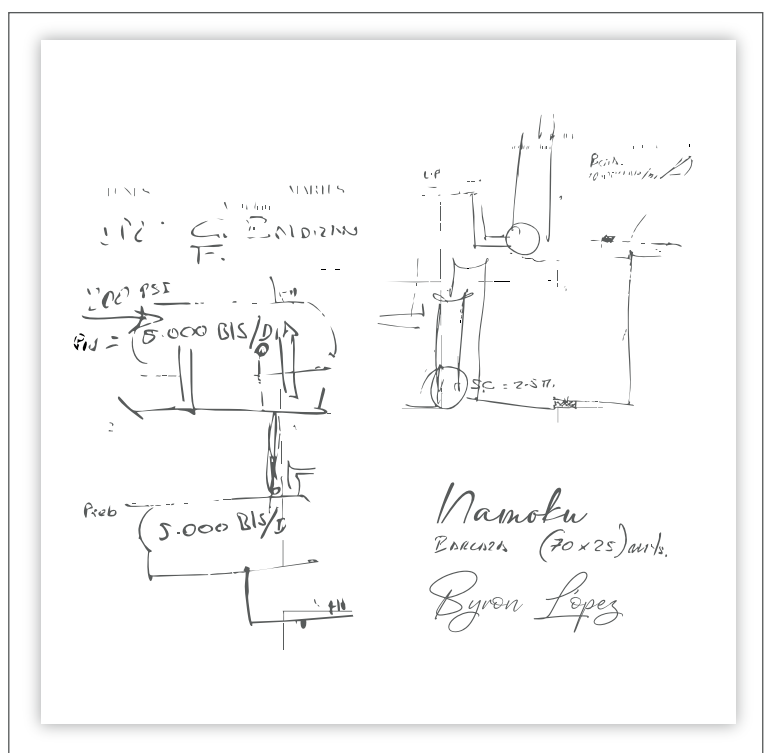


In 2008, SERTECPET decided to challenge the impossible and boldly write a new chapter for Latin American engineering. The sea of Peru witnessed the birth of a dream turned into steel, technology, and hope: Project Namoku. A SERTECPET Off-Shore Project with a Namoku barge, operated in Corvina, Peru.

What began as a humble stroke on a sheet of paper, drawn by the visionary hand of Eng. Byron López (may he rest in peace), founding partner of our company, was transformed into a majestic floating work that showcased SERTECPET's ingenuity beyond borders and printed SERTECPET's name in energy history.

### The Problem

BPZ started operations in Peru looking for natural gas. In the Corvina field, lot Z-1 development was designed for natural gas. However they stumbled upon oil, a capacity of 5,000 barrels of oil per day. They sought out Sertecpet to deliver a solution to handle this production, requiring a quick, high-tech solution that met international standards, including: SOLAS (Safety of Life at Sea); ABS (American Bureau Council; API RP 14C Recommended Practice for Analysis, Design, Installation, and Testing of Basic Surface Safety Systems for Offshore Production Platforms for Upstream Segment; and Peruvian regulations with zero tolerance for oil or condensate spills.



Boceto hecho a mano por el Ingeniero Byron López

We also aimed as a professional challenge to avoid affecting local fishing communities that concurrently used the same sea area.

### The Napkin

The client approached us due to Sertecpet's presence in Peru and global reputation in well testing. We are then called to present a proposal, which was discussed at a dinner, during which the client asks about our proposal.

Our founding partner and our scientist and CTO, Byron Lopez, was at this dinner. The moment he hears this question, he passionately grabs a napkin and draws the idea that he had extremely clear in his mind. So much skill in the proposed technology and in the solutions were what gave way to the client putting us as the first option. After the delivery of a formal proposal with detailed documents, the awarding was achieved.



### The Work

Some notable aspects of this project included:

- **The flare**

It had substantial challenges such as the fact that a single drop of oil and condensate were never to leak onto the sea, specially when it was coming out through pipes like the flare pipe.

The leakage challenge on the flare was solved by manufacturing multiple pressure powered compartments using a system similar to what we have within the bodies of our jet claw pumps, which whenever there was condensate dragged by oil, the condensate would get disintegrated before reaching the flare by splitting the squirt towards the flare into mini squirts, in order, to dissipate the condensate and get only gas towards the flare. Making it 100% burnable and 100% leakage proof.

- **False Wave System**

The wave currents should not interfere with the actual measurements of the level sensors. We used a mechanical approach and an experimental approach to face these challenges.

The wave challenge was solved by simulating the system in our manufacturing plant. We used experimental "baffle" systems to simulate the surf conditions at sea. This is how we were able to design the safety instrumented systems. This is how we made sure that, regardless of the waves, the sensors and meters do not give us a false measurement of liquid (oil or formation water).

This was a fully automated facility and operation, powered by SCADA and PLC's. A very impressive mark, considering this was designed on 2007.

The facility was fully automated, powered by SCADA and PLCs. A mark we achieve proudly as this was designed in 2007.



### The Result

The O&M was fully executed by Sertecpet for the period 12.5 years. The capacity was designed to process 8,000 barrels of oil per day, 2,000 barrels of water per day and 10MM scf/d of gas. With an autonomy of storage of 20,000 barrels of oil.

In all of the period we handled the operation, we did not drop a single drop of oil or condensate or any other harmful leakage; we had an operation with zero accidents and zero incidents.

All systems designed by Sertecpet worked to perfection, giving us a 100% success rate in this project. This can be legitimized by letters of recognition given to us by BPZ, for engineering, for construction and for operation respectively.

Sertecpet also registered the barge and obtained certification from Bureau Veritas, enabling our client to access financing for the project. This project is a resemblance of the different types of beauty we see in this business, the challenge, the creation, the responsibility and a passion to deliver the most value to our clients.

