

# Offshore industry poised for "dramatic transformation"

Siemens  
Topsides 4.0  
offers a digital  
lifecycle solution  
to offshore  
production  
facilities

**C**hanges tend to be abundant in most industries as the calendar transitions to the next decade. The offshore sector of the oil and gas industry is not immune to these changes. Digital technologies and decarbonization have, and continue to, play a prominent role in the sector's evolution, one that Christian Schöck, CEO of Siemens Brazil, has had a front seat to for several years.

Schöck's career in the oil and gas industry dates back to 2001, when he served as the global localization director and pre-salt replicantes project director with Dresser-Rand Brazil. During

localization developments, Schöck managed local content and managed Siemens' infrastructure in several countries, such as Brazil, Mexico, Saudi Arabia and the United Arab Emirates and led the development of local content worldwide. He also served as a project director in Brazil, the United States and other locations on several large-scale projects.

**COMPRESSORTECH<sup>2</sup>** discussed the current state of the offshore market with Schöck and how it will continue to evolve as the energy mix continues to diversify.

## WHAT IS THE ATMOSPHERE OF THE OFFSHORE MARKET TODAY?

The offshore market is undergoing a dramatic transformation. We see significant investments to exploit abundant oil and gas reserves, particularly in places like the North Sea and offshore Brazil. These investments present tremendous opportunities for operators, their suppliers and regional economies, but they also come with challenges.

One of the critical dilemmas the industry faces is how it can reduce its environmental footprint through decarbonization. Increased electrification, high-efficiency rotating

Natural gas, oil vital to future energy mix.

By DJ Slater

equipment solutions and the application of digital technologies will play an essential role in addressing this challenge. Together, they are enabling operators to push the limits of what is possible when it comes to increasing efficiency, reducing emissions and, ultimately, improving sustainability.

## HOW DOES THE OFFSHORE MARKET COMPARE TO ITS COUNTERPARTS ON LAND?

The challenges that onshore and offshore industries face are very similar, however, there are some notable differences. In onshore operations, there are often more opportunities to leverage hybrid power solutions that incorporate renewables. Operators also have easier access to alternative fuels, such as hydrogen. The development of hydrogen-powered gas turbines is an area that Siemens has been pioneering.

Digitalization can be applied similarly to onshore and offshore facilities. However, in the offshore environment, there is typically more potential for OPEX and safety gains. Tools such as digital twins and advanced



"The challenges that onshore and offshore industries face are very similar, however, there are some notable differences."

CHRISTIAN SCHÖCK, CEO of Siemens Brazil



analytics based on artificial intelligence (AI) are becoming more commonplace across the entire industry. Still, they are proving particularly advantageous offshore, where costs and risks are higher.

**HOW VITAL IS OFFSHORE PRODUCTION TO THE ENTIRE ENERGY LANDSCAPE?**

A significant portion of current oil and gas production comes from offshore fields and this will continue to be the case for the foreseeable future. Numerous studies have been published around this subject, many of which point to increasing offshore production through 2040. This is precisely why the oil & gas industry is focused on increasing efficiency and long-term sustainability.

**HOW HAS THE OFFSHORE GAS COMPRESSION MARKET EVOLVED SINCE YOU FIRST GOT INVOLVED IN THE BUSINESS?**

The offshore market is always pushing the limits of what is technologically possible. This has allowed us to exploit reserves in ultra-deep waters at competitive costs. Exploration of the pre-salt layer in Brazil, for example, only commenced 11 years ago, and it already represents approximately 55% of the country's total oil production. The injection pressure on such fields is considerably higher than a decade ago.

In recent years, compressors' efficiency and tolerance to abrasive gases have improved considerably, while maintenance levels remained similar. The use of ultra-sonic compressors and subsea compressors is also increasing. Hydrogen-powered FPSOs could become feasible in the midterm and adopt solutions from onshore. Digital capabilities will continue to develop faster than the market is implementing the solutions.

Siemens is continually working on improving these technologies and developing new concepts to enhance topside efficiency capabilities.

**SIEMENS HAS A LOT OF EXPERIENCE IN BRAZIL. HOW DOES BRAZIL COMPARE TO THE GLOBAL OFFSHORE MARKETS?**

It is an exciting time to work in oil and gas in Brazil, especially considering I am Brazilian. After a period with low investment in offshore assets, the forecast is encouraging. Pre-salt areas are being developed in record time, flaring policies are changing and infrastructure is being built to bring gas from offshore, avoiding millions of dollars per day of reinjection that can be monetized. As a result, more operators are investing in offshore concessions, which makes Brazil the front runner country for offshore oil and gas projects.

On top of it, onshore development is also expected to expand as regulations change rapidly and Petrobras' privatizes assets. With more than 170 years in Brazil and with several local facilities for engineering, products, and services, Siemens plans to support the industry's development, growth and decarbonization.

**WHAT PROJECT ARE YOU MOST PROUD OF? WHY?**

There are several exciting projects I have been fortunate enough to be involved with, both onshore and offshore. Siemens Brazil, for example, recently built a combined cycle power generation plant in the Amazon region, replacing diesel production with gas-powered turbines. The plant provides the third-largest city in the Amazon state with a cleaner, more reliable source of energy.

In the offshore arena, one challenging project that I am especially proud of included supplying 80 compression trains for eight Petrobras FPSOs with high local content requirements. In 2011, when the project was initiated, Dresser-Rand (part of Siemens) had no facility in Brazil to manufacture the equipment, nor the staff or certified suppliers to execute the project. Our team rose to the challenge by building a more than US\$30 million facility in Brazil.

**WHAT DO YOU LOOK FORWARD TO SEEING IN THE FUTURE FROM THE OFFSHORE MARKET?**

I think it will be fascinating to see the next generation of FPSOs being deployed in the coming years. Brazil is observing several new assets entering operation with new players and new technologies. This is also the case globally. Many exciting trends are emerging, including the use of combined cycle power solutions, integrated field exploration, subsea power grids and compression equipment, unmanned vessels, drone utilization, virtual reality, hydrogen applications and more. Let's observe how the market exits the health crisis currently underway and other themes, but hopefully, it reestablishes the projections from some weeks ago.

**CT2**

**An aerial view of the Dresser-Rand (Siemens) plant in Santa Barbara, Brazil. The plant supplies gas compressors to the area, as well as offers repair services for power equipment.**

