



PETROPERU

EMBRACING THE MODERN WAY

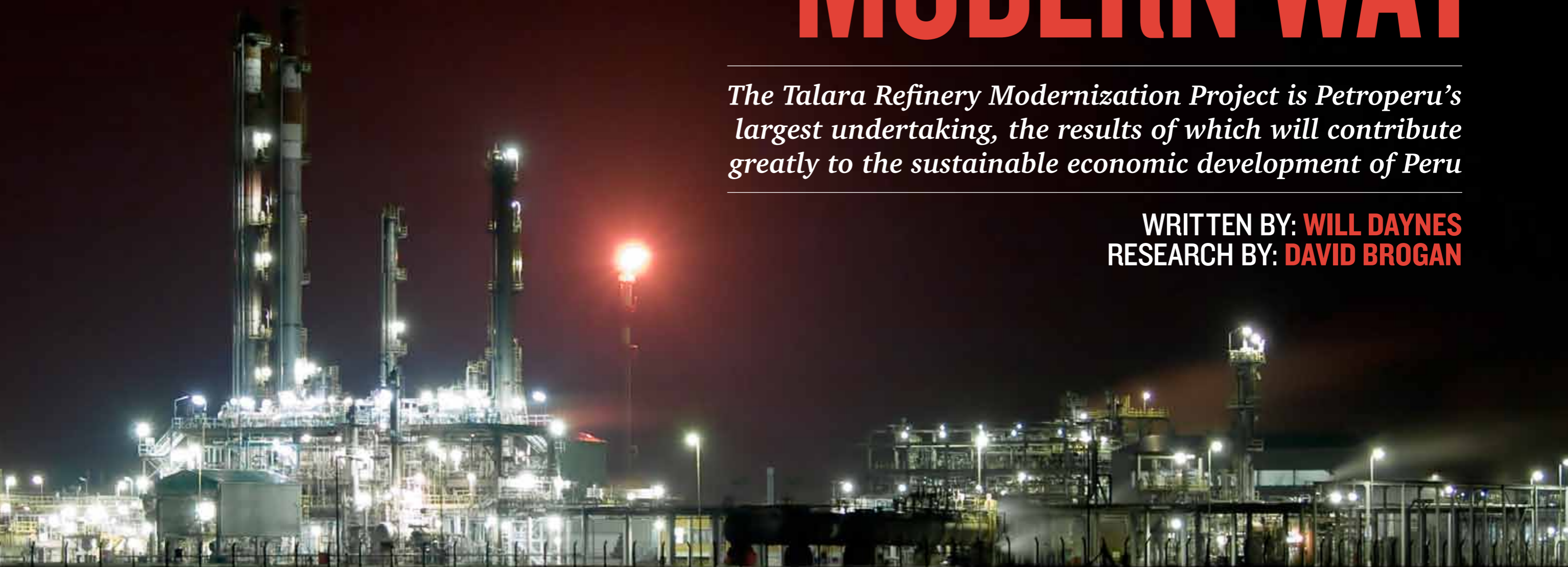


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EMBRACING THE MODERN WAY

The Talara Refinery Modernization Project is Petroperu's largest undertaking, the results of which will contribute greatly to the sustainable economic development of Peru

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It was in July of 1969, during the presidency of Juan Velasco Alvarado, that Petroperu was created based on La Pampilla State Refinery and expropriated refineries. In the more than four decades since the company has been a major contributor to the country's economy.

This comes in spite of the considerable political, administrative and macroeconomic challenges it has faced over the years. From the outset Petroperu was tasked with operating and maintaining virtually every complex oil patch in the country by itself. It was thanks to the skills and dedication of its Peruvian workforce that it was able to continue delivering petroleum products without any supply disruption, thus becoming the most important state-owned company in Peru.

Today Petroperu's largest project is the Talara Refinery Modernization Project, an undertaking that the company highlights as an example of a successful South American mining energy and minerals project that is increasing its influence locally and internationally.

The company's involvement with the Talara Refinery dates back to 1998 when it first contacted Texas based-consultancy Bonner & Moore to carry out a study to help adapt the refinery to current needs, improving the quality of diesel fuels with a maximum sulphur content of 2,000 parts per million (ppm).

The passing of legislation in March 2006 brought in rules regulating diesel fuel

sulphur content to a maximum of 50 ppm, thus requiring the company to essentially formulate an entirely new project that would comply with the said standards. This is what inspired the company to embark on its mission to develop a modern Talara Refinery with fuel production which meets the quality requested by the country's legal regulations and international markets, within a framework of social responsibility, environmental protection and adequate profitability.

A megaproject of engineering and construction, the modification involves the expansion of existing units at the refinery as well as the installation of new process units, services and other requested facilities.

The project itself exists within a framework of social responsibility, environmental protection and the generation of market opportunities and has been given the name

"Proyecto Modernización Refinería Talara" (PMRT). Upon completion it is expected to result in cleaner air due to the reduction in sulphur content in diesel and petrol, clean waste gas emissions from the refinery, reduced liquid fuel imports and an improvement in the commercial balance of hydrocarbons.

The social and environmental impact of the project is expected to benefit the Peruvian population on a number of levels. The Talara economy will be boosted by additional direct and indirect works, especially during the construction period and this will undoubtedly result in better economic opportunities

1969

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The year that Petroperu was formed

Making our planet more productive

Operating in Peru since 1996, Praxair is now the country's leading manufacturer of industrial gases—supplying atmospheric, medical and specialty gases nationwide.

Its eleven industrial gas facilities are strategically located across the country, helping ensure supply reliability for all customers. Praxair also offers a wide range of technologies that can help customers increase efficiency, improve productivity and enhance environmental performance. In short, Praxair provides the products and services that are making our planet more productive.



PRAXAIR



With its 50-year track record of serving the refining industry worldwide, Praxair has the experience to help refineries succeed in today's challenging environment. For decades, Praxair has supplied hydrogen gas to produce cleaner burning transportation fuels and applications technologies that help refiners improve their processes. Praxair's innovative industrial gas-based application technologies help our refining customers to do more with less, from enhancing product performance to reducing environmental impact. Refineries are facing a number of challenges today. Government regulations are tightening fuel specifications and standards. The crude slate has become heavier and increasingly sour, requiring additional process flexibility. These demands have intensified the search for more efficient ways to use and manage hydrogen supplies. For this reason, Praxair

delivers the expertise and innovation required to optimize efficiency and reduce costs associated with refinery hydrogen use. Praxair's optimization technologies and experience can reduce volumes by recovering the hydrogen and heavier hydrocarbons from refinery fuel gas, saving both hydrogen and fuel costs. This reduces operating and capital costs, enhances margins and decreases greenhouse gas (GHG) emissions. Managing the fuel gas system is integral to running refineries at optimal efficiency. Inefficiencies can often occur when the fuel gas and hydrogen systems are too closely linked, with purges and bleeds from the hydrogen system going directly to fuel gas and significantly impacting both its quality and quantity. Praxair has the in-house expertise to analyze such systems and find technologies to meet overall energy and hydrogen

requirements. In addition to conventional methods, Praxair refinery gas-processing technology enables the use of problematic fuel gas streams as feed for a steam methane reformer or as fuel for a gas turbine. This leads to higher returns, since those streams no longer need to be blended or segregated, something that further exacerbated "fuel gas long" issues. Praxair is focused on designing and constructing the most effective industrial gas plants, on time and on budget, using stringent industry safety standards. Praxair uses its extensive operating experience to design and build its hydrogen facilities to the highest standards, ensuring the utmost in safety, reliability and efficient supply. We also strive to enhance supply reliability and offer customers a high level of operational flexibility by investing in necessary infrastructure where

possible, including pipelines and by-product sources. In addition to Praxair's hydrogen expertise described above, Praxair has also developed expertise in various technologies for refining industries. One such technology increases the throughput of fluid catalytic cracking (FCC) units that are air blower limited, cyclone velocity limited, coke burn limited or wet gas compressor limited by injecting oxygen into the combustion air. Praxair has installed more than fifteen FCC oxygen enrichment units around the world. Global refiners are discovering how oxygen enrichment in their FCC increases the unit processing capacity with a small capital cost investment. This is accomplished while realizing other significant operational advantages.

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ACCIONA agua is part of the Talara Refinery
with a Reverse Osmosis Desal plant from 2001

SOLUTIONS DON'T ALWAYS DROP OUT OF THE SKY

We are working to ensure that water shortages cease to be a problem.
And we do this as world leaders in water treatment, by developing,
building and operating drinking water, sewage and desalination plants.
Because it's necessary to be present not just on the five continents but
also in the five oceans.

TRANSPARENT SOLUTIONS TO WATER PROBLEMS.



The Talara refinery

for Talara. Furthermore, local businesses in Talara and other parts of Peru will be tasked with providing goods and services to the refinery during the construction and operation phases, providing economic opportunities to many people.

From the point of view of environmental feasibility, the Talara Modernization Project

will improve the air quality of Peru, as well as the surrounding water quality, and it will not release oily or solid waste which is harmful for the environment. The proposed updates and the new units that will be added to the Refinery will be designed to comply with or exceed World Bank environmental rules, national rules and all local regulations.

“TODAY PETROPERU’S LARGEST
PROJECT IS THE TALARA REFINERY
MODERNIZATION PROJECT”



El Milagro refinery



The Conchan refinery



Worker inspecting the pipeline

“THIS PROJECT WILL HELP GUARANTEE THAT PETROPERU IS ABLE TO CONTINUE CREATING SIGNIFICANT VALUE FOR PERU AND ITS CITIZENS FOR MANY YEARS TO COME”

The environmental investment projections are included in the general capital investment required for the modernisation. The current estimate is that the capital investment for the environmental part will be of approximately \$1.3 billion. This amount includes the contingency factor or the location factor.

It cannot be denied that it has been a long and challenging process to get the project to

the point where it is today. It was recognised from a very early stage that such a large scale project would require a significant investment of time, technology and capital resources. Based on a feasibility study carried out on behalf of Petroperu by Arthur D. Little it was clear that the costs of the project would be substantial and that even when taking into account its use of fast-track engineering and

construction strategy it would not be able to commence operations until 2016.

While these factors may have put off a number of operators or companies, the fact is that the numerous social and environmental benefits that the modernization project will bring to the region make it very much worth the time, cost and effort of all concerned. This project will not only result in bringing in an attractive economic return, but will also help guarantee that Petroperu is able to continue creating significant value for Peru and its citizens for many years to come.

Today the implementation of the modernization project is well under way, with the preliminary engineering and technology phase having commenced at the end of 2009.

Come the estimated culmination of the undertaking in 2016 it is expected to have achieved a number of positives, not least of all increasing the value of Petroperu as a business. On top of this the project will have transformed the Talara Refinery into one of Latin America’s most modern, increased its production capacity by approximately 50 percent and most importantly of all it will have done more to promote the sustainable economic development of the region than perhaps any project of its kind before. **BE**

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