

# Air Products' oxygen technology and services increase efficiencies and saves money for Southern Peru Copper Corporation (SPCC)



“Since 1995, the relationship between SPCC and Air Products has been and continues to be a winning relationship — winning, with excellent results for SPCC.”

Carlos Lama

Superintendent of Acid/Oxygen Plants,  
Southern Copper Corporation

For two decades, Air Products' Equipment Sale & Plant Support team has helped one of the world's largest integrated copper operations to meet its goals for efficiency, reliability and safety.



SPCC's 300 TPD oxygen plant #1 located in Ilo, Peru. Air Products also built and serviced a 1045 mTPD oxygen plant in 2004 for the copper mining company.



**“It is company policy to establish long-term relationships with vendors who provide goods and services of excellent quality at competitive prices.**

**Air Products is a clear example of this, 25 years of business relationships that make them our strategic partner and also gives us solutions to our needs.”**

**Gerardo Alcázar**

Project Procurement Lead,  
Southern Peru Copper Corporation

**SPCC and Air Products employees celebrating a successful 25 year working relationship with a special dinner and awards ceremony in Peru.**



## **Air Products and SPCC: two company teams come together**

Overlooking the Pacific Ocean, the port city of Ilo, Peru, lies at the north edge of the Atacama, one of the world’s driest coastal deserts — so arid that a local golf course has no grass and uses blue rocks to designate water holes. There, about 740 miles (1,240 km) south of Lima, the company now known as Southern Copper Corporation processes copper from their mining operations high in the Andes mountains. Part of the Grupo Mexico family of companies, Southern Copper is one of the world’s largest integrated copper producers, with mining, smelting and refining facilities in Peru and Mexico.

Southern Copper’s roots date back to the 1950s, when Southern Peru Copper Company (SPCC) was incorporated and built its first mine in Tacna, Peru. In 1991, the company signed a base-line agreement with the Peruvian government and set out to increase production and improve environmental conditions at its operations. Soon after, it purchased the Ilo copper refinery, which could produce 190,000 tons per year. Part of the agreement with the government required development of a sulfuric acid plant in order to decrease gas emissions and provide acid for leaching operations.

“Upon arriving onsite 20 years ago, in a smog of sulfuric acid, lungs burning, eyes watering, I thought, ‘What did I get myself into?’” says Demetrios “Jim” Kourpas, operations specialist at Air Products. It was 1995 and everyone was under tremendous pressure to get the job done.

“After the first week, it was clear we were all on the same path: to get the projects built — both the air separation unit and the sulfuric acid plant — safely and as quickly as possible,” he says. “Each day, we would have a morning meeting — construction, operations, everyone. As a team, Air Products and Southern Copper people bonded, leaving the meeting and heading our own way, me to the air separation unit (ASU) and the others up the hill to the acid plant.”

Most of the time, the team worked seven days a week in order to meet the schedule. Four months later, the construction of the 300 ton-per-day ASU, Oxygen Plant #1, was completed.

“Between my faltering Spanish and SPCC’s operator’s patience, we trained, commissioned, and started the state-of-the-art ASU successfully and without flaw,” Kourpas says. “The Southern Peru team started and stopped the unit several times, becoming proficient and coming up with some techniques of their own. Twenty years later, they are still operating their plant.

## Maintaining high oxygen availability and flexibility to meet variable demand

In 2005, SPCC acquired Minera Mexico and its subsidiaries, and Southern Copper Corporation was born. That year, the relationship between Southern Copper and Air Products expanded with the installation of a 1,045 metric tons per day plant, Oxygen Plant #2. Today, the Air Products Equipment Sale & Plant Support team continues to help Southern Copper increase plant efficiency and reliability through plant assessments and engineering support.

### Air Products know-how saves SPCC \$600,000 a year in energy costs.

For example, in the early years of Oxygen Plant #2, emissions from the smelter corroded the intercooler bundles of the main air compressor (MAC), obstructing the air flow and caused repeated failures of the compressor impellers from constant surge. Air Products solved the problem by adding an inlet air filter with special chemical media to remove the gaseous contaminants in the air. When Southern Copper needed greater control of oxygen production from the two plants, Air Products adapted Oxygen Plant #2 to automatically control the production to match oxygen demand with minimal venting based on the final purity of the product oxygen, saving \$600,000 per year in energy.

Air Products' services to Southern Copper include process optimization, equipment upgrades, preventive maintenance of special equipment, such as the main air compressor, booster compressor, expander and compander, and spare parts. The Air Products team also provides integrated solutions in the event of a technical problem. For example, our technicians stopped a liquid oxygen leak in the cold box of Oxygen Plant 1 and repaired the low-pressure column in Oxygen Plant 2. As a result of this teamwork, says Carlos Lama, superintendent of Acid/Oxygen Plants for Southern Copper, "the oxygen plants operate with high availability and the copper production from the smelter is not impacted by a lack of oxygen."

### SPCC relies on Air Products high standard of safety for turnkey services during major outage

During a major outage, Air Products provided turnkey services for the retrofit of the 5R3MSG-15 MAC in Oxygen Plant 1. Air Products brought in mechanical labor, supervision and tooling from the United States. In the meantime, Southern Copper prepared the job site to meet Air Products safety requirements for the use of scaffolding, temporary power, crane inspections and other items. Recognizing Air Products' deep maintenance and engineering experience and the high standard of safety that is ingrained in the Air Products culture, Southern Copper also specifically requested that the project use the Air Products safety work permit system for energy isolation, such as lockout/tagout, and for control of the work permits.

Says Air Products project manager Paul Strauss, who was maintenance planner for the retrofit, "This type of work — a major equipment maintenance evolution, plus foreign travel, language challenges, challenging work environment — is what we do best at Air Products."

# Personalized problem solving sets Air Products apart

One of the things that sets Air Products apart, says Lama, is “the positive, personalized and timely response to technical questions to provide solutions to our problems.” People at Air Products exhibit an expertise and confidence that continually earns customers’ trust. In fact, from departments and work groups to individual mechanics, technicians and engineers, Air Products people are hard-wired to be problem solvers and addressing issues at customer plants as if they were our own.

“I experience a good deal of job satisfaction when the job is completed on time, within original budgeted estimates and with zero first-aid cases, zero recordable injuries and zero near misses,” says Strauss. “I especially enjoy the feeling I get when I can help the customer solve specific problems, point out potential problems that can be avoided and suggest preventive maintenance tasks that can help avoid imminent or future failures.”

Today, Southern Copper continues to grow and expand. With extensive experience designing, building and maintaining more than 2,200 air separation plants in more than 40 countries, Air Products serves as their strategic partner, helping Southern Copper find new ways to enhance efficiency, safety and sustainability while increasing production and controlling costs.

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## For more information

To learn more about how Air Products’ can put our experience to work to help keep your plant operating safely, reliably and efficiently, call 610-481-5319 or visit us on the Web at [www.airproducts.com/cps](http://www.airproducts.com/cps).

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