



STACKABLE, SAFE, SUSTAINABLE: THE SMART APPROACH TO TAILINGS

SUCCESS STORY

State-of-the-art filter presses
equipped with an addIQ
control system for the
Brazilian iron ore producer Itaminas

ANDRITZ

The challenge

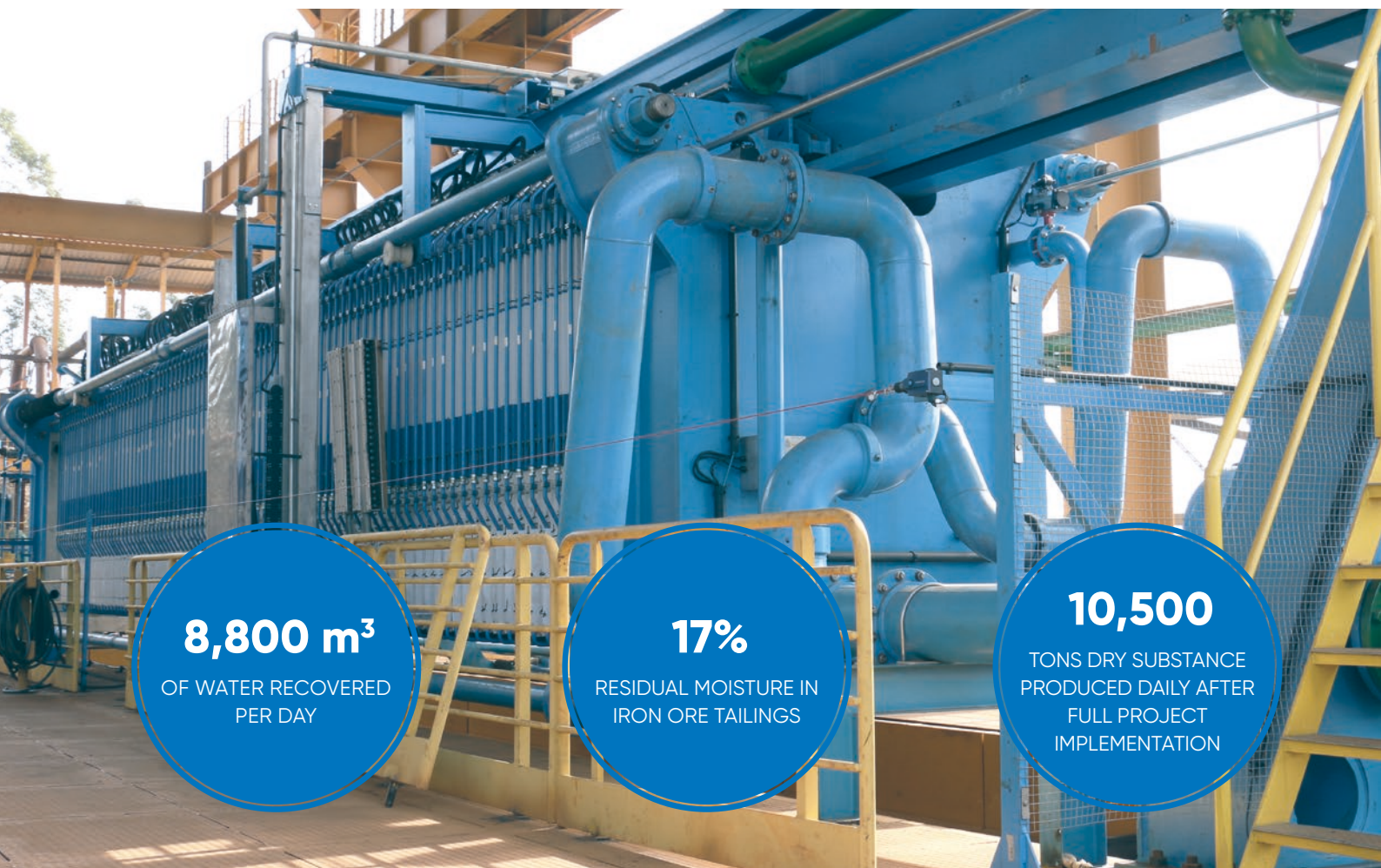
Replace tailings dams with dry stacking

Itaminas, founded in 1959, is an iron ore extraction company located in Minas Gerais, Brazil. The material left over after the production of concentrated sinter feed, high-silica sinter feed, hematite and pellet feed is known as tailings – and safe disposal of these materials is one of the mining industry's greatest environmental challenges.

As one of the first mining companies in Brazil to decommission dams associated with the production of iron ore concentrate, Itaminas has already achieved considerable environmental, economic and social success in recovering the areas impacted by dams that were operating and then decommissioned. Faced with an operational need related to the end of the useful life of the

B4 dam, currently used by Itaminas, and looking for a new alternative to dispose of its tailings, the company turned its efforts towards the implementation of the filtering system and subsequent stacking of dry tailings.

Various technologies from ANDRITZ's comprehensive solid-liquid separation portfolio were studied, from vacuum belt, ceramic or vacuum disc filters to filter presses, the latter then being used in implementation of the project. The ANDRITZ team, together with Itaminas, proved the feasibility of filtration by carrying out tests with different cake thicknesses, drying times and membrane packages on a pilot filter press at the ANDRITZ laboratory in Pomerode, Santa Catarina.



One of the ANDRITZ overhead filter presses 2500 x 2500 mm at Itaminas

Our solution

Proven overhead filter presses with a future-proof control and automation system

In a highly competitive market, the ANDRITZ solution turned out to be the safest, smartest and most sustainable option. The differentials were consistently achieving the final residual moisture required of just 17%, and long-standing expertise was applied to develop a future-proof solution together with the customer. Four ANDRITZ overhead filter presses, manufactured in Brazil, in the largest size of 2500 x 2500 mm were chosen as the ideal equipment for high throughputs. Tests showed that a membrane pressurization system with water is the best way of achieving the geotechnical moisture content in the cake required for dry disposal. Easily upgradable in terms of volume and filtration area, the filter presses for this specific application were equipped

with double-opening, double-washer, bilateral feeding and a package of mixed membrane/chamber plates that can be easily accessed from the side. The real stand-out feature is the automation – the addIQ Prime control system including the optional addIQ Connect. With state-of-the-art hardware and various diagnostic functions, this control system maximizes the performance and operation of the individual machines. With a 12" panel touchscreen as standard, its design allows intuitive operation, crossing barriers of language or training. The control system provided has the resources for remote monitoring in the future, also enabling remote support for fast interaction between the on-site machine and the ANDRITZ specialists.

Results

Stackable tailings, optimized operation, lower OPEX and less water consumption

Thanks to the full support of a multi-disciplinary team on site for supervision, and the supply in form of modular kits, the third unit was assembled within a record time of just 21 days. The filter presses are now consistently achieving a moisture content of around 17%, the performance tests produced a cake density of 2.5 t/m³ and delivered final performance that was 34% higher than expected. With three of the four filter presses already in operation, performance has been very satisfactory, aided by the reliable addIQ Prime control system. Dry stacking of tailings through smart technology reduces the risks to everyone involved – the environment, the community, and the operator's employees. In the past, the OPEX of filter

presses was considered higher than that of maintaining tailings dams. But the value is incalculable and incomparable when it comes to an extreme case caused by the rupture of a dam. With regard to associated risks, the safe stacks of dry tailings are an advantage over the dams. Another advantage in dewatering the tailings is the reuse of water in the production process itself, reducing the need for fresh water from springs, lagoons and wells. The recovery of clean water from the filtration process is currently estimated at approximately 80%, avoiding plant outages during the dry season. With the ANDRITZ solution, an average of 8,800 m³ of water is recovered per day at the plant.

"We are innovating our beneficiation processes for tailings treatment. ANDRITZ's solution made it possible to eliminate the use of tailing dams, making our processes more secure and creating a new profile of sustainability and productivity."

GEDEON JUNIO
Itaminas – Production and Processing Director

"The successful partnership between ITAMINAS and ANDRITZ demonstrates that the mineral industry is undergoing modernization and building new paths for the future."

JONATHAN IZIDRO
Itaminas – Filtration Process Supervisor



A WORLD OF SEPARATION SOLUTIONS

ANDRITZ provides mechanical and thermal solid/liquid separation technologies, complemented by comprehensive services, automation, and digitalization solutions for the chemicals, environment, food and beverage, as well as mining and minerals industries. Our customized, innovative solutions focus on minimizing resource consumption and maximizing process efficiency, thus making a substantial contribution towards sustainable environmental protection. With over 150 years of experience and more than 2,700 separation specialists around the globe, we are a driving force in the evolution of separation solutions – enabling industries to meet tomorrow's demands responsibly. **ANDRITZ. FOR GROWTH THAT MATTERS.**

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