

CHALLENGE

THE GLOBAL DEMAND FOR RAW MATERIALS IS GROWING CONSTANTLY

and with it the challenge of depositing production residue from mining operations safely and sustainably. This may involve considerable risks. For example, production residue from the mining industry, normally in the form of liquid slurry, is usually collected in huge settling ponds. This carries the inherent risk of the dams collapsing, which in the past has caused environmental disasters.

SOLUTION TIONS

%

MOISTURE REMOVAL

With help from ANDRITZ, the Brazilian mining company ITAMINAS has installed an innovative filter system to remove more than 80% of the moisture in the slurry and finally dispose of it by environmentally compatible means. The process offers big ecological, social and economic advantages.

SAFE DIS- POSAL

In the mining industry, dealing with production residue – so-called tailings – is challenging. Storing the often toxic mineral slurry in large ponds secured by dams is a dangerous business. Dams that collapsed in Brazil and Hungary have caused huge disasters in the past.

ITAMINAS, with headquarters in Minas Gerais, Brazil, mines and processes iron ore and is one of the first mining companies in the country to implement an innovative strategy for safely storing the tailings. The company deliberately avoids using dams for this purpose and has achieved considerable ecological, economic and social success with the ecological restoration of those areas where ponds and dams had previously been used in mining operations.

The company has concentrated on implementing a custom-tailored filtration system followed by safe stacking of dry tailings. It uses special filter presses from ANDRITZ, equipped with a Metris addIQ control system. ITAMINAS currently has four filter presses, which were manufactured in Brazil. More machines are to follow in 2022.



ITAMINAS has been mining iron ore since 1959. The company has its headquarters in the Brazilian state of Minas Gerais.

Clacione de Oliveira is Superintendent Director of the mine in Minas Gerais. She explains why the mine has chosen to collaborate with ANDRITZ and what advantages the new process offers:

“Using ANDRITZ filter presses gave ITAMINAS the motivation and energy to operate in a safe, innovative and sustainable manner.

“Eliminating the deposition of tailings in the containment dams was my biggest dream, and in February 2021, this dream came true.

“Furthermore, we were able to recover more than 90% of all the water in the system, contributing towards conscious use of this asset, which has become increasingly scarce.

“Currently, we are starting operation of filter press number 4 and in the process of de-characterizing the existing tailings dams. This is a commitment we have signed with the community and regulatory authorities and which is also part of the values of ITAMINAS, namely respect for the environment, excellence and transparency,” says Tuca, as she is known throughout the mining community.



SAFE AND EFFICIENT

Stacking of dried tailings has several advantages: It not only reduces the risk to the environment, the neighboring population and the workforce. The recovered water can also be reused in the production process, so less fresh water is needed overall. This prevents production from slowing down or grinding to a halt during the dry season.



8,800 m³

of water
recovered daily

10,500 tons

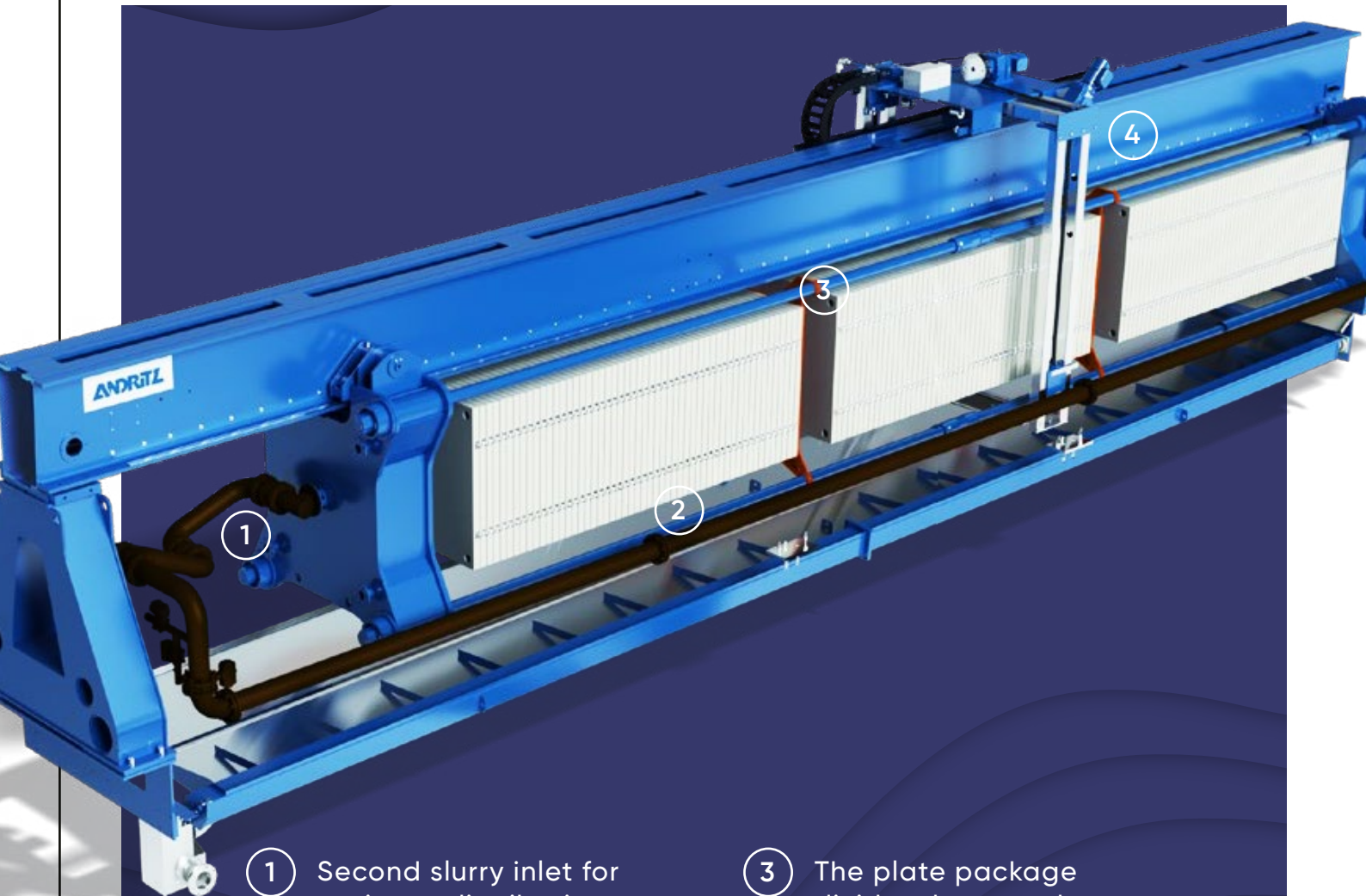
of dry tailings received
daily after full project
implementation

17%

residual moisture in
iron ore tailings

TALKING TECH: FILTER PRESSES

ITAMINAS uses the largest ANDRITZ overhead filter presses (L = 29.4 m, W = 6.0 m, H = 5.1 m). Equipped with 200 filter plates, each measuring 2.5 × 2.5 meters, and with a total machine weight of 194 tons, these machines are also amongst the largest filter presses worldwide.



① Second slurry inlet for optimum distribution and shortening the overall batch time.

② Filtration is particularly efficient thanks to some special functions and the Metris addIQ control system.

③ The plate package divider shortens the emptying time.

④ Double washing device for efficient and fully automatic filter cloth washing.

Metris addIQ

The integrated Metris addIQ Prime control system, including the optional Metris addIQ Connect, ensures efficient and smoothest possible operation. It optimizes and maximizes the output of the individual machines and contains numerous diagnostic and automation functions. The control system is operated intuitively thanks to a touchscreen, thus overcoming any language or training barriers. In addition, the system can provide remote monitoring and support online. As a result, ANDRITZ specialists from around the world can communicate securely and quickly with the filter presses on site if necessary and assist the ITAMINAS staff.

