

1 HUMAYA

Total output new: 50 MW
Scope: 1 × 50 MW (one unit of the two installed)

2 ZIMAPÁN

Total output new: 304 MW
Scope: 2 × 152 MW

3 EL CARACOL

Total output new: 630 MW
Scope: 3 × 210 MW

4 INFIERNILLO

Total output: 400 MW
Scope: 2 × 200 MW
(only two units of the six installed)

5 LA VILLITA

Total output: 320 MW
Scope: 4 × 80 MW

CFE's
hydropower
refurbishment,
Mexico

Mexico – ANDRITZ is leading a consortium that has been awarded contracts for the major refurbishment of nine hydropower plants across Mexico. The contracts, worth some US\$ 892 million, came from Mexico's state-owned power producer the Comisión Federal de Electricidad (CFE) at the end of 2021.

CFE generates, distributes, and markets power to almost 100 million people and adds more than a million new customers every year. It owns 162 generating plants with an installed capacity of 43,723 MW, including

thermal, hydroelectric, and wind powered plants, as well as one nuclear power station. CFE also operates more than 992,000 km of transmission and distribution lines.

In July 2021, CFE invited companies to submit offers for the upgrading and rehabilitation of nine existing hydropower plants with a total combined capacity of more than 4,250 MW. The plants are Malpaso (1,080 MW), Dr. Belisario Domínguez "Angostura"

ABILITATION

NCE

MAZATEPEC
 Total output new: 244 MW
 Scope: 4 × 61 MW



PEÑITAS
 Total output: 420 MW
 Scope: 4 × 105 MW



MALPASO
 Total output new: 1,152 MW
 Scope: 6 × 192 MW



ANGOSTURA
 Total output new: 1,000 MW
 Scope: 5 × 200 MW



(900 MW), Ángel Albino Corzo "Peñitas" (420 MW), Mazatepec (220 MW), Infiernillo (currently only 400 MW), La Villita (320 MW), Ing. Carlos Ramírez Ulloa "El Caracol" (600 MW), Ing. Fernando Hiriart Balderrama "Zimapán" (292 MW), and Humaya (currently only 45 MW).

By taking advantage of the existing civil and electrical infrastructure, the aim of the comprehensive refurbishment program will be to increase the operational

lifespan of the plants by at least 50 years and to strengthen the national electricity system.

Following a rigorous technical and economic evaluation in November 2021, the CFE awarded the contract to a consortium led by ANDRITZ S.A. de C.V., working together with Generadores Mexicanos S.A. de C.V. (GENEREMEX), Hydroproject de Mexico, S.A. DE C.V. and Sistemas de Energía Internacional S.A. de C.V. (SEISA).

"The modernization of these nine plants will boost the estimated annual generation by some 1,754 GWh."





[Malpaso main transformers](#)



[Malpaso dam and spillway](#)

“The objective of the modernization is not only to increase the reliability of the power plants, but also to increase the operational life by 50 more years.”

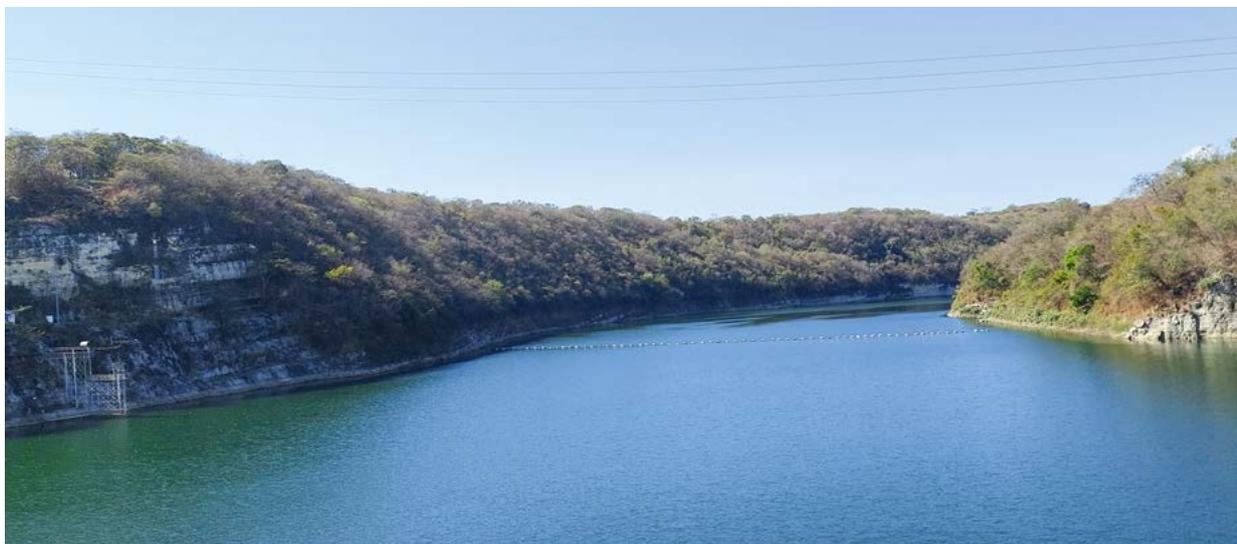
ANDRITZ S.A de C.V in Mexico has been based in Morelia, Michoacán since 1981 and offers comprehensive hydro-electric solutions for plants in Mexico, Central America, the Caribbean and South America.

The scope of supply for CFE includes design, manufacturing, supply, transportation, erection, testing and commissioning of 29 hydro generators, 17 turbines, 21 power transformers, 22 governors, three SCADA supervisory control and data acquisition systems, 27 static excitation systems and three protection systems, as well as the electrical power and associated auxiliary systems.

Since signing the contract in late November 2021, the consortium has been working on the project, which is scheduled to return the nine plants to service between 2023 and 2027.

Financial support will be provided by Agence Française de Développement (AFD), with a EUR 200 million (US\$ 232 million) of clean energy project investment over the next 25 years. This will include financial support for the rehabilitation and modernization of various hydro plants where the technology is more than 30 years old, which CFE says will “increase the generation of electricity, the useful life of the hydroelectric plants and the security of the infrastructure, as well as minimizing the environmental and social impacts

[Angostura reservoir from intake](#)





in the regions where they are located." A wider CFE investment plan includes a US\$ 4.85 billion longer-term initiative to increase nuclear, hydroelectric, wind and solar capacity, as well as a US\$ 4.46 billion overhaul of the company's transmission capacity.

With the modernization of these plants over the next five years, the total generation capacity will be boosted by 243 MW while the estimated annual generation will increase by some 1,754 GWh.

These contracts for upgrade of the units, some of them originally supplied by ANDRITZ predecessors in the 1960s and 1970s, are a further step in the long-term relationship with CFE, the largest electricity utility

in Mexico. The package of modernization of the nine power plants is representing one of the largest rehabilitation projects in the world, not only for ANDRITZ, but in the hydropower market.

ANDRITZ is very honored to be entrusted with the leadership of such a significant refurbishment program and to support CFE and the Mexican people on the path towards a more sustainable energy system.

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"This modernization project of all nine important hydropower plants represents one of the largest rehabilitation orders on the global hydropower market."

Angostura underground powerhouse

