New drivers shaping the future

A NEW LIFE FOR HYDRO ASSETS

The demand for rehabilitation, modernization, and upgrading of installed hydropower equipment has seen dramatic growth in recent years. About 40% of all hydropower plants worldwide were originally commissioned more than 40 years ago and have been in operation ever since. Europe and North America are particularly exposed in this respect, but Asia is also facing an increasing demand for rehabilitation of much of its aging hydropower capacity.

Existing hydropower plants also need to adapt to new grid requirements in response to growing renewable energy penetration. Increasing environmental constraints for both new and existing hydropower plants call for new solutions such as fish-friendly turbine technology and oil-free turbine runner hubs.

Today, many hydropower plants are facing extraordinary challenges due to more frequent start-stop cycles, operating at very low part-loads and as spinning reserve or as fast response capacity to stabilize the transmission grid. In parallel, the efficiency of turbines and generators has been significantly increased over the last few decades.

Each of the various elements and components within a hydropower plant have a different and specific lifetime. However, aging is accelerated by certain plant operational regimes. This can include frequent start-stop cycles, abrasion due to large volumes of suspended solids like silt, and corrosion. All can have a significant impact on service life. As a

result, refurbishments to modernize and upgrade a plant's performance are necessary and highly cost-effective.

ANDRITZ SYSTEMATIC APPROACH

The modernization of a hydropower plant is an extremely complex issue. As noted, aging of the various plant components and systems depends on operational, environmental, and ambient conditions.

Innovative modernization measures and top-notch technologies increase profitability and extend the lifespan of hydro assets.

Based on well over a century of hydropower experience, ANDRITZ has developed a structured process for assessing and modernizing hydropower plants in the most economical way. This systematic approach ensures tailor-made solutions that guarantee the maximum benefit for asset owners and operators.

Our Three-Phase Approach includes diagnosis, analysis, and therapy for all involved systems. In addition to standard solutions, our scope includes lifetime services, 24/7 customer support, life cycle and risk analysis, operation and maintenance services, as well as the long-term operation of assets.

Changing social, political and economic trends across the globe demand different perspectives. Hydropower technology and operation of the assets have to adapt to support new ideas and to meet all new upcoming requirements as they emerge. Examples for these global megatrends are new small-scale hybrid solutions (combining batteries with hydropower units), digitalization of all parts of a hydropower asset, and new long-term concepts for operation and maintenance.

ANDRITZ specializes in the rehabilitation, upgrading, and uprating of existing hydropower equipment. In addition, we offer solutions and services to optimize operation and maintenance of hydropower plants. Innovative modernization measures and state-of-the-art technologies increase profitability and extend plant lifetimes – all while taking into account basic economic, ecological, and legal conditions.

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