

TOP PRODUCTS ENSURE GLOBAL SUSTAINABILITY

Sustainable development – meeting the needs of the present without compromising the ability of future generations to meet their needs – is an integral and active part of Andritz's corporate policy. The products of Andritz support the economic growth of its customers – and of the countries and national economies where these customers are situated. Economic growth is a prerequisite for the ultimate goal of Andritz's corporate responsibility: social progress achieved on the basis of ecological and environmental balance.

ENVIRONMENTAL SUSTAINABILITY

Besides social progress and economic growth, the ecological balance is a pillar of sustainable development. Global efforts in support of climate protection over the past few years have significantly increased the relevance of energy generation from renewable sources such as hydropower and biomass.

It is a declared goal of Andritz to help customers achieve their goals with regard to profitability, sustainability, and environmental targets. Thus, Andritz's R&D programs strongly focus on the development of sustainable 'Top Global Products'. Already 35–40% of the Andritz Group's total Sales are derived from technologies and systems that generate energy from renewable sources such as hydropower and biomass. In the area of hydropower, Andritz offers modern equipment and services for hydropower plants, thus substantially contributing to the use of renewable, clean energy sources.

ABOUT 35–40% OF THE ANDRITZ GROUP'S TOTAL SALES ARE DERIVED FROM PRODUCTS, TECHNOLOGIES, AND SYSTEMS THAT GENERATE ENERGY FROM RENEWABLE SOURCES SUCH AS HYDROPOWER AND BIOMASS.

The Andritz Group is committed to promoting environmental protection and conserving natural resources by using biomass as raw material. Andritz has a comprehensive product portfolio for biomass starting from wood handling equipment, dryers and pelleting machines, to fluid bed boilers and gasifiers for lime kilns.

The Andritz Group offers sustainable global top products in all of its Business Areas:

In the **Pulp and Paper Business Area**, Andritz's developments in improving fiber yield, minimizing water consumption, increasing energy efficiency, reducing chemical consumption in bleaching, and waste recycling, all contribute markedly to the industry's sustainability. For example, in the past 20 years, technologies developed by Andritz have reduced the amount of water required (the process of making pulp demands large volumes of water) to produce a ton of pulp by 60%. Andritz systems also help recover and reuse up to 99% of the chemicals used in making pulp.

Andritz is one of the leading suppliers of recovery boilers, which are employed in chemical pulping and basically generate power from the balance of wood not turned into pulp (black liquor). This helps pulp mills to become net energy producers and thus to become eligible for CO₂ credits. The Andritz HERB (High Energy Recovery Boiler) at SCA's Östrand mill in Sweden operates at the highest temperatures and pressures and enables the mill to generate 500 Gigawatt hours of electrical energy per year – enough to make the mill virtually energy self-sufficient. The energy is generated from biomass which emits no fossil fuel-based carbon dioxide into the atmo-

sphere. The technologies developed by Andritz help customers to further reduce emissions and maximize energy production.

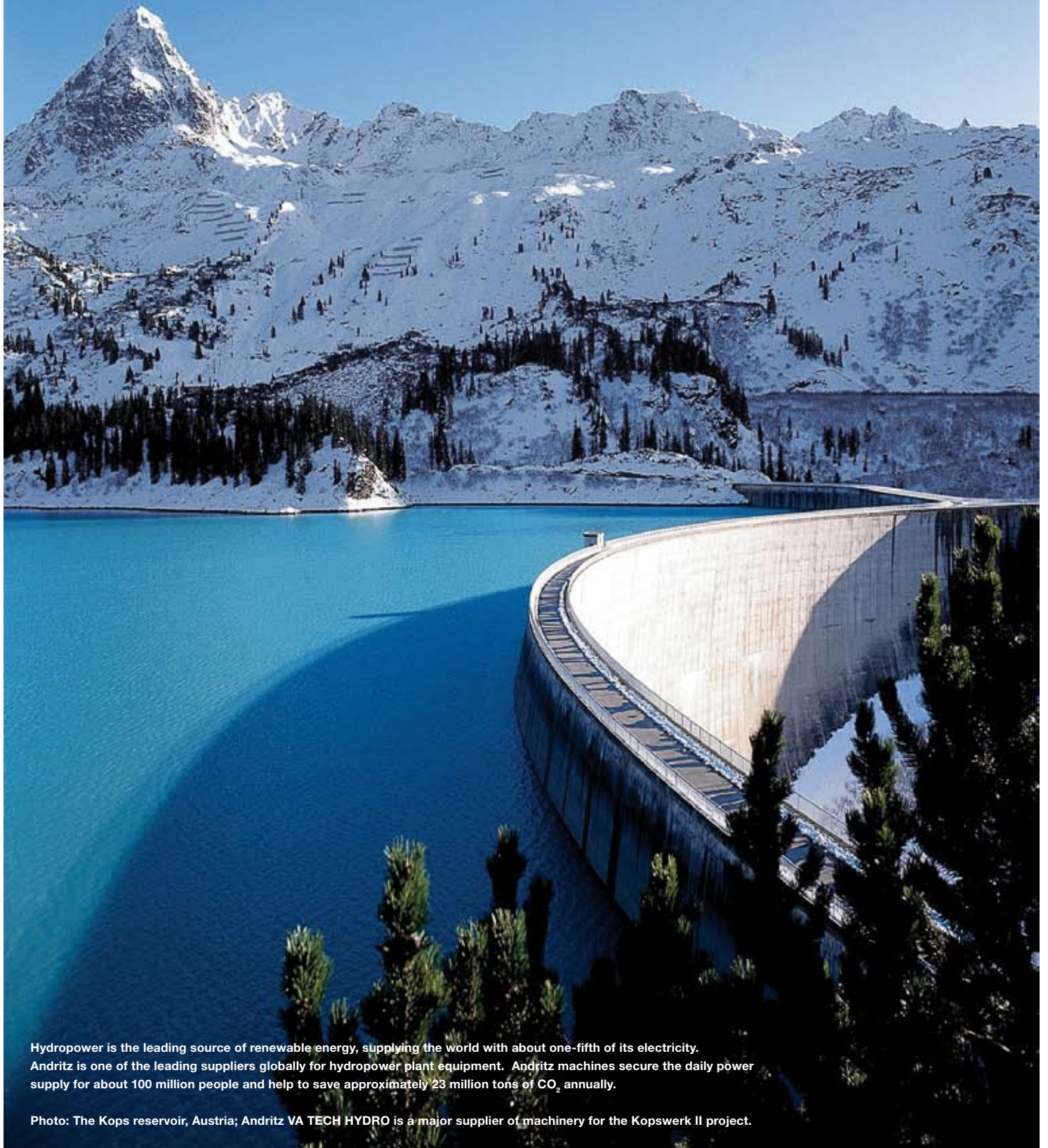
Liquid biofuel produced by 'second generation methods' using forest residues, grass, straw, and bagasse is a fast growing area. Andritz (with its associated company Carbona) has agreed to cooperate with forestry company UPM on the development of a technology for biomass gasification and synthesis gas cleanup. In the project, forest residue is gasified and the cleaned syngas is then fed into a Fischer-Tropsch reactor (a method developed in Germany in the 1920s) for conversion into biorefinery products. Besides the main product ('raw biodiesel'), a variety of other products such as lubricants and raw materials for the chemical and medical industries can be produced. Andritz's experience with biomass gasifiers dates back to the 1980s and relates to gasifiers for lime kiln fuel production. As part of the joint project with UPM, an extensive pilot plant testing program will be performed at the Gas Technology Institute (GTI) in Chicago, USA.

The **Hydro Power Business Area**, which has been providing hydropower plants with modern equipment and extensive services for more than 160 years, holds a top global position in this field. Hydropower is the leading source of renewable energy, supplying the world with about one-fifth of its electricity. It is clean, leaves behind no waste, and neither emits pollutants nor significant amounts of dangerous greenhouse gases. →



Andritz supplies complete process lines that convert liquid sewage sludge into granulate. With a calorific value of approximately 10 to 13 MJ/kg, this granulate can be used as a substitute for fossil fuels in heat and power generation systems, thus reducing CO₂ emissions.

Photo: Wastewater treatment plant of Psytalia, Athens, Greece, for which Andritz has supplied Europe's largest sludge drying plant.



Hydropower is the leading source of renewable energy, supplying the world with about one-fifth of its electricity. Andritz is one of the leading suppliers globally for hydropower plant equipment. Andritz machines secure the daily power supply for about 100 million people and help to save approximately 23 million tons of CO₂ annually.

Photo: The Kops reservoir, Austria; Andritz VA TECH HYDRO is a major supplier of machinery for the Kopswerk II project.

Through the use of renewable energy sources and highly efficient technologies, Andritz can already ensure future-oriented electricity generation. Andritz machines secure the daily power supply for about 100 million people and help to save approximately 23 million tons of CO₂ annually.

During the last few years, the market for hydro-power equipment has been driven by the strong replacement investments in industrialized countries since most of the hydropower infrastructure has surpassed its useful lifetime, as well as by the higher environmental awareness and energy needs in the fast growing emerging markets. According to renowned market researchers, this trend should continue during the next few years.

In the **Rolling Mills and Strip Processing Lines Business Area**, conserving raw materials and minimizing emissions is the driving force of one of the core process areas. Andritz acid recovery and regeneration systems completely recycle the acids used in the pickling process. The latest Andritz technology provides a zero-effluent process for mixed acids. More than 99% of the acids are recovered and can be reused. All Andritz process lines employ technologies to substantially diminish or completely eliminate the emission of substances into the environment. In particular, Andritz has developed technologies to substantially reduce the emissions of NO_x from waste gas streams in furnaces and pickling lines.

The **Environment and Process Business Area** supplies complete process lines which convert liquid sewage sludge into granulate. With a calorific value of approximately 10 to 13 MJ/kg, this granulate can be used as a substitute for fossil fuels in heat and power generation systems, thus reducing CO₂ emissions. With its own optimization of the combined drying/incineration process of using dried granulate as fuel and the energy generated in the incineration process as heat for the drying process, self-sustaining reduction of CO₂ is achieved. Directives and stringent environmental regulations are long-term major growth drivers in this Business Area, especially in the U.S. and Europe.

The **Feed and Biofuel Business Area** is the world market leader for plants and systems for the production of environmentally friendly biofuel pellets out of renewable materials, such as wood and agricultural by-products. In this way, highly valuable fuels are generated from materials which would otherwise have to be disposed of, and the effect on CO₂ emissions is neutral. Andritz also supplies pelleting equipment for industrial and household waste. The pellets produced offer an environmentally friendly alternative to fossil fuels in heating power plants.

SOCIAL SUSTAINABILITY

Globalization creates economic growth and new jobs – both in the developed world and, more importantly, in the developing regions. New jobs provide more people with a living and amenities, and also bring along training, thus ultimately creating entrepreneurship. Sustainable enterprises must aim to support free, open markets in stable societies and a fair distribution of the benefits.

Andritz has a strong commitment towards the sustainable development of social life in emerging markets. For example, in the fast growing emerging regions such as Brazil, China, and India, Andritz has created new jobs by establishing engineering, production, and service sites. The number of Andritz employees working in emerging markets has increased from 50 in the year 2000 to the current total of over 2,400, thus contributing to the social welfare and well-being in these countries. This was not achieved by shifting jobs from Europe to Asia; Andritz also increased the number of jobs in Europe during that time.

During the last ten years, Andritz delivered the main equipment for several new greenfield pulp mills in South America, India, and China. These mills provide work for more than 3,000 people – many of these newly-created jobs requiring advanced technical or business skills – and more than 15,000 in the forestry and other supplier industries. Andritz targets suppliers who are equally committed to economic, environmental, and social stewardship.

Andritz implements the following measures to achieve economic growth and ecological balance:

- Developing and offering technologies that prevent pollution in the first place.
- Developing processes that use the by-products of one process as raw materials for another, thus minimizing waste.
- Offering new services which allow more efficient utilization of labor and raw materials within a customer's plant.
- Collaborating with customers to better understand their requirements for sustainability and aligning Andritz's business processes with these requirements.
- Further developing sustainable and environmentally friendly products.
- Operating the business in a socially responsible manner.
- Giving preference to suppliers that share these commitments to sustainability.

Investing in people

Corporate success is strongly dependent upon the competence and commitment of employees. Andritz funds the professional development of its employees. Human Resources management, with issues such as staff development, leadership, and management responsibility, is given top priority. A successful management training program ('Management Challenge') has been an integral part of human resources development for several years.

In staff development, Andritz is increasingly focusing on the promotion of technical careers, particularly with regard to female technical graduates. An important initiative in this respect is the new company kindergarten at the Graz site, which offers flexible, reliable child care, and supports young mothers in improving their work/life balance. →