



Believe in sustainability



Think ahead.
Energy efficiency and comfort
are possible and necessary.
It's worth it.

Believe in sustainability

Ariston Group has placed energy efficiency at the heart of its sustainable growth strategy. Renewable and high efficiency products and solutions can make a decisive contribution to reaching the environmental goals in the building sector and reducing energy consumption, without sacrificing comfort.

Our stories

Committed to renewable and highly energy-efficient solutions

New-generation Sensys HD. This system laboratory played a major role in the development of the new modulating chronothermostat **Sensys HD**. The Sensys HD, in its NET connected version, can make a **+4% contribution to space heating efficiency** compared to a standard one. Professionals can easily set it up thanks to quick wizards. The new chronothermostat enhances the user experience: with a new design, made in Italy, and a full-color display, it allows users to be in **full control of their comfort and their energy consumption** thanks to detailed reports.



Portfolio extension of Hybrid solutions. To respond to market demands, Ariston Group further extended the portfolio of system solutions in hybrid systems: Heating Heat Pump combined with a Wall Hung Boiler, combinations of heat generator with solar thermal or Nuos Heat Pump Water Heaters.

Integrating hydrogen-based solutions. In 2020, Ariston Group innovated and presented an **ATAG wall hung boiler certified to work with up to 20% hydrogen**. In 2021, with the One+ range, the Group launched additional products certified for hydrogen blends. Convinced that hydrogen is one of the solutions to achieve decarbonization, the Group will continue investing in this field in the next years.

Relaunching AEROPTOP SG heat pumps. Ariston Group relaunched the Elco Premium line of electric outdoor heat pumps in Switzerland. Compared to the previous generation, the new SG heat pumps deliver **improved performance in terms of heat efficiency and noise**. The best results were the increased nominal heating capacity, around +28% in A2/W35 heat conditions, and the reduction in the maximum noise level (-2db(A)). Moreover, Elco products are true "design icons".



Velis DR is the electric storage water heater that **can store thermal energy in the form of hot water**. This makes it suitable for storing energy, helping to balance the national

electric grid and promoting the use of renewable energy. In 2020, Ariston Group launched a major project to remotely manage electric water heaters, and in 2021 a pilot project was launched in Italy with the aim of bringing this new technology to all EU countries.



Nuos Plus Wi-Fi is the Ariston heat pump water heater that converts heat from air to provide hot water at high efficiency. In addition to its improved energy efficiency, it boasts the **fastest heating time on the market**, and it is **ready for the R513A refrigerant**, which is among the most environmentally friendly on the market. The product offers new features, representing a further step towards a **more connected range** and allowing more versatile control with easy access via Ariston Net Apps: I-memory, time scheduling, and the new Bridge Net® BUS protocol for system integration through a single interface control.

Powerflex is the first electric storage water heater able to **automatically adapt its power according to the total energy consumed by household appliances**, in order to prevent blackouts and maximize energy savings and heating times. That is possible thanks to a new patented technology which allows Powerflex to communicate with a new Enel smart meter through a PLC communication protocol, without any additional wiring or physical connections. Powerflex will be available starting from 2022 in the Italian market.

Back up heaters for heat pumps are the technological solution provided by Thermowatt to **tackle the challenge of heating from clean energy sources**. Investments in technical expertise and manufacturing capacity have led to developing a range of components that are easy to integrate into the heat pump modules of Europe's Top Players. Among other distinctive features, back up heaters **deliver tailor-made heating performance, customizable tank shapes and hydraulic connections, and a full range of accessories**.

2021 | Key Facts and Figures

74%

of revenues from highly efficient and renewable solutions



Energy efficiency from plants to products

2.1 tons of CO₂ equivalent

avoided thanks to our high-efficiency technologies



Supporting local communities since 1963

Renewable and highly energy-efficient solutions:



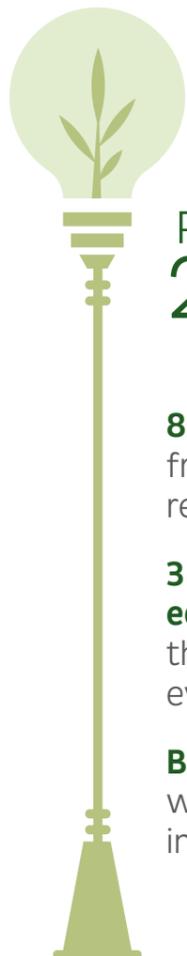
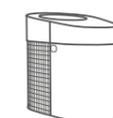
Sensys HD

Demand Response ready electric storage water heater



Portfolio extension of hybrid solutions

Aerotop SG



Road to 2022

80% of revenues from highly efficient and renewable solutions

3 million tons of CO₂ equivalent avoided thanks to our most evolved technologies

Bringing comfort where it is hard or even impossible to find

Ariston Group's answer: investments in research and development

The laboratories in Milan and Albacina (Marche region) saw significant investments in 2021 in terms of instruments, facilities, testing, and capacity increase, which allowed to double the R&D activities development and implementation. Moreover, in 2021 Ariston inaugurated a **new laboratory dedicated to system solutions, located in Osimo** (Marche region), to reinforce its ability to respond to the market's needs. This laboratory and the one already existing in Hechingen (Germany) allow to validate system solutions.



LombHe@t

The **LombHe@t** project is a promising answer to both the urge to decarbonize cities and users' demand for smart and efficient heating systems with low environmental impacts. The ultimate aim of the project is to **develop solutions, bringing together corporate R&D resources, universities, and the heating industry's SMEs, which contribute to reducing pollution, increasing air quality, and mitigating potential negative impacts on the environment.** LombHe@t's partners are: **A2A Calore e Servizio, Ariston Group, Enersem, and Fondazione Politecnico.** In the field of electric heat pumps, the Group focused on implementing a dynamic model to improve energy efficiency, developing heat pumps with low GWP refrigerators—and also reducing noise pollution. The results achieved so far have shown **improved seasonal performance: for every unit of electricity, 5 units of heat were transferred to the end user's heating**

system (SCOP of 5)², with an 80% reduction in GHG emissions generated by Ariston's products and a 75% reduction in noise pollution. Moreover, the Group filed 4 patent applications in 2021. LombHe@t also supported the development of **thermally driven heat pumps (TDHP)**, in order to further develop the absorption technology, that relies on natural refrigerant and is targeted for the retrofit applications. The technology is characterized by a **high seasonal performance** and a **high level of quietness**, to accommodate the most demanding application environment. Indeed, **such technology can contribute to the decarbonization path of the hard to abate existing building stock and to accelerate and exploit the potential of the green energy vectors.** This work, planned to be completed by 2022, already led to filing a patent application.

² Seasonal Coefficient Of Performance.

Thermal comfort in North America: the importance of teamwork

The Ariston Group placed a significant focus on **teamwork** and the **sharing of critical competencies** between central and local teams during 2021. This was especially true in North America, with the establishment of **branding projects, investments in local staffing and office spaces,** and the collaboration on **bringing new and innovative products to market.** Central and local teams came together to design and bring several new products to market, including a new heat pump water heater, a dual heat exchanger heating boiler, and a flexible capacity electric

water heater. Local and central teams have also embarked on projects to implement the SAP ERP in each region as a platform that supports growth and further integration into the greater Ariston Group. This teamwork is combined with focused efforts by local sales and marketing teams to **increase brand awareness** and continue to **capture market share** with the outstanding offering of heating and water heating products. In 2021, the Group established collaborative foundations and systems that will be the building blocks of its future success in North America.

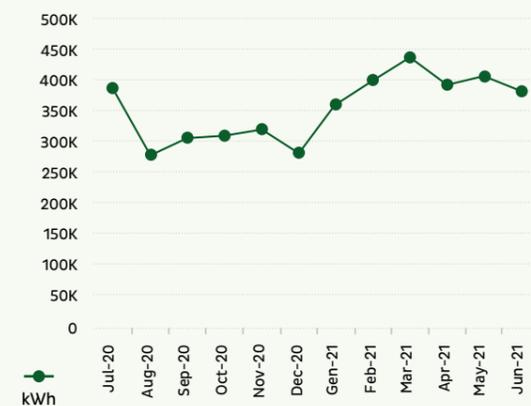
Sustainability begins at production sites

After a pivotal period, **the Group implemented an advanced energy management platform** at the Genga, Cerreto and Arcevia production sites. This is an **energy consumption monitoring system**, aimed at providing KPIs and reports on the real-time consumption levels of each energy carrier. Thanks to these data, it is possible to analyse consumption, generating reliable reports and finding corrective actions to increase energy efficiency as well as optimize production processes and energy supply contracts to slash costs. The Wuxi plant is also equipped with a consumption monitoring system, recording energy, gas and water levels for

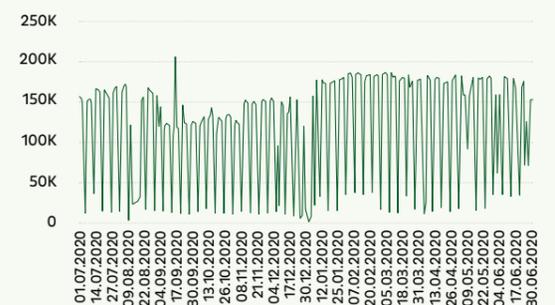
each area and machine. Such recordings represent a starting point for **efficiency-increasing actions and implementations.** An additional effort to **curb CO₂ emissions** comes from research activities the Group promoted in 2020, with the aim to study **alternatives to product painting on the surface of plastic materials**—a process that is intrinsically energy intensive and polluting. The pilot project launched in 2020 showed the potential to reduce emissions by an annual 1,800t of CO₂, a figure which is set to increase significantly when the initiative will be extended to a wider range of product categories.

The energy management platform is the innovative e-solution that the Group has chosen to monitor consumption. It can collect energy data, visualize them in real time, and provide specific analyses to enable smart energy management.

Monthly consumption of the measuring point of one of the Group's production sites



Daily consumption values of one of the Group's production sites



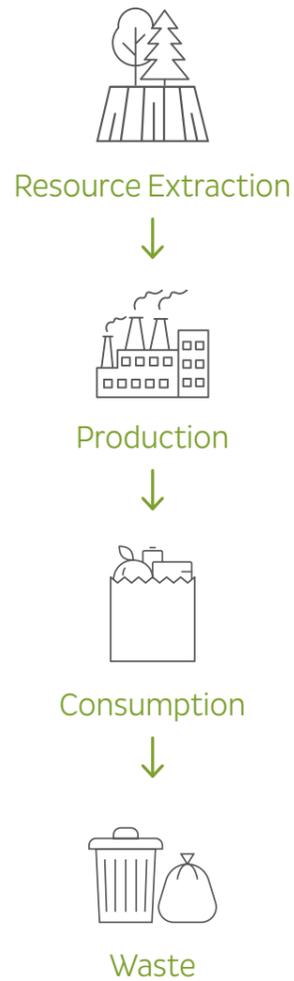
Moreover, **Thermowatt Professional**, which manufactures heating elements for professional and industrial applications at two plants - Follina (Italy) and Svilajnac (Serbia) - will move its HQ based in Follina to a new site, near the previous plant. The new site - 10,000 m² of fully

renovated manufacturing and office space - represents an important milestone in enhancing Thermowatt Professional's growth. Larger spaces will enable **more complex industrial productions** and the Group will benefit from **more efficient space management.**

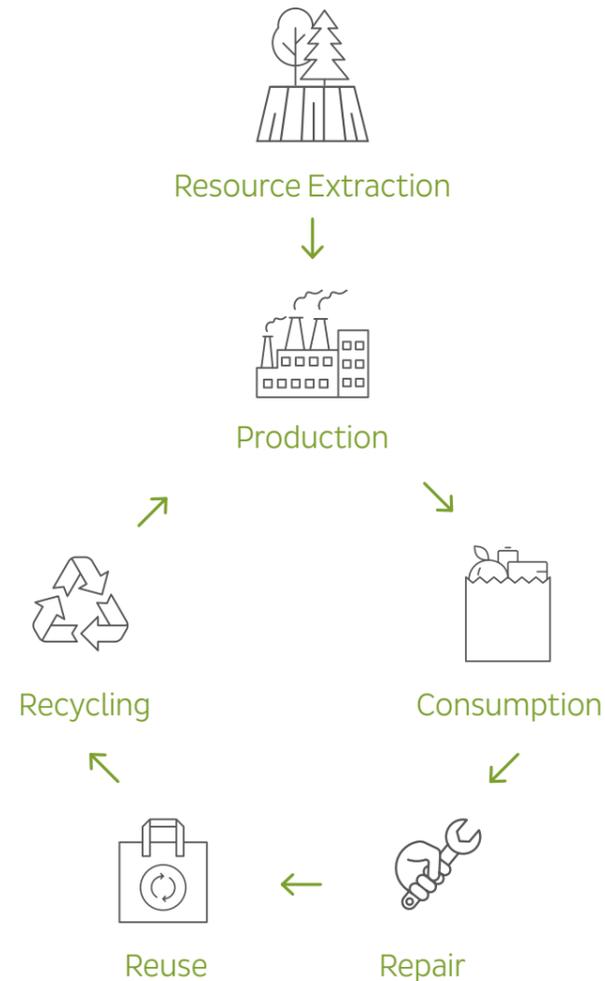
Closing the loop

It entails gradually decoupling economic activity from the consumption of finite resources, delivering a system in which **waste does not exist anymore and is “designed-out” of production processes**. It is based on three principles: design out waste and pollution, keep products and materials in use, and regenerate natural systems¹. Therefore, the concept of the circular economy lies at the center of topics associated with sustainable development.

Linear Economy



Circular Economy



Renewable energy at production sites

In 2020, the Group entered into a **100% green energy purchase agreement for the plant in Namur** (Belgium), covering the period from 2021 to 2023. This commitment to environmental sustainability comes on top of the upgrades made to the energy management systems used at production sites.



Sustainable transportation

Since October 2020, the Group has been **partnering with Geodis**, a leader in international transportation and logistics, in order to obtain a low-CO₂-emission fleet of vehicles and to sustainably transport the company's products around Italy.



Low-emission painting

The Italian site of Genga has experimented with using a **new enamel** that allows significantly reducing of the amount used for plastic components in water heaters, contributing to an **overall decrease in cobalt usage**. After generating the report on the final actual savings, the Group's ambition is to implement the project at other plants.



Fostering energy efficiency with innovative GAHP technologies

The i-GAP project aims to develop technologies for designing and producing **gas-absorption heating pumps (GAHP) for residential use**. These pumps have an innovative thermodynamic cycle and are designed for high-volume production. GAHPs are easily integrated into the building-plant system. The innovative GAHP modules are equipped with sensors and a user-friendly monitoring system for both professionals and end-users. The cycle and building-plant consumption performance in which it is integrated are modelled. Thus, it is possible to **quantify the energy, environmental and infrastructure benefits of adopting such heating technology** for all the stakeholders involved: end-users, energy policy makers, and utilities. The most significant impacts on S3 regional strategy topics concern the "eco-industry" area, with seasonal energy efficiency reaching 150% (EN12309:2015). Ariston Group is part of a European project, **REHeatEU**, that aims to promote GAHP technology across Europe. 24 organizations are involved, including universities, research centres, utilities, and infrastructure players interested in i-GAP research topics. The project was presented at the **European Hydrogen Forum** held by the European Commission.



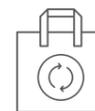
Hydrogen as a potential alternative to natural gas: heading towards H2-readiness

While launching wall hung boiler certified to work with up to 30% hydrogen, also **Elco Burners' high capacity hydrogen burners** were developed in Germany and installed in industrial plants, mostly out of Europe, where hydrogen is available coming from the industrial process. Far from being a novelty – the first hydrogen solution was sold in 1995 – such requests are deeply tailored and have become important opportunities to challenge and **innovate current technologies, heading towards H₂-readiness**.



Life Cycle Analysis on our products

In early 2021, Ariston Group decided to develop **Product Environmental Profiles** for several of its products (heating heat pumps, water heating heat pumps, condensing boilers, and hybrid solutions). The Environmental impact assessment for products and solutions, which follows the **LCA method** (according to ISO 14040 and 14044), is a step forward in the Group's commitment to Sustainability, and will also allow achieving the **PEPecopassport®**, the international reference program for environmental declarations of products from electric, electronic, and heating & cooling industries.



Closing the loop on steel

In 2021, Ariston Group partnered with **Acciaieria Arvedi**, one of Europe's leading steelmakers most committed to decarbonization with a **90% by-product recycling rate, above the EU's average**. To reduce direct GHG emissions generated during production, Arvedi is increasing its product circularity by classifying and recycling by-products. Ariston Group sells its own scrap steel by-products to Arvedi, among others, and then buys them back as refined steel. Ariston's Genga and Cerreto plants sold over 2,000 tons of by-products in 2021 and will buy sheet metal, partially produced with their own scrap steel.



Product and Packaging recycling

Product recycling is a priority for Ariston Group, which has implemented techniques to recycle electronic devices more efficiently, providing installers and distributors with a completely free recycling service. In **Spain**, several projects are currently aiming to **recover and recycle damaged products**. Instead of being disposed of, such products are now put on sale or disassembled to recycle specific components, while the rest of the product is refurbished and sold separately. In **Italy**, there are ongoing pallet recycling projects. Moreover, **pallets** shipped to China are recycled as well, instead of being disposed of.

¹ YouMatter, Circular Economy: Definition, Principles, Benefits And Barriers (2020)



Bringing comfort everywhere, including in crisis situations

The health crisis due to **Covid-19** highlighted the importance of “comfort”, in the sense of **both safety and security**. Ariston Group is deeply committed to delivering comfort to everyone, *when* and *where* needed: that is Ariston’s mission in all the communities where it operates.

In **Italy**, the project “**Oceano e Clima**” has been launched in partnership with the **NGO Worldrise**, with the goal of raising awareness among citizens about the **importance of ocean ecosystems in fighting climate change**. Murals were painted in many cities across the country and materials explaining the projects were released online through social campaigns, dedicated landing pages, and press releases.

In **Romania**, an even larger and more powerful new edition of their local Ariston’s “comfort challenge” took place across the country. Ariston supported the **Romanian Red Cross**, providing schools and hospitals with heating solutions (2,150 in 2021) and **bringing hot water to the poorest and most isolated areas of Romania**, as well as playing an important role in Alpine rescue operations (helping 43% of national hubs).

Several actions took place in **Mexico**, where **CaloRex** adopts an all-round approach to the concept of sustainability – thus ensuring low negative impacts on the environment and embracing positive impacts on the local communities where it operates. Ariston’s “acciones” go from **supporting communities affected by fires to**

fostering reforestation by planting trees and organizing **collective recycling** and **donations for children** in difficult conditions.

In **Spain**, **Fundación ONCE** and Ariston have signed an agreement to join forces and collaborate to improve the accessibility of their products and thus support the creation of **sustainable and accessible homes for everyone**. The main goal of this 2-year partnership is to develop a universal accessibility program in the field of architecture and thermal comfort.

In **Vietnam**, the corporate vision of bringing comfort to everyone became an opportunity to spread positive energy, especially during difficult lockdown times. Ariston Group donated products to the **Tempt Hospital** and contributed to Covid-19 donation funds. Social networks have been used to **organize cooking challenges to connect people across the country during lockdowns**. Moreover, the Work from Home policy has been extended to cover 100% of staff and Ariston tried to **get as many employees as possible vaccinated**, including family members, when possible.

Finally in **Singapore**, Ariston collaborates with **Glyph**, a charitable organization that accompanies **1,700 children in their development journey**. The joint project aims to **provide warm showers for children and young adults** from low-income households and new heating comfort to households with a challenging family environment.

The Aristide Merloni Foundation continues supporting the community

The Aristide Merloni Foundation was set up in 1963 at the behest of the eponymous founder with the goal of supporting the creation of new businesses in the area surrounding Fabriano, where the first production sites were located. Since 2016, the Foundation has been launching a series of projects aiming to enhance local communities through digital competencies and new technologies. The Foundation’s projects are brought together under the “**Save the Apps**” initiative. They include interactive digital maps to share information about critical conditions across the community, tele-medicine services, home-sharing apps, an e-learning platform for digital entrepreneurs, and local food e-commerce. In 2021, such innovative initiatives were pursued together with various stakeholders, from **the farmers involved in the e-commerce of local goods** to the **University of Ascoli Piceno** and **San Ginesio’s mayor**, who participated in the home sharing project.

At the same time, 2021 saw the creation of **HAMU**, an **Inter-regional innovation Hub involving the Abruzzo, Marche, and Umbria regions**. Overall, 10 research centres, business community members, universities, and foundations brought HAMU to life. The Hub, which has a non-profit business model, has three aims: contributing to the elaboration of **strategic projects for the regions involved, creating meeting occasions for people with various backgrounds**—from science to technology and business—and, finally, **proposing policy guidelines for the allocation of Next Generation EU, Green Deal, and other EU funds** in the three regions involved. HAMU’s current open projects are promoting the diffusion of a start-up and innovative entrepreneurial mindset, mapping financial tools to foster business within the HAMU’s scope and studying the regions’ needs in terms of strategic competencies for competitive businesses, starting from technical schools.

