



# PRIATHERM

One Step Ahead In Cooling



## Priatherm: a story of innovation and internationalization



Priatherm is a relatively young company (founded in 2010) that designs and manufactures heat sinks. The firm is a division of ADVANCED TECHNE SRL, which is part of a larger industrial group of companies called Aretè and Cocchi Technology. A&CT companies are active in various niche industrial fields, but are all characterized by high technological capabilities and a strong aptitude for innovation.

From the beginning, it was clear to both the owners and the company management, that in order to thrive among the multitude of European competitors, the new company would need to focus on innovation and internationalization. Priatherm focuses on a process requiring high know-how, called brazing. This technology permits the joining together of two aluminum parts or an aluminum part and a stainless steel piece, resulting in finished objects that perform extremely well both mechanically and thermally. The same process can be used to produce liquid cold plates, joining two shells — one smooth and one with machined channels.

Starting from the year following its creation, Priatherm has experienced continuous growth, first gaining and keeping many Italian customers, then expanding to foreign countries. "On the basis of satisfied customers that assure us a stable turnover, we are adding, year after year, a series of new customers, at the European level, who are choosing us for our technical solutions, our dynamism and our flexibility" General Manager Alessandro Bizzarri explained of the company success.

In these pages we will share with you our achievements over the past year and our latest innovations. We hope you find it fruitful!

*Your Priatherm Team*

## PATENT PENDING: INNOVATIVE "AG-LITE" HEAT SINKS

***Priatherm presents its innovative aluminum - graphite high cooling performance heat sinks, suitable for applications where weight is a critical point.***

**AG-LITE** is a patent pending solution by PRIATHERM to cool down power electronics in applications with severe restrictions in terms of weight. It consists of a base plate made by an aluminum-graphite composite material and of aluminum thin fins jointed, without any air gaps or glue, to the base itself. The special metal-to-metal contact between fins and base, obtained after extensive research and testing, combined with advanced and qualified metallurgic laboratories, facilitates a very good heat transfer and excellent mechanical properties.

**AG-LITE was developed following requests from different markets where lightness plays a critical role in increasing competitiveness.** Some examples include:

- a) Electrical vehicles
- b) Broadcasting devices installed on top of high antennas (for maintenance)
- c) Portable medical devices

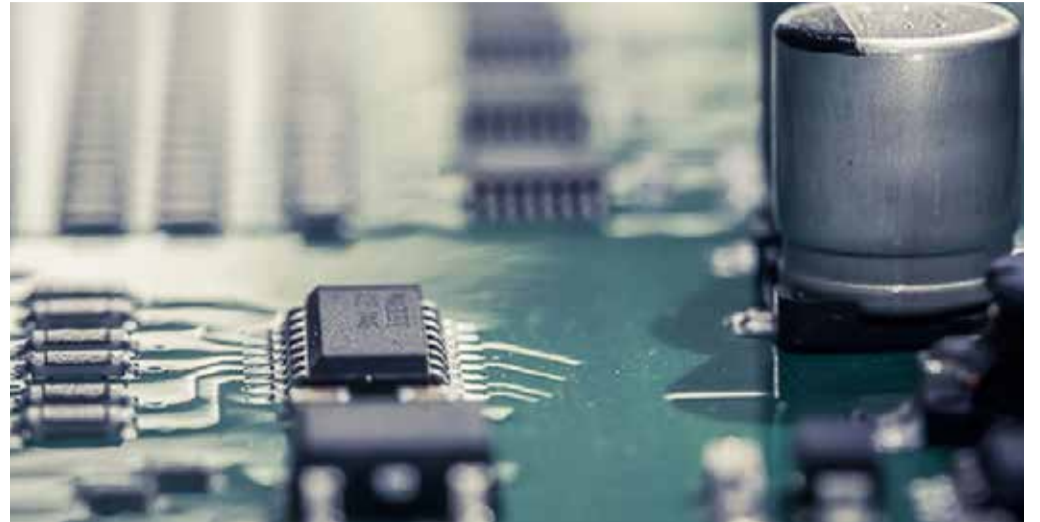
**AG-LITE** ensures excellent heat spreading as well, and is therefore suitable for RF applications and for any electrical layout with high power flux and consequential thermal hot spots. In fact most heavy copper heat sinks can be replaced by **AG-LITE**, saving **up to 60% in terms of weight** and without significantly affecting the thermal performance.

Unlike pure graphite heat sinks, which exhibit fragile behavior when they undergo machining, AG-LITE can be easily worked with very fine features (e.g. small-diameter threaded holes and milled pockets).



*Prima Electro is an Italian Contract Electronics Manufacturer committed to developing, producing, selling and delivering electronic systems solutions to leading industrial environments. One of the main players in the embedded product market — and possessing strong know-how in the industrial, transports and energy fields — Prima Electro offers dedicated power and control electronic solutions, translating clients' ideas into specifications.*

**Prima Electro has successfully entered the series production phase with its mid- to high-power inverters, ranging from 70 to 180 kVA, designed for sensorless control of induction and PM motors and targeting heavy duty applications in harsh environments.**



**Prima Electro** involved **Priatherm** starting in the very earliest stages of design when looking for a tailor-made thermal management solution.

Technical teams from **Prima Electro** and **Priatherm** collaborate closely to design an air-cooled heat sink that would meet application requirements in terms of compactness, efficiency and cost. Optimal results were achieved by brazing the fins of the heat sink directly onto the power modules aluminum support, without any air gaps or resin in between.

Today cooperation between the two companies is not limited to the air cooling field, but has also been extended to the advanced water cooling field. The relationship between **Prima Electro** and **Priatherm** continues to become more and more robust with a profitable growth for both companies.

*"A high-end technology and a strong focus on customers' needs are the key features that make Priatherm an ideal partner for all those clients needing high performance heat sink solutions"*

"Federico Ziliani – Vice President DOTS Business Unit – PRIMA ELECTRO"



## The first Priatherm distributor: ANATRONIC

*Anatronic S.A has been distributing Priatherm products in the Iberian Peninsula since the latter was founded in 2010. Anatronic is one of the leading distributors of electronic active, passive and electromechanical components, modules and subassemblies and displays in the Spanish and Portuguese*

[www.anatronic.com](http://www.anatronic.com)



Anatronic distributes electronic active, passive and electromechanical components, modules, subassemblies and displays in the Spanish and Portuguese electronics markets, and has partnered with Priatherm since the latter was founded in 2010. Its headquarters and main warehouse are located in Madrid, with other sale offices located in Bilbao, Barcelona, Lisbon (Portugal) and Santiago del Chile. Its core business is with technical consumer goods, but it is also active in many other sectors such as automotives, telecommunications and defense.

Anatronic's strength lies mainly its 13-person team composed of highly educated and skilled people. The sale managers are electronic, industrial and telecom engineers, most of whom have many years of experience with the company. "Our team provides excellent technical and logistical support to our customers in the development of their products. That's why we could react to the economic crisis of 2008, and since 2012 we have been increasing our business and getting close to the pre-crisis turnover," said Javier Sanz, Anatronic's most experienced sale manager.

Anatronic was Priatherm's first international partner. Priatherm is grateful to Anatronic for having believed in its potential from the beginning — and considering the potential of the Spanish market, we are very optimistic for our future together.

# BRAZING is COOL

*Brazing under controlled atmosphere (the Nocolok® method) is a robust and reliable process for joining metals for several industry sectors. Originating in the heat exchanger field, Brazing was "imported" by heat sink manufacturers in the early 2000s. Priatherm is combining a strong knowledge of this manufacturing process with thermal management experience and an attitude of innovation, in order to deliver original, effective solutions to the power electronic markets.*

With brazing it is possible to join different pieces of metal with the addition of a filler material, without melting the original parts. For aluminum (the preferred metal for cooling electronics thanks to its positive characteristics of weight, conductivity, machinability and cost) the filler is an alloy aluminum-silicium with these main aspects:

- a) Able to wet the surfaces of parts to be joined and to move for capillarity even in narrow spaces;
- b) Melting temperature slightly lower than melting points of parts to be joined;

Surface wettability is promoted by a flux that is used to avoid oxidation. The heating of the parts takes place in specific ovens, where the atmosphere is filled ("controlled") by an inert gas, such as Nitrogen. To achieve the desired results the following are key: correct preparation of components, use of proper jigs and tools, optimal choice of oven and control of its parameters.

It's also very important for the design engineers to consider brazing starting from the early stages of the project; a clever design for manufacturing can provide the end user with tremendous advantages in terms of reliability, performance and cost.

Priatherm is since years fully dedicated to improve, day after day, the brazing process to manufacture heat sinks, by:

- Training people;
- Investing in modern and specialized equipment and tools;
- Measuring and analyzing historical data and test results.

On top of that, R&D engineers develop innovative cooling solutions for both air and liquid cooling by incorporating creative mechanical designs – which decrease dimensions and weight, improve heat exchange, reduce pressure drop of coolant fluid – and combining different metals, such as stainless steel, which is very effective for Liquid Cold Plates.

(Alessandro Bizzarri, General Manager – ADVANCED TECHNE-PRIATHERM)



## Priatherm meets with local and international business partners

*The Priatherm team met with both its Italian and European business partners. The focus of the meeting was to inform the partners about product innovations and to explore together new applications, trends and business opportunities, exchanging ideas and experiences.*

On September 13th and 20th Priatherm was pleased to welcome its national and international business partners to its headquarters in Ferrara. The first date was dedicated to the national partners representing the most industrialized parts of Italy, the North and Central regions.

The second date was dedicated to the company's other European partners; Spain, Portugal, Austria, Switzerland, Poland, Belgium, France and various Scandinavian countries were represented.

After an introduction from Priatherm's General Manager describing the company organisation and business philosophy, the meeting transitioned into a deep discussion of the physics of heat transmission, followed by an overview of Priatherm's product range, including the brazing technology. The second half of the training was dedicated to analyzing the markets and products where heat sinks are used, in order to explore new opportunities as well as exchange comments.

The goal of both meetings was to give more details regarding our range of products, and particularly to introduce some innovative products such as the graphite / aluminium AGI-LITE heat sink described above. The meeting offered a great opportunity to share experiences and analyze market trends in different parts of Europe.

And since Priatherm is located in the homeland of stuffed pasta, ham and good red wine, the assembly offered a convivial occasion to get to know one another better. The group visited the beautiful town of Ferrara, whose city center is a UNESCO world heritage site thanks to its important contributions to the Italian Renaissance.



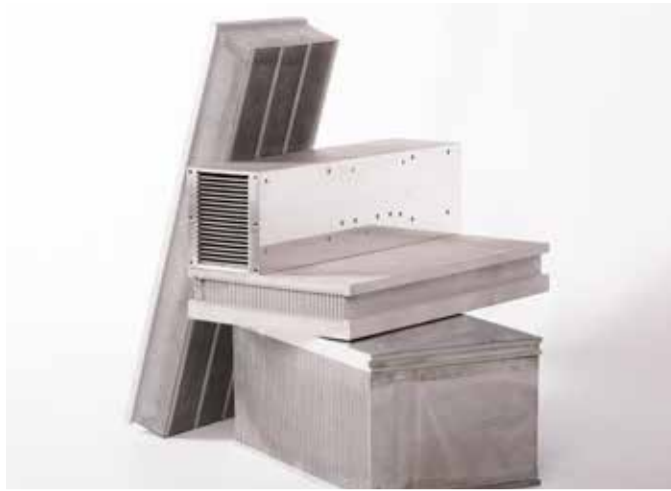
### PT Click

For a quick and safe assembly through dedicated clips.



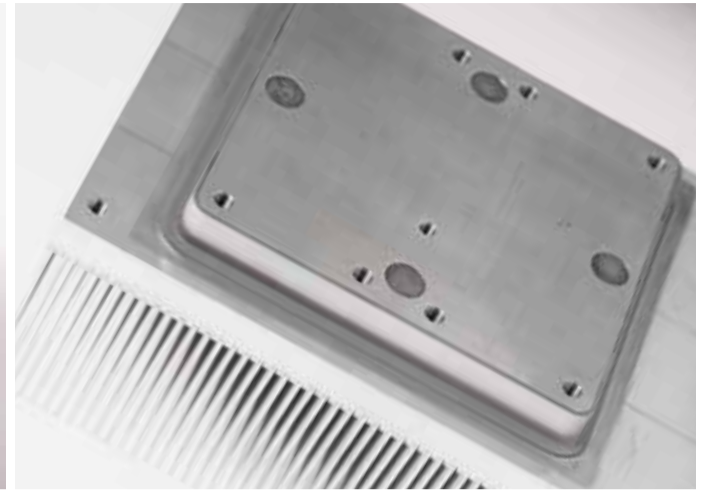
### PT High

Top class cooling performance heat sinks with brazed fins.



### Electrically Insulated HS

Heat sinks with electrically insulated blocks (up to 15kV).



## PRIATHERM AIR COOLING SOLUTIONS

### PT Board

A selection of the most popular board level heat sinks.



### PT Led

Heat sinks dedicated to the most common LED's.



### PT Sink

Heat sinks from standard and customized extruded aluminum profiles.



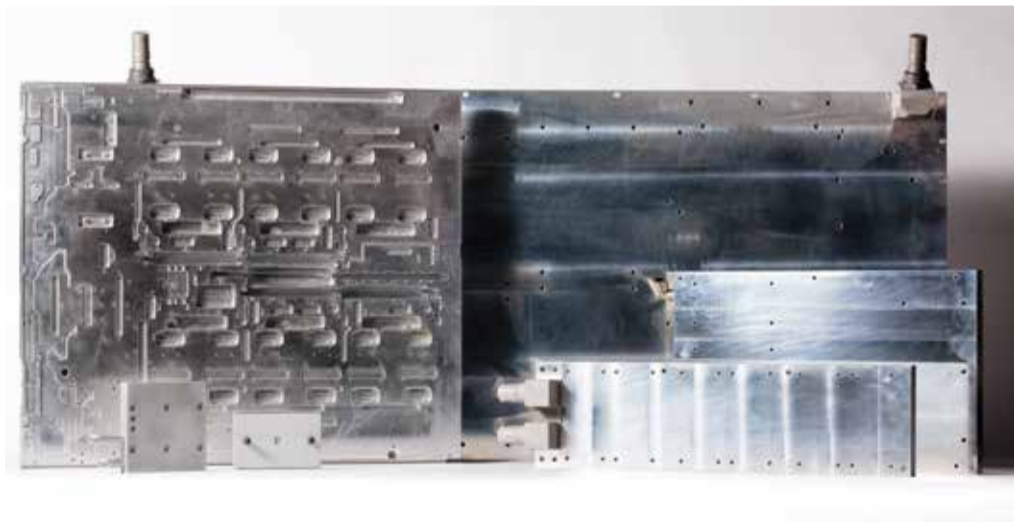
# PRIATHERM

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### PT Zed

High performance Liquid Cold Plates sealed through brazed covers.



### PT Flow

Vacuum Brazed LCP's for applications with de-ionized water.



## PRIATHERM LIQUID COOLING SOLUTIONS



Coolers with copper or stainless steel embedded pipes.

### PT Pipe



PT ZED and PT FLOW are also available with electrically insulated blocks (up to 15kV).

### Electrically Insulated LCP's