Solar Heat Europe

Integrating Solar Thermal into the EU Energy Labelling Framework

Proposals for Space and Water Heaters

Contents

1. Introduction

The current revision of the European Union's energy labelling and ecodesign regulations for space and water heaters presents a critical opportunity to ensure that the solar thermal technology is properly recognised for its significant contributions to energy efficiency and decarbonisation. This document outlines a proposal to achieve that goal by establishing a consistent and creative approach that serves the purpose of the regulation i.e. helping consumers identify the most efficient products and leading to energy savings, whilst supporting the solar thermal sector's growth.

Solar Thermal within the Current Regulatory Framework

Historically, the energy labelling and ecodesign regulations have primarily focused on products that consume primary energy (e.g., boilers, heat pumps). Solar thermal, which harnesses energy directly from the sun with no major external energy consumption, had therefore to be considered differently. While thermosiphons are considered, under the current regulations, as a standalone product under energy labelling and eco-design (as a Solar Water Heater, if using an electric heater - more details below), other Solar Thermal (ST) systems have not been considered nor labelled as a standalone product but rather as a "component of a package", when sold with another device (e.g. gas boiler). In such cases, ST were only an element of the "package label."

The Role of Packages (former "installer label")

Under the current regulation[1], most solar thermal collectors are included as part of a "package" that receives an energy label. A package combines a conventional heater (such as a boiler or heat pump) with a solar thermal device installed together. The resulting "package label" reflects the overall efficiency of the combined system and has been typically calculated by the installer, based on the specific characteristics of the collector and the main complementary heater. This mechanism has been an important way to demonstrate the added value of solar thermal and to make its contribution visible to consumers.

The critical issue introduced by the current revision is that the "package label" or "installer label" will no longer be legally permitted, according to the European Commission's legal services.

[1] Energy Labelling & Ecodesign Regulations for Space and Water Heaters

- Space Heaters – Energy Labelling: Commission Delegated Regulation (EU) 811/2013
- Space Heaters – Ecodesign: Commission Regulation (EU) 813/2013
- Water Heaters – Energy Labelling: Commission Delegated Regulation (EU) 812/2013
- Water Heaters – Ecodesign: Commission Regulation (EU) 814/2013

This change removes the main mechanism through which solar thermal systems have been able to obtain an energy label, creating a significant challenge for the sector.

This document proposes targeted changes to the Commission's draft to ensure that solar thermal collectors remain applicable within the scope of Energy Labelling. As currently written, the draft would effectively be harmful for solar collectors, distort the market, and phase solar thermal out of the Energy Labelling framework — an outcome that the sector firmly opposes.

Addressing the gap crated by the removal of the "installer label" is therefore the primary objective of Solar Heat Europe's contribution to the consultation. As such, our sector puts forward a constructive, tailored solution, and calls for a dedicated energy label for solar thermal collectors.

These adaptations will help maintain the visibility of solar thermal among clean and efficient space and water heating solutions, while increasing the options for consumers to make more informed, sustainable choices and achieve further energy savings.

Thermosiphon and Solar Thermal Hybrids

The current regulations also addressed specific solar thermal systems, notably thermosiphon systems. These systems, designated in the regulations as "solar water heaters," would be labelled only if they were using an electrical heater. Nevertheless, if the electric element was only a backup heater, then these systems would not be labelled and would be considered a 'solar-only system.'

There were important gaps in the current regulations regarding the calculation method used for 'solar water heaters,' which led to a significant underestimation of their performance and, consequently, to systematically poor energy labels. This issue has been addressed through the "Simplified Method for Solar Thermal," which had already been discussed and accepted by the Authorities in previous drafts of the new regulation, although it never had the opportunity to be implemented on the market. The method is retained in the current proposal, and we strongly welcome this inclusion.

That same approach also opened the door for the 'Solar Hybrid.' This was an option considered to combine solar thermal and gas boilers in one hybrid system, which was particularly relevant in a scenario where no stand-alone gas boilers would remain in the market.

The inclusion of the Simplified method for Solar Thermal was a positive step, but a more direct and visible labelling approach for solar thermal components themselves is now needed, especially given the proposed termination of the "installer label", i.e. the possibility

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for installers to prepare a package label reflecting the efficiency of the custom system they sold and/or installed to a consumer.

Another key proposal by Solar Heat Europe is therefore to restore the Solar Water Heater (SWH) category under these Energy Labelling regulations. Using the proposed calculations methods within the regulation, it would then be possible to re-introduce this specific product category, covering thermosiphon and ICS systems with an integrated electric heater.

Furthermore, considering that these products have a strong (and quasi only) southern-European market relevance, and a tailored label is essential to recognise their contribution and maintain their visibility in the revised framework.

2. Key Issues Relevant to the interlinked EC Consultation on Space and Water Heaters

The present document responds to the four parallel consultations launched by the European Commission on the revision of the Energy Labelling and Ecodesign Regulations for space heaters, combination heaters, water heaters and hot-water storage tanks. As these consultations are closely interlinked, we have included our inputs in this single document. Still, we provide below a summary of the main issues addressed in this document in relation to each of the consultations.

Cross-cutting Issues Relevant to All Four Consultations

- Need for a coherent regulatory framework that maintains visibility of solar thermal across both Energy Labelling and Ecodesign, **avoiding unintended exclusion of solar thermal due to the removal of the package label**.
- **Need for a dedicated Solar Thermal Collector Label** to replace the discontinued "package/installer label," ensuring solar thermal remains visible within the energy labelling framework.
- **Improved pictograms** for solar thermal, helping consumers to identify more clearly the technology with the EU-made products available in the market.
- The relevance of the **sector's role in quality assurance,** namely via the pan-European third-party certification: Solar Keymark.
- **Consider the specificities of hybrid PVT panels** (solar thermal + PV) and how to reflect the added value of their electric output.

Energy Labelling – Space and Combination Heaters (Review/Rescaling)

- **Need for a dedicated Solar Thermal Collector Label** to replace the discontinued "package/installer label," ensuring solar thermal remains visible within the space-heating framework.
- **Proposal for a Solar Thermal Label for Space Heating**, including:
  - Use of Gross Thermal Yield (GTY) as the intrinsic performance metric for solar thermal.
  - Climate-zone differentiation (low/medium/high irradiance).
  - Indication of collector area required to reach class A for a reference space-heating load.
- **Ensuring fair comparison with other heating technologies**, given that solar thermal does not consume primary energy.

- **Recognition of solar thermal in packages** (solar thermal + heat pump/boiler), highlighting its contribution to reducing primary energy demand.
- **Avoiding market distortion** resulting from the removal of the package label.

Ecodesign – Space and Combination Heaters (Review)

- Ensuring that Ecodesign requirements remain **compatible with the proposed Solar Thermal Label**.
- **Ensure the consistency of the Simplified Method for Solar Thermal** into the Ecodesign framework to ensure correct performance calculation.
- **Editorial changes**, which are proposed in annex, for correction and clarity.

Energy Labelling – Water Heaters and Tanks (Review/Rescaling)

- **Proposal for a Solar Thermal Label for Water Heating**, including:
    - Use of GTY as the performance metric.
    - Reference tapping profile (L).
    - Climate-zone differentiation.
    - Indication of collector area required to reach class A.
- **Reintroduction of Solar Water Heaters (SWH)** as a product category, covering thermosiphon and ICS systems with integrated electric heater.
- **Need for a dedicated Southern-climate label** for thermosiphons, clearly marked to avoid consumer confusion.
- **Improved pictograms for tapping profiles**, ensuring clarity and consistency.
- **Ensuring that solar thermal remains eligible for national support schemes**, which often require an energy label.
- **Consider the specificities of hybrid PVT panels** (solar thermal + PV) and how to reflect the added value of their electric output.

Ecodesign – Water Heaters and Tanks (Review)

- **Correct application of the Simplified Method** to ensure accurate performance assessment of solar water heaters and thermosiphons.
- Ensuring that Ecodesign rules remain **compatible with the proposed Solar Thermal Label and Solar Water Heater label**.

3. Why is it critical to include Solar Thermal in the context of these regulations

Solar thermal technologies hold a pivotal position in Europe's transition to a sustainable and secure energy system. A dedicated and visible labelling option within the Space and Water Heater regulations is essential to recognise their unique attributes and to reflect their contribution to the decarbonisation of heating and cooling.

This includes the full range of solar thermal solutions that must remain within scope: solar thermal collectors, solar water heaters (including thermosiphon and ICS[2] systems with integrated or backup electric heaters), PVT collectors combining thermal and electrical output, and thermal storage.

Ensuring that all these sub-categories are properly covered is critical to maintain visibility, comparability, and to ensure fair treatment and fair competition among technologies under the revised Energy Labelling and Ecodesign framework.

⇨ **Solar thermal: A Powerful Enabler for Decarbonisation**

The primary function of solar thermal is to convert solar radiation directly into useful heat, which can then be used for space heating and hot water. This process is inherently carbon-free at the point of use. By -replacing fossil fuel-based heating sources (directly or indirectly), solar thermal systems offer a direct and highly effective pathway to decarbonise the heating and cooling sector, which is a major contributor to the EU's overall energy consumption and greenhouse gas emissions. **Recognising the contribution of solar thermal systems through an appropriate label is crucial for guiding consumer choices towards cleaner heating solutions and achieving the EU's climate goals.**

⇨ **Solar thermal: An EU-Made Technology contributing to Energy Security and creating Local Jobs**

Solar thermal is a renewable, mature and reliable technology primarily developed and manufactured within the European Union. This has been recognised by the EC, which have included solar thermal has one of the net-zero strategic technologies[3].

By leveraging this domestic resource, the EU can reduce its dependence on imported fossil fuels, thereby strengthening its energy security and geopolitical resilience. The entire value

[2] ICS (Integrated Collector Storage) systems are compact solar water heaters in which the solar collector and the hot-water storage tank are combined into a single integrated unit. These systems store heated water directly within the collector body, making them simple, robust and particularly suitable for warm climates with high solar irradiance.

[3] Article 4 of the Net-Zero Industry Act lists solar thermal technologies among the net-zero technologies in scope."

chain, from manufacturing to installation and maintenance, supports a large network of local businesses and creates sustainable, skilled jobs across the continent. This not only boosts the European economy but also ensures that the benefits of the energy transition are distributed locally.

⇨ Solar thermal: Synergies with Other Technologies and predictable energy costs

Solar thermal is a versatile technology that can operate in combination with any other heating technologies. It integrates seamlessly with heat pumps, condensing boilers or biomass boilers to form highly efficient hybrid systems. In these configurations, solar thermal acts most of the times as a primary heat source, significantly reducing the operational load on the conventional heater and maximizing the efficiency of the entire system. This symbiotic relationship reduces both energy consumption and operational costs, while contributing to an increase in the lifetime of the main or complementary heaters. As such, the use of solar thermal systems enhances the performance of other technologies in the market.

Solar thermal systems are compatible with all heating technologies, allowing them to continue operating — and delivering CO_2 savings — even when the main heating system is replaced. This makes solar thermal a "no-regret" solution that can be deployed immediately and universally. In addition, solar thermal reduces pressure on electricity grids, which will face growing challenges from rising electrification and increasingly variable demand and supply. Because solar heat is stored on site and typically remains available for 2 to 3 days in an average building, consumers can avoid high energy costs during peak-load periods thanks to the contribution of solar thermal systems.

⇨ Solar thermal: Inherent Efficiency and Scalability for clean heating solutions

A fundamental advantage of solar thermal technology is its consistently high and long-lasting efficiency, as solar thermal systems do not experience significant performance degradation over time. In addition, their output can be directly and predictably increased simply by enlarging the collector area: a larger array always delivers a higher share of solar energy and improves the overall seasonal heating efficiency. This inherent scalability and robustness make solar thermal a reliable, future-proof investment for sustained energy savings and meaningful carbon reduction.

4. A dedicated Labelling approach for Solar Thermal Collectors: why and how?

4.1. Why labelling Solar Thermal collectors is key

For the solar thermal sector, ensuring that the inclusion of all solar thermal collectors within the scope of the space and water heating regulations is of paramount importance. The energy labelling framework provides clearly recognised communication and marketing attributes for the products falling in its scope; it usually is a condition sine qua non to access to financial support, and it aligns with the specific business models of manufacturers. The following points outline why the Energy Labelling regulations are critical to the sector's long-term success and growth.

Awareness and Visibility

An official energy label offers a standardised and easily understandable way for consumers and public authorities to recognise the energy performance and environmental benefits of solar thermal products. This visibility is essential to overcome market barriers and to support informed choices. **For consumers,** the label simplifies a complex technical decision, strengthening confidence and trust. **For public authorities and policymakers**, it provides a reliable tool to identify and promote high-efficiency solutions, helping to direct support schemes toward the most effective technologies. <u>**As the criteria for space and water heaters are being revised, excluding solar thermal in practical terms from the scope of this regulation would be unacceptable for the sector.**</u>

Access to Funding and Financial Support

Energy labels are often a prerequisite to access national and European funding programmes, grants, subsidies, and other financial incentives promoting energy efficiency and renewable energy. For solar thermal customers, a product-specific label will ensure eligibility for these crucial support mechanisms. <u>**Without a clear and recognised label, customers risk being excluded from financial aid, creating a severe competitive distortion vis-à-vis other heating technologies. This would significantly hinder the uptake of solar thermal solutions and jeopardise the sector's growth potential.**</u>

Note: An alternative that could be mentioned would be to rely on dedicated, stand-alone support schemes for solar thermal, independent of energy labelling. However, national experience shows that developing such dedicated schemes is administratively complex and risks creating long delays and financing gaps for the sector. Al in all, it is considered as far less effective than integrating solar thermal into the established energy-labelling framework.

Market Dynamics and Placing on the Market

The solar thermal sector operates with a distinct value chain compared to most traditional HVAC providers. Manufacturers focus primarily on producing solar thermal collectors, which are supplied in large volumes to distributors. Installers then purchase these collectors and integrate them on-site into complete heating systems. The termination of the package/installer label creates a major gap in this process, removing the mechanism that previously reflected the performance of the final system. **A new approach that enables the labelling of solar thermal components—such as collectors—directly at the manufacturing stage would restore clarity and value throughout the supply chain, from producers to end-users**. This would more accurately reflect how solar thermal products are placed on the market and purchased.

Solar Thermal Manufacturing: A specificity and an Expertise of its Own

Many manufacturers in the solar thermal industry are specialists in producing high-quality solar collectors and related components. They do not necessarily produce or sell complementary heating products (e.g., boilers, heat pumps) required for a complete hybrid system. Encouraging these specialized solar thermal manufacturers to create and label pre-packaged "combined products" would be a substantial barrier to market entry and would not align with their core business models. **However, crafting a specific collector-based labelling approach will empower these specialists to compete based on the merit and performance of their primary product i.e. the ST collector, fostering innovation and a healthy, competitive market.**

Feasibility and Practical Implementation

The proposed collector label is fully feasible to implement and aligns with existing industry practices. It relies on Solar Keymark certification data and standardised GTY values, meaning no new testing procedures or additional administrative burden are required for manufacturers.

Market-surveillance authorities can verify compliance using the same datasets and methodologies already in place for solar thermal products. This ensures that the introduction of a collector-based label is both technically straightforward and operationally consistent with the current regulatory framework, enabling a smooth and low-cost transition for all actors involved.

4.2. How to calculate Solar Thermal Performance ?

This section outlines a new and innovative approach to calculate and label the performance of solar thermal systems. This proposal reflects the specific characteristics of solar thermal technologies while remaining fully aligned with the core principles of the European energy labelling and Ecodesign framework. **Its objective is to provide a fair and accurate representation of solar thermal's contribution to energy efficiency, supporting consumers, installers and manufacturers alike.** This targeted approach constitutes Solar Heat Europe's main contribution to the ongoing Energy Labelling and Ecodesign revision.

A New Approach for a Solar Thermal Collector Label

Solar thermal systems operate fundamentally differently from conventional heating products. **They do not consume primary energy from fossil fuels nor electricity**; instead, they capture and convert solar radiation into useful heat. This crucial distinction makes it difficult to apply the standard primary energy-based calculation methods usually used for energy Labelling calculation in most energy-related products.

To overcome this, we propose a new calculation model that enables both:

- **1) a fair overview of the individual performance of the solar thermal collector; and**
- **2) a clear demonstration of the efficiency gains provided by this solar thermal collector in an overall heating system.**

Regarding point 1), the label would reflect the **Gross Thermal Yield (GTY) of a given collector under standardised conditions** and compare this performance against the average values of products (solar thermal collectors) currently available on the market. This ensures that the label provides a transparent, meaningful indication of the collector's efficiency, allowing consumers and installers to easily identify high-performing products and supporting fair competition within the sector.

As for point 2) above, our proposed approach is built on the EC proposal for showing in the package label the increase in efficiency provided by the added components in relation to the initial space and/or water heater, which we strongly support. By using a theoretical, 100% efficient backup heater as a reference, we can therefore quantify the improvement achieved **thanks to the inclusion of the solar thermal system**. The label would not show the efficiency of a system that consumes primary energy, but rather **the efficiency gain** that solar thermal provides to a reference system.

Since covering the heat demand with free solar heat is independent from the complementary heater to in which it is installed, the consumer can rely primarily on the use solar energy, that is then complemented with the conventional heater (heat pump, gas boiler or other).
Therefore, it is intended to allow consumers to have a better perception of the efficiency improvements delivered thanks to a solar thermal device when coupled with an existing or a new heating installation.

This new label will serve several vital purposes:

- **Empowering Consumers:** It will enable consumers to easily compare the performance of different solar thermal collectors, empowering them to make informed choices individually or with the support of an installer.
- **Competing fairly and consistently as relevant Market actors :** It seeks to combine the best features of the current regulations with the specific needs of the solar thermal sector. The result is a balanced, consistent, and creative approach that provides a robust framework for manufacturers to compete – within the solar thermal sector and with other technologies.
- **Promoting Decarbonisation:** By clearly demonstrating the energy-saving potential of solar thermal, the label will position the technology as a key option to decarbonise the heating and cooling sector and help achieve the EU's climate targets.

This proposal represents a win-win-win solution: it serves the regulatory purpose of transparency, helps consumers make smarter decisions, and it gives the solar thermal sector a viable path to contribute to the energy transition.

Use of Reference Operating Modes: A Standard Feature of EU Energy Labelling

The use of a reference operating mode for testing and labelling is a well-established practice within the EU's energy labelling framework. This principle ensures that consumers can compare products on a level playing field, even if their final use case may differ from the actual test conditions. This approach provides therefore a positive precedent for our proposal regarding solar thermal.

- **Gas Boilers:** Under current regulations, gas water heaters must declare the load profile for which their label is issued (e.g., S, M, L, XL). While a product may be installed to serve a different load profile in a real-world application, the declared load profile serves as a consistent reference point. This allows manufacturers to provide clear information to consumers about the conditions under which the label's values were determined, facilitating a direct comparison between different models.

- **Tumble Dryers:** Tumble dryers are another clear example. They are tested and labelled based on a single, specific program, such as the "standard cotton program". Although a consumer may choose to use other, potentially less efficient, programmes in their day-to-day use, the label remains a valuable tool. It allows consumers to compare the efficiency of different tumble dryers under the same, standardised conditions, enabling them to make a more informed purchase decision.

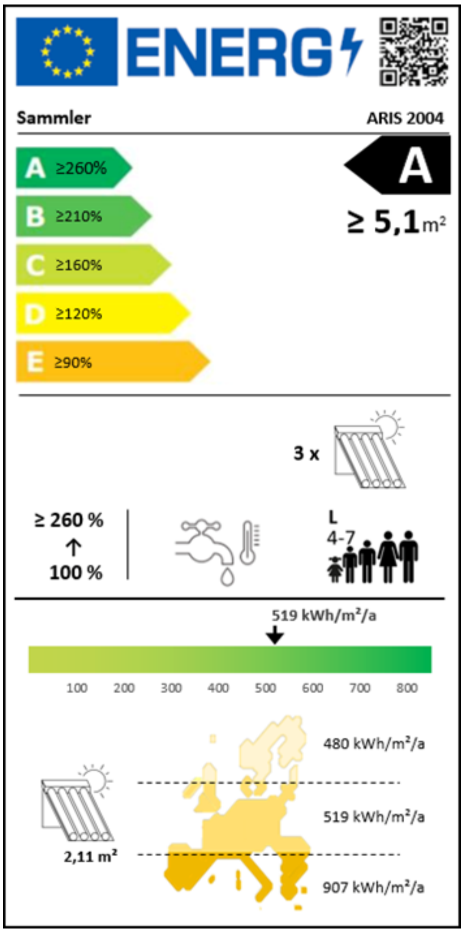
- **Washing Machines:** Similar to tumble dryers, washing machines are labelled based on a specific, energy-efficient program (e.g., the "Eco 40-60" program). Consumers are free to use a wide variety of other programmes (e.g., a quick wash or an intensive cycle), which will have different energy consumption figures. The label, however, provides a standardised and legally mandated reference point for comparison.

- **Dishwashers:** Dishwashers also follow this model, with a label based on a specific "Eco" programme. This program is a standardised reference point that allows for easy comparison between different models, regardless of which other cycles a consumer might choose to use in practice.

These examples demonstrate that the regulatory framework already accepts the use of a reference case (including test conditions or assumed end-use) for labelling purposes. **This principle can and should therefore be applied to a solar thermal label, where the label is defined using a reference performance of the (complementary) heater to facilitate the calculation and comparison between products.**

4.3. General Principles of the proposed Solar Thermal Label

Building on the considerations outlined in the previous sections—namely the need for a collector-based approach, a transparent performance indicator, and a format that remains simple while reflecting climate differences—we propose the following template for a Solar Thermal Label.



This new design focuses on the intrinsic performance of the collector, uses annual gross thermal yield (GTY) as the central comparative metric, and incorporates climate-zone information in a clear and intuitive way. It offers a practical, scalable and consumer-friendly solution that restores visibility for solar thermal within the energy labelling framework while remaining fully aligned with the specific characteristics of the technology.

The proposed Solar Thermal Label is designed to give consumers and installers a clear, comparable and intuitive way to understand the performance of a solar thermal collector.

The proposed label focuses on the intrinsic performance of the collector itself, using a single, robust and widely understood metric: the specific annual gross thermal yield (GTY), expressed in kWh/m² per year.

It should be pointed out that GTY is not a new metric: It is already used in Solar Keymark certification and widely applied across the sector, making it a familiar, standardised and fully validated indicator of collector performance.

An additional explanation of the different elements include in the label is provided in Annex III. Overview of elements included in the proposed solar thermal label.

A performance scale based on GTY

Gross thermal yield (GTY) represents the amount of useful heat a collector can deliver per square metre under standardised reference conditions. It is the most direct indicator of collector quality and allows meaningful comparison between different technologies and designs. In this context, GTY functions as the solar-thermal equivalent of a “power output” rating in other heating technologies. The label displays the GTY value prominently and places it on a performance scale, enabling consumers to immediately see where a collector stands relative to others on the market.

The scale is designed to:

- cover the full range of collectors available in Europe;
- reflect that the best collectors reach around 800 kWh/m²·a [4];
- leave headroom for improvement in collector efficiency;
- avoid misleading colour cues while remaining easy to interpret.

A reference-based approach using the average climate zone

To ensure comparability, the GTY displayed on the label refers to a standardised average European climate zone. This mirrors the logic used in other product labels, where a single reference operating mode is used for comparison even if real-world conditions vary.

However, because climate differences are particularly relevant for solar thermal, the label also includes a small climate map showing the collector’s GTY in the three reference zones (low, medium, high irradiance). This avoids the need for separate labels per climate zone while still giving installers and consumers the information they need.

Showing what is needed to reach an A class

Solar thermal is a scalable technology: the same collector can be installed in different quantities depending on the building’s needs. To reflect this, the label includes a simple and transparent indication of the collector area required to reach the A class for the reference load profile.

This helps consumers understand not only how good the collector is, but also what it takes to achieve the highest efficiency class in practice. It also avoids penalising high-quality collectors simply because they are installed in smaller systems.

[4] The best collector certified with Solar Keymark reaches approximately 800 kWh/m²·a, though it is a high-performance collectors used in large installations, not for the building segment.

Climate-zone differentiation without multiple labels

Instead of issuing separate labels for each climate zone, the new proposal includes:

- one main label based on the average climate
- a compact table or map showing the GTY for each climate zone

This keeps the label simple while still providing the climate-specific information that is essential for solar thermal.

A performance-based collector label

Because the label is based solely on the collector's performance, it is:

- independent of the backup heater;
- compatible with all system configurations (boilers, heat pumps);
- suitable for both water heating and space heating[5];
- a direct replacement for the installer-made package label, which will no longer exist.

This approach gives manufacturers a fair and consistent way to present their products, while giving consumers and installers a clear and trustworthy basis for comparison.

Beyond the label: The lookup table for the product information sheet

In line with the approach already introduced in the European Commission's draft regulation—where lookup tables for solar devices are explicitly foreseen—a dedicated lookup table shall always accompany the Solar Thermal Label, to be included in the Product Information Sheet.

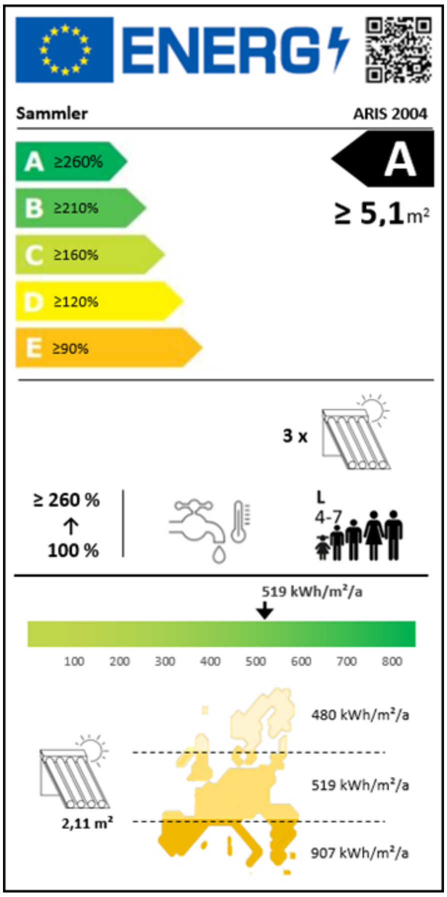
We propose that the table includes, besides the detailed performance values for the three reference climate zones, the annual gross thermal yield (GTY). Furthermore, the first line under each climate zone should be the reference solar collector area required to reach the reference efficiency class. See Annex II for more details.

The combination of the label and the lookup table ensure full transparency, preserves the climate-specific information essential for solar thermal, and allows consumers and installers to size systems correctly while maintaining a clean and simple label design.

[5] The example presented is a label for water heating. A similar concept is applicable for space heating.

4.4. Solar Thermal Label for Water Heating

As previously mentioned, the current draft of the regulations does not adequately reflect the fact that solar thermal systems can cover a substantial share—typically more than half—of domestic hot water demand, independently of the heat generator used.



To address this gap, we propose a dedicated solar thermal label for water heating that clearly illustrates the contribution of solar energy for a representative reference tapping profile (L).

The label is based on a neutral backup heater efficiency of 100% and assumes the use of a storage tank meeting the minimum heat-loss requirements (class D).

Under these standardised conditions, the required collector area is calculated according to the individual performance of the collector—expressed through its gross thermal yield—to reach class A in an average European climate[6].

To ensure full transparency for consumers and installers, the label also incorporates a performance scale showing how efficiently the collector converts solar energy into useful heat, as well as the specific yields achieved in the three reference climate zones. This allows users to understand both the intrinsic quality of the collector and its expected performance across Europe.

This approach demonstrates that different collector types can achieve class A, while making clear that the required collector area varies according to efficiency. We believe that introducing such a label would significantly improve consumer understanding, support fair comparison between products, and highlight the strong contribution of solar thermal to clean and affordable hot water production.

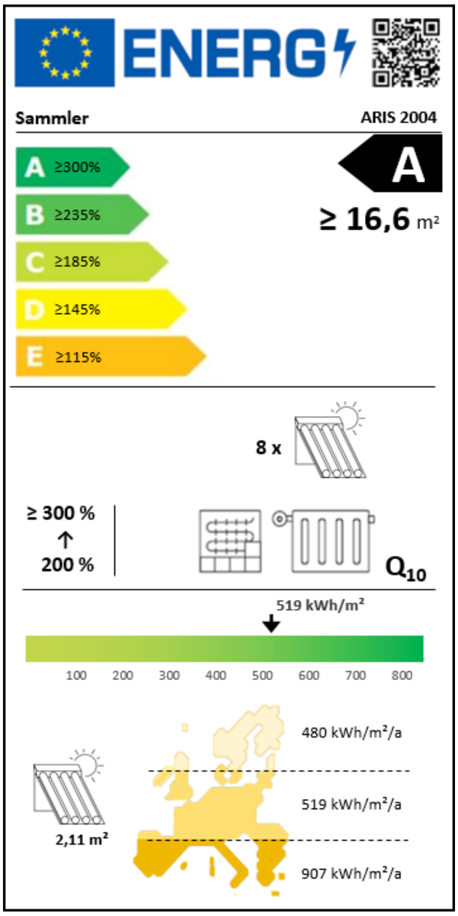
[6] It requires a solar device efficiency for water heating $\eta_{sol,wh}$= 260 %.

4.5. Solar Thermal Label for Space Heating

Solar thermal systems can cover a substantial share of space-heating demand—typically between 15% and 50%[7] in optimised buildings, regardless of the type of backup heater. This important contribution is not sufficiently reflected in the current draft regulation.

To address this gap, a dedicated **Solar Thermal Label for Space Heating** should be introduced, following the same principles as the proposed label for water heating.

Such a label would show the efficiency improvement delivered by a representative solar thermal configuration under standardised reference conditions.



Proposed reference conditions

These reference conditions consist of an average heat pump with a space heating efficiency of 200 % and label class C which is deemed to be the typical minimum standard for new heating systems in the future. It is representing a 50 % share of renewable energy (calculation according to Annex I of the draft regulation).

The label fulfils an informative role of indicating to consumers how to reach energy label class A for space heating in an average European climate. It considers that a solar thermal system must cover a heat demand of 10,000 kWh (Q10), using a standard tank with minimum label class D and no additional control improvements.

The required collector area is determined solely by the collector's individual performance—measured by its gross thermal yield (GTY). Under these conditions, the proposed solar system must achieve a solar device efficiency for space heating solar device efficiency for space heating ($\eta_{sol,s}$) of 150%.

Introducing this label would make the contribution of solar thermal to space heating visible, comparable, and easy for consumers to understand—supporting informed choices and ensuring fair recognition of solar thermal within the revised framework.

[7] 15% (≙ η_{sol}= 118 %) and 50% (≙ η_{sol}= 200 %)

As outlined above, the removal of the installer package label creates a clear need for a new labelling approach covering solar thermal collectors. While the first priority is to ensure proper labelling for water heating, it is equally essential that space-heating applications are included.

Without such a label, manufacturers offering integrated solutions—such as systems combining solar thermal with other heating technologies—would lose the ability to demonstrate the efficiency gains delivered by these components. This would make the added value of solar thermal, advanced controllers, and other efficiency-enhancing elements invisible to consumers, placing these technologies at a competitive disadvantage.

In brief, regarding the Solar thermal Label, Solar Heat Europe defends:

- The introduction of a dedicated Solar Thermal Label based on the annual gross thermal yield (GTY), providing a clear and comparable performance indicator for all collectors.
- The indication of the performance of the collectors, in a comparable way, in three different climate regions.
- The inclusion of collector area required to reach class A, ensuring transparency for consumers and reflecting the scalable nature of solar thermal systems.
- The requirement that the label be always accompanied by a lookup table, as foreseen in the EC draft regulation, to provide detailed performance values for all three climate zones.
- A collector-based approach that is independent of the backup heater, ensuring fair comparison across technologies and replacing the discontinued installer package label.

5. Reintroducing Solar Water Heaters as a product

Thermosiphon systems and Integrated Collector Storage (ICS) units are among the most widespread solar thermal solutions in Europe and globally. They are particularly well-suited for domestic hot water production in southern climates, where high solar availability and moderate demand patterns make them an exceptionally cost-effective and reliable option. Their simplicity, low investment cost, and strong energy-saving potential have made them a cornerstone of solar water heating markets for decades.

5.1. 'Solar Water Heater' product category

A defining feature of many of these thermosiphon and ICS systems is the presence of a built-in electric backup heater. In typical operation, this heater is used only occasionally—mainly in periods of unusually low solar radiation or when the stored solar heat has been fully depleted. In practice, the system operates as a solar-first solution, with the electric element serving as a safety net rather than a primary heat source.

Given these characteristics, Solar Heat Europe strongly supports **the creation of a dedicated product category "Solar Water Heater" within the revised energy labelling** and ecodesign regulations for water heaters and hot water storage tanks **with its own dedicated label** and using the calculation method included in the draft regulation, as used for the package label.

Defining Solar Water Heater

This category would apply specifically to thermosiphons and ICS systems equipped with an electric heater, recognising their unique configuration and market relevance.

The current EC draft treats thermosiphons and ICS units with an electric element as a "package" composed of a solar device and a heater. While this is conceptually close to how these systems function, the definition creates practical problems: the electric element in these products is not a standalone heater, but an integrated part of the storage water heater. As a result, applying the generic "package" definition risks misinterpretation, inconsistent market treatment, and unnecessary administrative complexity.

To avoid these issues, it is more appropriate to recognise "Solar Water Heaters" as a distinct product category, with their own dedicated label and calculation method. This approach reflects the actual design and use of these systems, ensures regulatory clarity, and makes it possible to include climate-zone differentiation directly on the label—an essential feature for technologies whose performance is strongly influenced by local irradiance conditions

Crucially, the draft regulation already foresees the use of the Simplified Method for Solar Thermal to calculate the performance of packages that include a solar device. This method is well-suited to thermosiphons and ICS systems, as it accurately reflects the contribution of solar energy to the overall output—especially in the warmer climates where these systems are predominantly installed. It also avoids the distortions that occurred under the previous methodology, where the performance of solar-only systems was significantly underestimated.

Recognising Solar Water Heaters as a distinct category strengthens the regulatory framework, supports a mature and highly relevant segment of the solar thermal market, and ensures that consumers receive clear, accurate information about the performance of these widely used systems.

Methodological Readiness

The reintroduction of the Solar Water Heater (SWH) product category does not require any new testing or calculation procedures. The Simplified Method already included in the Commission's draft provides the necessary and fully compatible basis for assessing the performance of thermosiphon and ICS systems with integrated electric heaters. This ensures that reinstating the SWH category is technically straightforward, fully aligned with the existing regulatory architecture, and immediately implementable by manufacturers and market-surveillance authorities.

5.2. 'Solar Water Heater' label

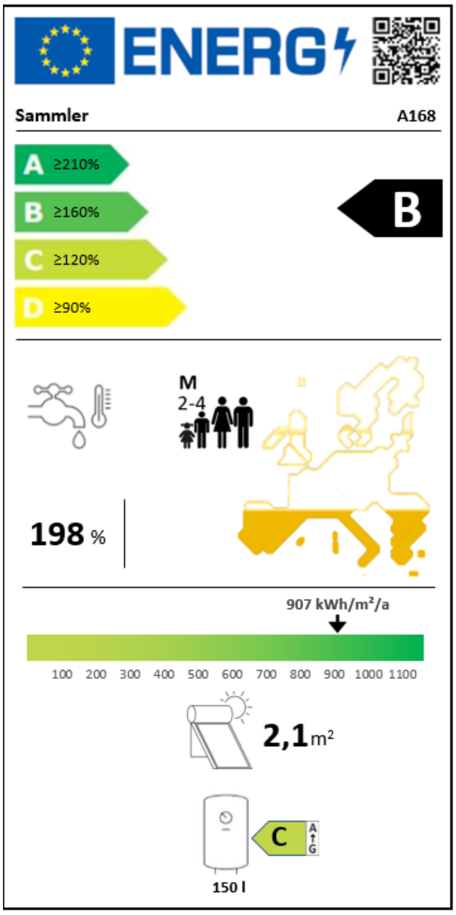
Solar water heaters, as defined above, can cover up to 90% of domestic hot water demand in warmer climates. Under typical conditions, these systems reach label class B, and with high-efficiency collectors, optimised system design or improved storage tanks, class A is also achievable—even when the small remaining backup energy is supplied by electricity.

Administrative Simplicity for Manufacturers and MSAs

The proposed SWH label builds on existing data requirements and certification practices, ensuring minimal administrative burden for manufacturers and straightforward verification for market-surveillance authorities. Because the performance values are derived from standardised test procedures already used in Solar Keymark certification, the label can be implemented without additional testing or documentation.

Element of the Label and its Design

In the proposed label for solar water heaters, we have included only four classes. The lower classes E-G will not be needed in this label as such low performance levels are not found on the market. Eliminating those classes also serves the purpose of allowing for more space for the design of the label.



This includes the insertion in the upper part of the label of a map highlighting the Mediterranean region, clearly indicating that this label applies to warmer climate zones. Its use is not recommended in other areas and the information included in the label reflects the performance in this region.

Similar to the solar thermal label, the solar water heater label displays the efficiency improvement provided by the system and includes the icon[8] corresponding to the selected hot-water profile.

In addition, it shows the actual collector area of the solar water heater as well as its specific water-heating efficiency. The Solar Water Heater" may be composed of one or more solar collectors, hence the importance of indicating the total collector area used in the product.

The label also incorporates a performance scale that illustrates how efficiently the collector converts solar energy into useful heat. In this case, the scale is tailored exclusively to warmer climates, as other climate zones are not relevant for this product category.

To fully characterise the system, the label indicates the number of collectors, the storage tank volume, and—where applicable (e.g., for systems with separable tanks)—the label class of the tank itself.

In brief, regarding the Solar Water Heater, Solar Heat Europe defends:

- The explicit inclusion of "Solar Water Heater" as a product category, covering thermosiphons and ICS with electric backup.
- The use of the Simplified Method to calculate the efficiency of these systems, ensuring a fair representation of their solar contribution.
- The use of a product label for "Solar Water Heater" that includes the climate-zone differentiation directly on the label.

[8] Please see proposal for "*Improved pictograms for load profiles (Water Heating)*" in section 8. of this document.

Solar Heat Europe

6. Quality Assurance

Since the beginning of their economic relevance in the 1970s, solar collectors have always been developed not only as pure heat generators but also as environmentally friendly products in terms of their manufacture and use of materials. This happened long before there were EU regulations on eco design. Where materials were considered or declared critical in the past (e.g. CFCs, black chrome absorbers), the solar thermal industry has replaced them with eco-friendly materials on its own initiative, as a wish to provide products with a more sustainable profile is also a key factor in the manufacture of solar thermal products.

At the same time the solar thermal sector has a robust and well-established framework for quality assurance – the Solar Keymark -, which ensures the reliability, safety, and performance of its products. This existing system, based on industry-led certification, is highly effective and widely accepted. As such, there is no need to introduce a new, more complex framework requiring Third-Party Conformity Assessment (TPCA) by Notified Bodies, which could be the case under ecodesign regulations. Such a move would add unnecessary complexity and cost without providing a proportional increase in value or product assurance.

Relevance of Quality Assurance

Quality assurance is paramount for building consumer trust and fostering a healthy market for solar thermal technology. The existing mechanisms provide a credible guarantee that products meet specific technical and performance standards. This is particularly important for renewable energy technologies, where long-term performance and durability are key considerations for both consumers and policymakers. The current pan-European certification scheme for solar thermal provides this assurance efficiently and effectively.

Solar KEYMARK: The pan-European Certification for solar thermal products

The Solar KEYMARK is the leading voluntary quality mark for solar thermal products in Europe. It is a highly respected and widely accepted certification that offers a strong foundation for a robust quality assurance framework.

- **Broad Acceptance:** The Solar KEYMARK is recognized and accepted throughout the European Union and beyond. It covers the vast majority of solar thermal products on the market, providing a unified standard that simplifies the process for manufacturers, distributors, and consumers. The most relevant solar thermal markets in Europe (such as Germany, Greece, Italy, France, …), Solar Keymark certification is a requirement for the granting of subsidies.
- **Comprehensive Verification:** The certification process under Solar KEYMARK is thorough and comprehensive. It verifies key performance aspects of solar collectors and systems, including thermal efficiency, durability, and safety. This ensures that products are not only effective but also built to last.

New Developments in Quality Assurance

The solar thermal industry is continuously improving its standards to align with evolving regulatory requirements and market demands.

- **ISO 9806:2025-10 Annex G on Resource Efficiency:** The recently published standard incorporates resource efficiency including material use, repairability and recyclability. The normative Annex G, for example, addresses this critical aspect. This demonstrates the industry's proactive approach to integrating principles that are central to ecodesign regulations.
- **Future Reviews of EN12975/EN12976:** The standards for solar thermal systems, such as EN 12975 (collectors) and EN 12976 (factory-made systems), are regularly reviewed. These reviews provide an opportunity to incorporate new provisions related to ecodesign aspects like resource efficiency, further strengthening the existing quality assurance framework and aligning it with the goals of the European Commission.

By leveraging these existing and evolving industry-led quality assurance mechanisms, the EU can effectively regulate the solar thermal market without imposing the administrative and financial burdens of a Third-Party Verification system. This approach would support the continued growth and innovation of the solar thermal sector while ensuring high-quality products for consumers.

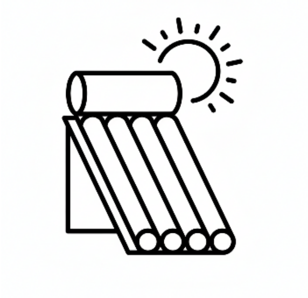
In brief, regarding the Quality Assurance, Solar Heat Europe defends:

- The continued use of the Solar Keymark as the core quality assurance framework for solar thermal products, recognising its proven effectiveness, broad acceptance, and alignment with market needs.
- The avoidance of unnecessary Third-Party Conformity Assessment (TPCA) requirements for solar thermal collectors, which would add cost and complexity without improving product quality.
- The regular review and updating of EN 12975 and EN 12976 to incorporate new sustainability and performance criteria while maintaining a coherent and industry-led certification system.
- The integration of resource efficiency, repairability and recyclability into existing standards (e.g., ISO 9806 Annex G into EN standards), ensuring that quality assurance evolves in line with ecodesign principles.
- A regulatory approach that builds on the existing, robust, and cost-effective certification ecosystem, supporting innovation and competitiveness in the European solar thermal industry.

7. Proposed improvements to the current EC proposal

7.1. Improved pictograms for solar thermal

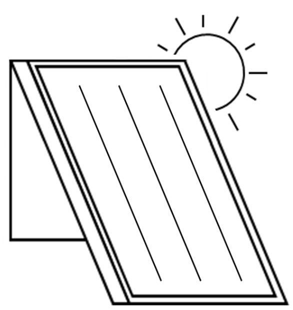
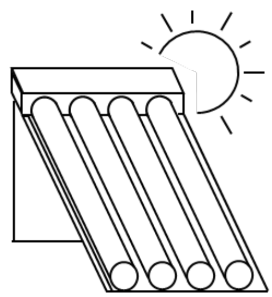
The pictogram currently used to represent solar collectors has several shortcomings, in our perspective.



While we understand the need to differentiate solar thermal collectors from solar photovoltaics panels, the current design (included in the current proposal) depicting a combination of evacuated-tube collectors with a tank, closely resembles Chinese-style thermosiphon systems. These systems are not representative of solar thermal collectors sold in the European market and, as unpressurised units, are generally unsuitable for most EU applications. **Using such image risks creating confusion for consumers and blurring the distinction between fundamentally different technologies.** It also mixes two separate product categories—solar thermal collectors for forced-circulation systems and thermosiphon systems—which should remain clearly differentiated within the Energy Labelling framework.

To ensure clarity, market relevance and consistency with the proposed collector-based labelling approach, **SHE proposed two distinct pictograms,** building on the logic of the icon included in the proposed regulation**:**

Solar Thermal Collectors (Forced-Circulation Systems)

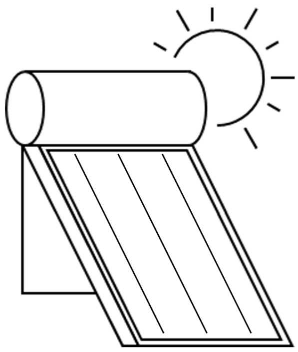
Pictogram based on a Flat-plate Collector	Pictogram based on an Evacuated Tube Collector
	

Pictograms based on a flat-plate collector or and evacuated tube collector, would provide a neutral and recognisable representation of solar thermal collectors used in forced-circulation systems across Europe. This avoids confusion with thermosiphon units and clearly identifies the product category covered by the new Solar Thermal Collector Label.

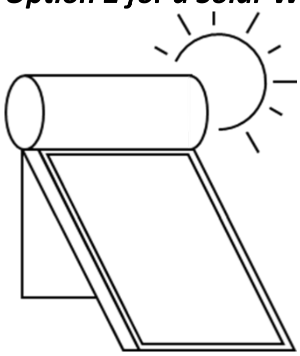
Thermosiphon Systems (Solar Water Heaters)

A separate pictogram representing typical flat-plate collectors with horizontal storage tanks, reflects much more adequately the design used almost exclusively in warm climates. These systems are particularly relevant in Mediterranean countries—Greece being a leading example—and may receive a dedicated label restricted to this climate zone, in line with their specific market characteristics.

Option 1 for a Solar Water Heater



Option 2 for a Solar Water Heater



This differentiation supports the overall objective of the new labelling framework: providing consumers with clear, accurate and technology-appropriate information, while ensuring that each solar thermal product category is represented in a way that reflects its real-world use and market relevance.

7.2. Improved pictograms for load profiles (Water Heating)

In our opinion, the use of a single letter to indicate a hot water tapping profile is not sufficiently clear for end customers. While this may be acceptable for conventional heating devices - where systems can be switched on easily and typically rely on small storage tanks - it is far more critical for solar thermal systems. For these technologies, understanding the tapping profile is essential, as it directly influences system design, including the required gross collector area and storage volume.

In reviewing the current profiles, we also noted that the smaller categories (3XS to S), which are generally not relevant for solar thermal applications, are difficult to distinguish from one another. To address this and to improve overall clarity, we have developed an extended proposal that visually differentiates all tapping profiles, including the smaller ones. This approach helps end customers better understand the intended use of each profile and ensures a consistent and intuitive presentation across the entire labelling framework.

Hot water tapping profiles

We present below some proposals for pictograms that we believe can make hot water tap profiles easier for end customers to understand.

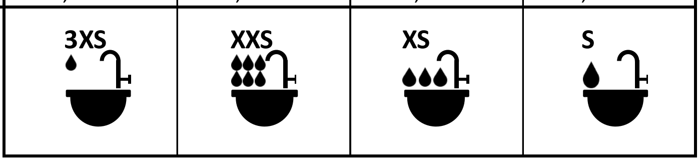
Profiles 3XS to S

These are very small to small tap profiles, which mainly supply individual washbasins in decentralised locations. Since the 2XS, XS and S profiles in particular have the same Q_{ref}, the most important distinguishing criteria are:

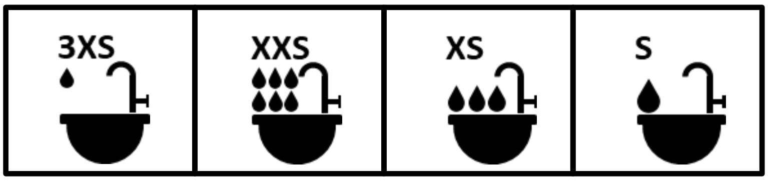
a) The maximum tap flow rate symbolised by the size of the water droplets.
b) The maximum dispensing quantity for a single dispensing is symbolized by the number of drops in combination with the drop size.

A screenshot of the calculation basis and the corresponding pictograms as a graphic is presented below:

Tapping profile		**3XS**	**XXS**	**XS**	**S**
Q_{ref}: [kWh/day]		0,345kWh/d	2,100kWh/d	2,100kWh/d	2,100kWh/d
Daily hot water consumption	**ΔT = 30 K**	10 l/d	60 l/d	60 l/d	60 l/d
Maximum flow rate [l/min] ≡ drop size		2 l/min	2 l/min	3 l/min	5 l/min
Maxiumum tap quantity[kWh] ≡ drop number		0,015 kWh	0,105 kWh	1,050 kWh	0,525 kWh
Maxiumum tap quantity [l]		0,43 l	3,01 l	30,14 l	15,07 l
Tapping time at max. tapping quantity [min]		0,22 min	1,51 min	10,05 min	3,01 min



Graphics:



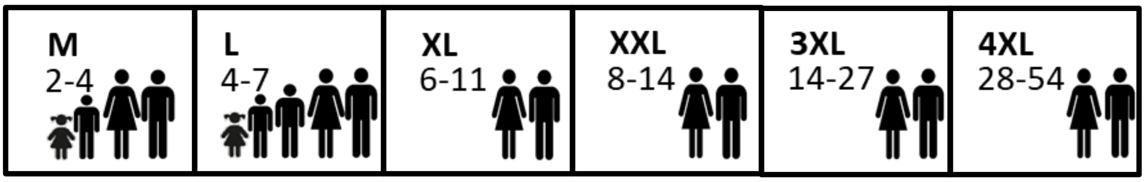
Profiles M to 4XL

These are medium to very large tap profiles that supply single-family homes (M+L) and multi-family homes (XL to 4XL) centrally. The criterion here is the number of people supplied. The range is determined by the specific daily consumption per person (assumptions: 30 l/d without circulation, 50 l/d with circulation).

A screenshot of the calculation basis and the corresponding pictograms as a graphic is presented hereunder:

Tapping profile		M	L	XL	XXL	3XL	4XL
Annual water heating demand Q_{wh}: [kWh/a]		1284 kWh/a	2559 kWh/a	4188 kWh/a	5387 kWh/a	10268 kWh/a	20537 kWh/a
Ø daily hot water consumption	ΔT = 30 K	101 l/d	201 l/d	328 l/d	423 l/d	805 l/d	1611 l/d
Persons with DHW circulation	50 l/d	up to 2	up to 4	up to 6	up to 8	up to 16	up to 32
Persons without DHW circulatior	30 l/d	up to 3,4	up to 7	up to 11	up to 14	up to 27	up to 54
Q_{ref}: [kWh/day]		5,845kWh/d	11,655kWh/d	19,070kWh/d	24,530kWh/d	46,760kWh/d	93,520kWh/d
Maximum hot water consumption acc. Q_{ref} [l/d]		168 l/d	335 l/d	547 l/d	704 l/d	1342 l/d	2685 l/d
		M 2-4	L 4-7	XL 6-11	XXL 8-14	3XL 14-27	4XL 28-54

Graphics:



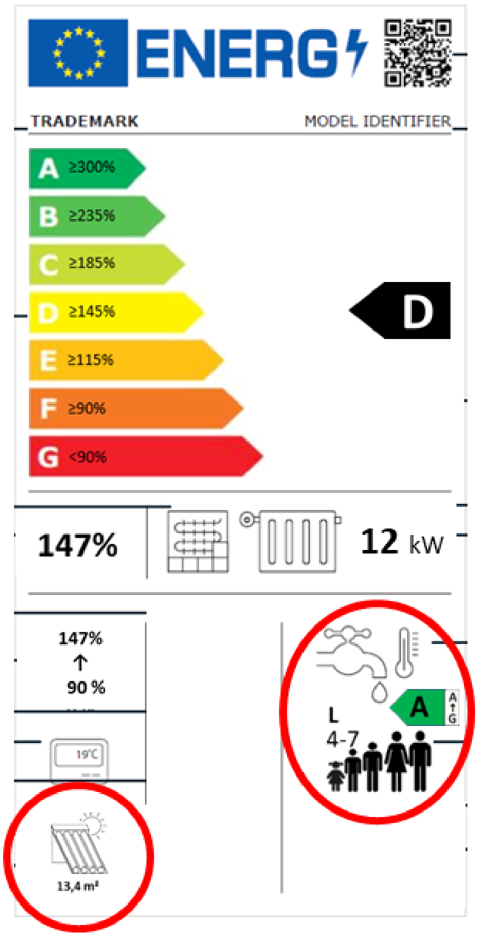
7.3. Proposal for a package label for a combination heater

The draft regulation introduces a label for space heating that can also apply to products capable of producing domestic hot water. However, while the label indicates that a product can provide hot water, it does not display any information on the efficiency of hot water production.

Combination heaters ("combi heaters") are widely used across Europe and represent a major share of the market. Their performance in domestic hot water production is a key factor for consumers and should be clearly reflected in the labelling framework.

In addition, the supply of hot water is an important element. In Europe, according to Eurostat, space heating represents around 62.5% of the final energy consumption of EU households, while domestic hot water accounts for a further 15.1%. As such, the water heating efficiency should also be included in the label.

To address this issue, we propose the following improvements to the package label.



Display the label class for hot water production

The pictogram for domestic hot water should include the corresponding label class (e.g., through the standard arrow and class designation).

This is particularly important for combination heaters, as it allows consumers to immediately understand the efficiency of hot water production and identify where solar thermal provides a clear improvement. As hot water demand will represent an increasing share of total energy use in well-insulated buildings, this information becomes even more relevant.

Indicate the collector area included in the package

The gross collector area (in m²) should be shown directly within the collector pictogram. This provides essential context for understanding the system's performance and ensures comparability between packages.

Example

A package label for a gas condensing boiler combined with a solar thermal system (space heating + hot water) would show not only the improved heating class due to solar support, but also that hot water production for a typical family (profile L) reaches class A with a collector area of 13.4 m². This is valuable information for consumers assessing system performance. A similar package label for a heat pump could show an improvement from class C to B for space heating—and potentially to class A when paired with high-efficiency collectors and an appropriate collector area.

7.4. Relevant editorial changes to the EC proposal

In addition to the substantive points outlined in this document, several editorial adjustments to the Commission’s draft have been identified. These are compiled in Annex IV to provide a clear and structured overview of the proposed edits.

The annex brings together a set of improvements that are primarily editorial in nature and intended to enhance the clarity, coherence and usability of the regulatory text. They include terminology alignment, corrections to cross-references, and updates to outdated standard references, as well as other consistency refinements necessary to ensure the proper integration of solar thermal technologies within the revised framework.

The annex also includes reference to the structural adjustments required to accommodate the proposals presented in this document, notably the introduction of a dedicated solar thermal collector label and the re-establishment of the Solar Water Heater product category.

7.5. Reflecting PVT Collectors in the Energy Labelling Framework

Photovoltaic-thermal (PVT) collectors are an emerging hybrid technology capable of delivering both electricity and useful heat from the same surface area. Their dual output makes PVT collectors increasingly relevant for buildings with limited roof space and for integrated renewable-energy strategies—particularly in combination with heat pumps, where PVT can provide both heat and electricity to the system.

At the same time, this hybrid nature creates challenges within the current Energy Labelling and Ecodesign framework, which remains largely designed around single-function products

PVT collectors do not fit neatly into either the photovoltaic (PV-only) or the solar-thermal-only categories:

- Under PV regulations, only the electrical output is considered, ignoring the thermal contribution.
- Under solar thermal regulations, only the heat output is considered, ignoring the electrical generation.

PVT collectors occupy a unique position in the solar landscape: they are neither purely photovoltaic nor purely solar thermal, and their relevance is particularly high in buildings where rooftop space is limited. Its hybrid design delivers combined benefits that single-output metrics cannot reflect, and a one-sided classification risks undervaluing the technology and distorting comparisons with pure PV or pure solar thermal systems. It also overlooks a key advantage of PVT: the ability to deliver much higher total energy density per square metre by producing both heat and electricity from the same surface.

Given these limitations, it is important that the revised framework acknowledges the specificities of PVT and provides a pathway for their appropriate representation in the future. Two key performance metrics are already well established under EN standards for solar thermal products:

- **Gross Thermal Yield (GTY)** – representing the thermal output
- **Gross Electric Yield (GEY)** – representing the electrical output

These metrics provide a transparent basis for assessing the two components of PVT performance, regardless of how they may eventually be reflected in the Energy Labelling framework.

At this stage, we would like to table the following possible approaches for future consideration. Several options could be explored in future regulatory updates, including but not limited to:

- **Enhancing the solar thermal label to incorporate GEY alongside GTY**
  This would allow PVT collectors to be represented within the existing structure while making both outputs visible.
- **Developing a dedicated PVT label**
  Such a label could reflect both thermal and electrical performance in a coordinated way, avoiding inconsistencies with PV or solar thermal categories.
- **Using a combined metric such as Gross Solar Yield (GSY)**
  GSY, defined as GTY + GEY, could offer a simple and intuitive representation of total useful energy delivered per square metre.

At this stage, these options are presented as **avenues for further exploration**, not as final proposals. The sector intends to continue analysing the implications of each approach—technical, regulatory, and market-related—before formulating a concrete recommendation.

Annex I. The Simplified Method for the Calculation of Solar Thermal Systems Efficiency

This annex presents the Simplified Method for calculating the efficiency of solar thermal systems, as referenced throughout this document. This method provides a transparent, harmonised and technically robust approach for assessing the performance of solar thermal collectors and systems under standardised conditions. It is designed to correct long-standing inconsistencies in the treatment of solar thermal technologies within the Energy Labelling and Ecodesign framework and to ensure that their contribution is represented accurately and comparably. The method builds on established European and international standards while streamlining the calculation steps to make them more accessible for manufacturers, installers and market-surveillance authorities.

For more information, we recommend the following document:

https://www.tib-op.org/ojs/index.php/ST-symposium/article/view/1345/2376

Essentials of the method:

- Solar device efficiency η_{sol} generated by multiplying f_{sol} by f_{tank}
- System efficiency generated by multiplication of η_{sol} by the efficiency of conventional heat generators for space heating η_{sh} and water heating η_{wh}
- Same method for space and water heating
- Same method for forced circulation, thermosiphons and ICS systems

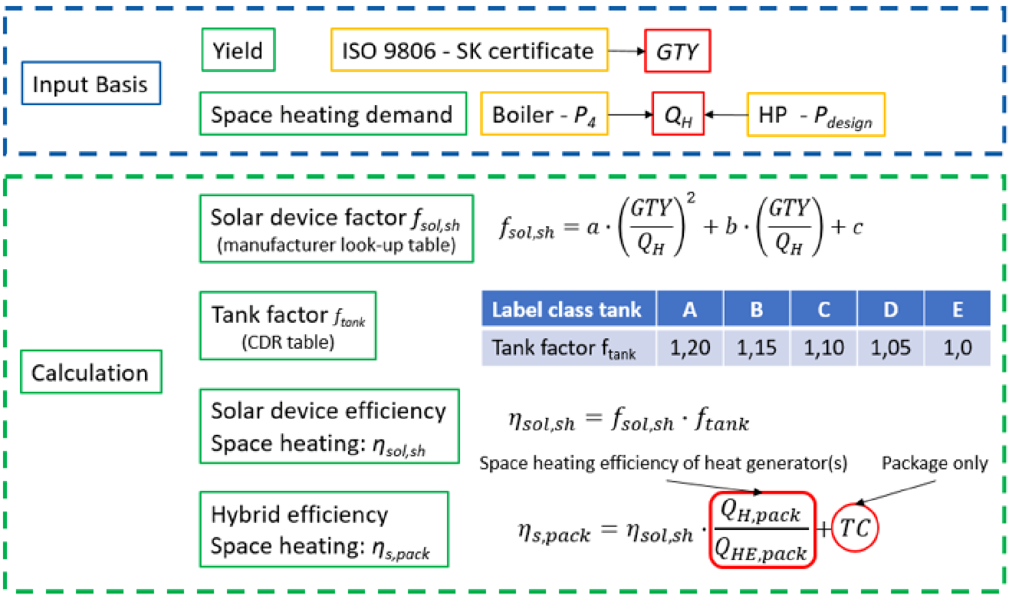


Figure 3. Flow chart space heating

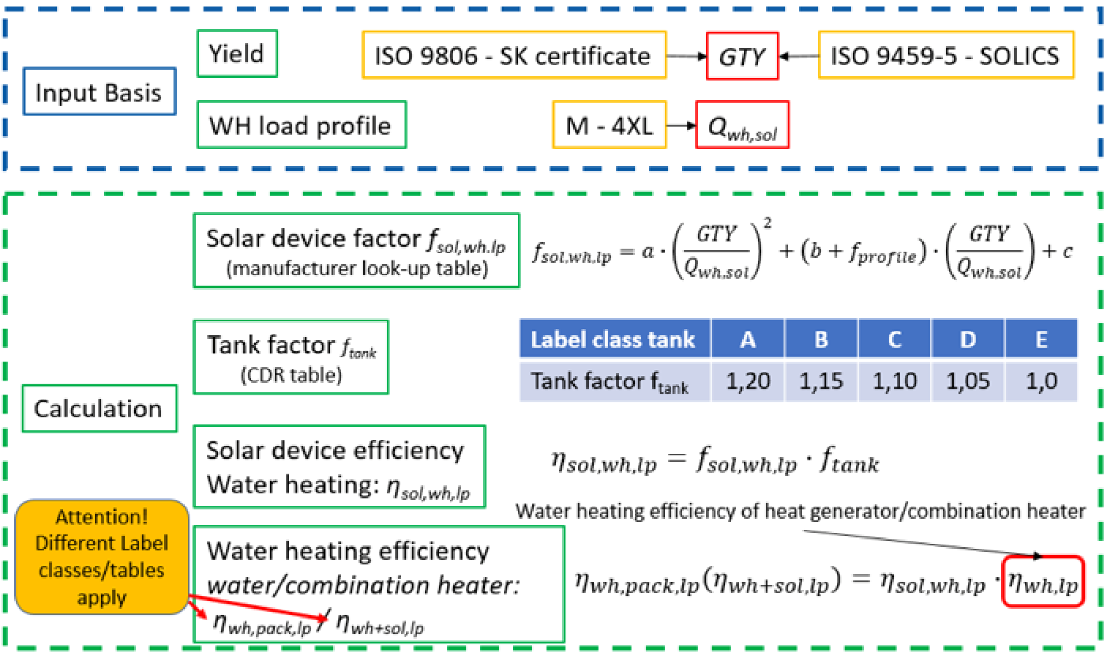


Figure 4. Flow chart water heating

Options

- Solar device efficiency η_{sol} can be determined for labelling solar devices with the individual storage factor of the associated storage tank or with the lowest factor of 1,0 if a manufacturer offers collectors only.
- Solar device efficiency η_{sol} can be recalculated to solar fraction κ

$$\eta_{sol} = \frac{1}{1-\kappa}$$

and vice versa which can be applied also to calculate the renewable share of any space or water heating efficiency of the regulation

$$\kappa = 1 - \frac{1}{\eta_{sol}}$$

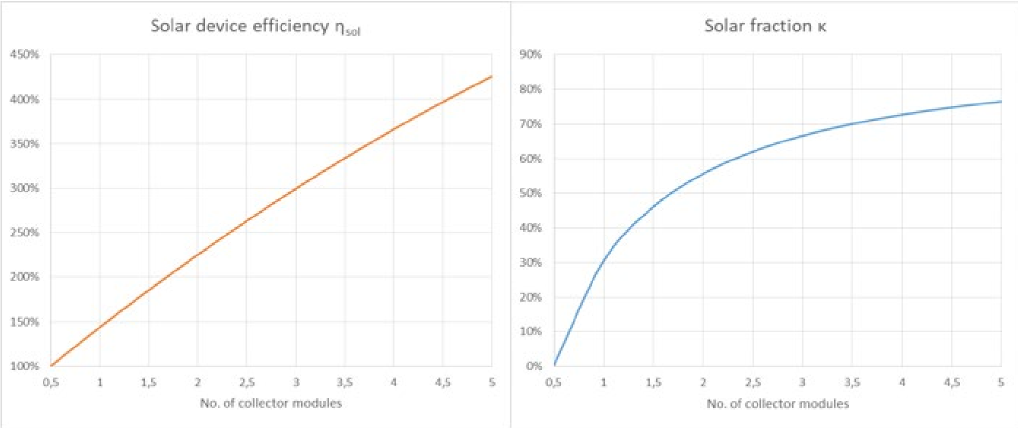


Figure 5: Comparison solar device efficiency vs. solar fraction

- The heat demand covered by the solar device Q_{sol} is independent of the efficiency of the conventional backup heater and can be calculated by multiplying the solar fraction κ by the heat demand $Q_{wh,sol}$ or Q_H

  Water heating: $Q_{sol,wh} = \kappa_{wh} \cdot Q_{wh,sol}$
  Space heating: $Q_{sol,sh} = \kappa_{sh} \cdot Q_{wh,sol}$

- A neutral approach using an efficiency of 100% for the backup heater could be used to label a solar device independently without considering a conventional backup heater and thus replacing the installer package label which will not be available anymore in the revision.
- The package label will still be possible for full-range suppliers who offer a solar system and associated backup heating using the same calculation method.

Annex II. Example of lookup table

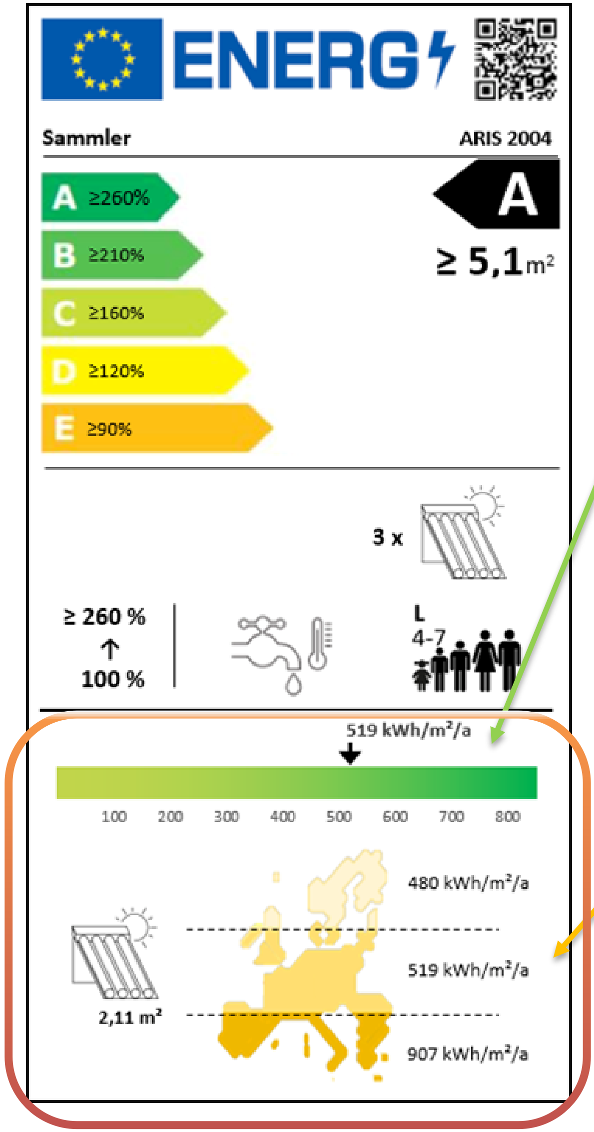
In line with the European Commission's draft regulation—where lookup tables for solar devices are already foreseen—the Solar Thermal Label should always be accompanied by a dedicated lookup table in the Product Information Sheet. This table provides the detailed performance values for the three reference climate zones, including the annual Gross Thermal Yield (GTY) and the collector area needed to reach the reference efficiency class.

Together, the label and lookup table ensure transparency, preserve essential climate-specific information, and help consumers and installers size systems correctly while keeping the label itself simple and easy to read.

Solar device									
Brand or trademark:		**Sammler**		**Model identifier:**		**A+/ARIS 2004 (Ref.)**			
Solar device factor for water heating									
Climate	**Number of solar collectors**	**Gross area of collector array [m²]**	**Gross thermal yield of collector array [kWh]**	**Load profile of combination heater included in the package**					
				M	**L**	**XL**	**XXL**	**3XL**	**4XL**
				Solar device factor for water heating (per climate, chosen collector surface and load profile in % points)					
average	Reference	5,4	2815	-	260%	-	-	-	-
	1	2,1	1095	182%	140%	114%	103%	-	-
	2	4,2	2190	287%	218%	170%	150%	113%	-
	3	6,3	3285	369%	290%	223%	195%	141%	105%
	4	8,4	4380	428%	355%	274%	238%	168%	122%
	5	10,6	5475	450%	413%	321%	279%	195%	138%
	6	12,7	6571	450%	450%	367%	319%	222%	154%
	7	14,8	7666	450%	450%	409%	358%	248%	171%
	8	16,9	8761	450%	450%	449%	394%	274%	187%
	9	19,0	9856	450%	450%	450%	429%	299%	202%
	10	21,1	10951	450%	450%	450%	450%	323%	218%
colder	Reference	5,4	2815	-	228%	-	-	-	-
	1	2,1	1095	166%	133%	111%	102%	-	-
	2	4,2	2190	226%	192%	156%	140%	109%	-
	3	6,3	3285	240%	237%	195%	174%	131%	102%
	4	8,4	4380	240%	240%	229%	206%	153%	115%
	5	10,6	5475	240%	240%	240%	234%	174%	128%
	6	12,7	6571	240%	240%	240%	240%	194%	141%
	7	14,8	7666	240%	240%	240%	240%	213%	154%
	8	16,9	8761	240%	240%	240%	240%	231%	167%
	9	19,0	9856	240%	240%	240%	240%	240%	179%
	10	21,1	10951	240%	240%	240%	240%	240%	191%
warmer	Reference	5,4	2815	-	307%	-	-	-	-
	1	2,1	1095	342%	209%	160%	145%	120%	106%
	2	4,2	2190	500%	445%	281%	233%	164%	131%
	3	6,3	3285	500%	500%	446%	349%	217%	157%
	4	8,4	4380	500%	500%	500%	491%	277%	186%
	5	10,6	5475	500%	500%	500%	500%	344%	217%
	6	12,7	6571	500%	500%	500%	500%	420%	250%
	7	14,8	7666	500%	500%	500%	500%	500%	284%
	8	16,9	8761	500%	500%	500%	500%	500%	321%
	9	19,0	9856	500%	500%	500%	500%	500%	360%
	10	21,1	10951	500%	500%	500%	500%	500%	401%

Annex III. Overview of elements included in the proposed solar thermal label

Individual performance of the solar thermal collector



A performance scale based on GTY

The core element of the label is the **Gross Thermal Yield (GTY)**, which represents the amount of useful heat a collector delivers per square meter under standardised reference conditions. GTY is the most transparent and comparable indicator of collector performance. The label displays the GTY value prominently and places it on a performance scale, enabling consumers to immediately see where a collector stands relative to others on the market.

The **performance scale** is designed to:

- cover the full range of collectors available in Europe
- reflect that the best collectors reach around 800 kWh/m²·
- leave headroom for improvement in collector efficiency
- avoid misleading colour cues while remaining easy to interpret

Note: the highest-performing collectors certified under Solar Keymark reach approximately 800 kWh/m²·year, although these are typically used in large installations rather than in the building segment.

A reference-based approach using the average climate zone

To ensure comparability across Europe, the GTY indicated in the performance scale refers to a standard average climate zone in Europe. This mirrors the logic used in other product labels, where a single reference operating mode is used for comparison even if real-world conditions vary.

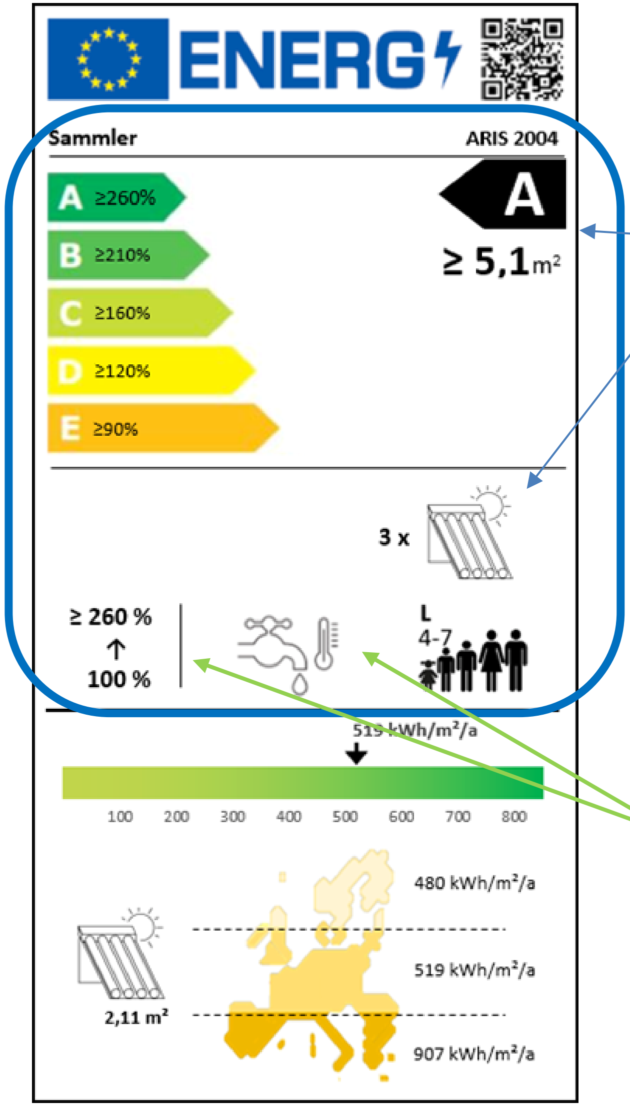
Because climate differences have a significant impact on solar thermal performance, the label also includes a **small climate map** showing the collector's GTY in the three reference irradiance zones:

- low irradiance,
- medium irradiance,
- high irradiance.

This avoids the need for separate labels per climate zone while still providing installers and consumers with the information they need for proper system sizing.

Solar Heat Europe

Contribution of the solar thermal systems in combination with reference heater



Showing what is needed to reach class A

Solar thermal is a scalable technology: the same collector can be installed in different quantities depending on the building's needs. To make this clear, the label includes a simple indication of the minimum collector area required to reach class A for the reference load profile. The minimum area is not a multiple of the collector area (in this example 5,1 m^2). Hence, to make it clear to consumers, an indication of how many solar thermal collectors would be necessary (of that specific model), is included (in this example, 3).
This helps consumers understand not only the intrinsic quality of the collector, but also what is required in practice to achieve the highest efficiency class. It also ensures that high-quality collectors (likely more expensive) are not penalised simply because a smaller area may be required.

Reference scenario used for the label calculation

To ensure consistency and comparability, the label is calculated using a standardised reference scenario, which includes:

- Hot water provision (or space heating, depending on the label version),
- The applicable load profile (tapping profile) for the reference case, corresponding to a L profile (we propose the use of the icons to complement the current use of letters per profile),
- The improvement in efficiency provided, starting with the 100% efficient of the reference heater, used as a neutral reference point.

This approach ensures that the label reflects the performance of the collector itself, independently of the specific complementary heater used in real installations (e.g., gas boiler, heat pump, biomass boiler).

Annex IV. Editorial changes proposed to the EC draft regulations

This annex compiles proposals for edits to the Commission's draft regulations on energy labelling and ecodesign for space and water heaters. Most of these adjustments are editorial in nature and aim to improve clarity, coherence and usability of the regulatory text.

Such proposals, listed hereunder, include corrections, clarifications and consistency improvements that are necessary to ensure the proper integration of solar thermal technologies within the revised framework. They include terminology alignment, corrections to cross-references, updates to outdated standard references.

It also refers to changes proposed in the main document, namely on structural elements required to accommodate the proposed solar thermal collector label and the reintroduced Solar Water Heater product category.

Ref. document	Text in draft proposal	Proposed edit	SHE Comments
Energy Labelling – Water heaters *(multiple references)*	thermosiphon/ICS solar devices or variations of this.	To use "thermosiphon or ICS"	The draft uses different designations for the "thermosiphon" and "Integrated Collector Storage (ICS)" as a single compound term (e.g., "thermosiphon Integrated Collector Storage (ICS) solar device"), while elsewhere it uses "thermosiphon/ICS". As such we request, for a matter of consistency, that the reference used is "thermosiphon or ICS" throughout, and align the exclusion clause and definitions.
Energy Labelling – Water Heaters, Annex VII (multiple sections	Several references to "Table 4" and "Table 5" appear swapped (e.g., Q_{sol} determined using Table 5; $\eta_{wh,sol}$ coefficients in Table 4).	Correct references so that: - Solar-device parameters refer to Table 4; - Coefficients for $\eta_{wh,sol}$ refer to Table 5.	Ensures internal consistency. Current draft mislabels tables, which may lead to incorrect calculations and market-surveillance errors.
Energy Labelling – Space heaters	where: – $Q_{wh,sol}$ is the annual solar	The reference should be Alinea (e) and not (3).	Idem

Ref. document	Text in draft proposal	Proposed edit	SHE Comments
Annex VII - Measurements and calculations / Table 16 - The minimum value for Q_{nonsol} & *Ecodesign – Space heaters* Annex III - Measurements and calculations / Table 16 - The minimum value for Q_{nonsol}	water heating demand, calculated in accordance with point (3), and expressed in kWh/a; – Q_{sol} is the solar heat delivered, determined using standards referred to in Annex VIII, and expressed in kWh/a; (e) The annual solar-water-heating demand ($Q_{wh,sol}$) shall be calculated in the following way:		
Energy Labelling – Space heaters Annex VII - Measurements and calculations / Table 17 - Coefficients for calculation of $\eta_{sol,sh}$ & *Ecodesign – Space heaters* Annex III - Measurements and calculations / Table 17 - Coefficients for calculation of $\eta_{sol,sh}$	Q_H shall be calculated in the following way: – For heat pump and hybrid heat pump heaters: $Q_H = P_{design,h} \times H_{HE}$ – For other heat generators: $Q_H = P_4 \times H_{HE}$ – where H_{HE} value given in Table 2 for the various climates.	Q_H shall be calculated in the following way: $Q_H = P_{design,h} \times H_{HE}$ - For electric boilers: $P_{design,h} = P_4$ - For fuel boilers: $P_{design,h} = 0{,}387 \times P_4$	This needs to be confirmed, though it seems that there is a typo in the text. Taking from the new text, $P_{design,h}$ and P_4 would have the same value, which should not be the case. For additional clarity, we suggest checking the definition of P4 in the previous draft (2023) (c) Solar device efficiency for space heating The climate-specific solar device efficiency for space heating $\eta_{sol,sh}$ is calculated as: $\eta_{sol,sh} = \left(a * \left(\frac{GTY}{Q_H}\right)^2 + b * \left(\frac{GTY}{Q_H}\right) + c\right) * f_{tank}$ with: – *GTY* is the Gross Thermal Yield per year (kWh/yr) of the solar device where signifies the applicable climate condition (A, C or W). – Q_H = annual space heating demand (kWh/yr), calculated as $P * H$ with H as set out in Table 5 per climate condition.[14] – Climate-specific coefficients *a*, *b* and *c* as set out in the table below [14] Note to CF. For fuel boilers follow EN 15502-1, i.e. the annual space heating demand is $P_{design} * H_{eH}$, which equals 800 h at nominal heat output P_N (=P_4), meaning that for space heating P_{design}= (800/2066 P_4)=0.387 P_4

Ref. document	Text in draft proposal	Proposed edit	SHE Comments
Energy Labelling – Water Heaters & Space Heaters, Annex VII and Annex VIII (Transitional Methods)	Multiple references to outdated or superseded solar-thermal standards, including EN 12975 and EN 12976.	Update references to current solar-thermal standards, namely EN ISO 9806:2025.	Some of the referenced standards are ISO standards, which are not freely accessible. Considering the position of EC in this matter, it should be considered the integration of the relevant technical provisions directly into the regulation, or providing an equivalent normative annex, to ensure that compliance requirements remain transparent and publicly available.
Energy Labelling – Space & Water Heaters (multiple annexes)	No provisions currently exist for a standalone Solar Thermal Collector label.	Introduce the necessary editorial adjustments across Annex II (classes), Annex III (label layout), Annex IV (product information), Annex VII (calculation methods), and Annex VIII (transitional methods) to enable the inclusion of a collector-based solar thermal label using GTY and climate/irradiance-zone information.	These are editorial and structural changes required to integrate the proposed collector label into the existing framework.
Energy Labelling – Water Heaters (Annex I, Annex II, Annex III, Annex VII)	The draft no longer includes a distinct Solar Water Heater (SWH) product category (thermosiphon / ICS with integrated electric heater).	Reintroduce the SWH product category by adjusting definitions (Annex I), class tables (Annex II), label layout (Annex III), and calculation references (Annex VII) to ensure that SWH (thermosiphon and ICS systems with integrated electric heaters) are correctly represented.	These changes are editorial clarifications needed to restore a product category that previously existed in the regulation. They ensure visibility of SWH systems—particularly relevant for Southern Europe—and maintain consistency with the Simplified Method.
Energy Labelling – Space & Water Heaters, Annex III (Label)	The draft uses a generic "solar device" pictogram that visually resembles a non-EU made thermosiphon.	Replace the generic pictogram with: - a dedicated icon for solar thermal collectors; - a separate, distinct icon for Solar Water Heaters.	The current pictogram resembles a Chinese-style thermosiphon, which is not representative of European solar thermal collectors and may confuse consumers. Distinct icons are needed to differentiate collectors from solar water heaters, ensuring clarity and correct technology identification

We would like to **express our support to the changes** that have been included in this draft regarding:

Topic	**Comments**	**Ref. document**
Tank factor	Relevant update, reflecting developments and the reality in the market.	Energy labelling - Water heaters; Annex VII - Measurements and calculations; 5. Solar Device, Table 4)
Volume of the solar storage tank	The change of the sizing coefficient from 0.07 to 0.06 in the Ecodesign requirements is rather important, as this allows for a better sizing, more in line with the requirements from the market.	Ecodesign - Water heaters; Annex III - Measurements and calculations; 5. Solar Device, 5.1g)