Choose the Right RTP—Avoid Risks, Avoid Overspending

With over 45 years of experience and proven expertise in semiconductor rapid thermal processing, we invite you to take a few minutes to complete our RFQ form on our website. Providing complete information allows us to recommend the most suitable RTP model and configuration for your specific applications—helping you achieve optimal results at the right cost. Avoid unnecessary risks and overspending.

This presentation explains why each piece of information in the RFQ is important. We sincerely appreciate your time and look forward to supporting your business.

AccuThermo AW610M
Semi-Automatic

AccuThermo AW820M
Semi-Automatic

AccuThermo AW820R
Automatic

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Customer Inquiry RTP Requirements Survey

Please provide as much information as possible in the following survey and email it to to sales@allwin21.com / allwin21corp@gmail.com. The more complete and accurate your responses, the better we can recommend the most suitable RTP model or configuration for your specific needs, based on our 45 years of RTP experience and thousands of successful installation worldwide. Completing the survey thoroughly will ensure optimal system performance while avoiding unnecessary options that do not contribute to your application. We greatly appreciate your time and effort.

Section 1: Contact Information

(1) Full Name:
(2) Email Address:
(3) Company Name:
(4) Company Address:
(5) Phone Number (Option):

Section 2: RTP System Requirements

(1) Type of RTP System Required (Semi-Automatic or Fully Automatic):
(2) Substrate Size Range (Minimum& Maximum Diameter / Dimensions):
(3) Substrate Material(s) (e.g., Si, GaAs, sapphire, others):
(4) Process Gases Required(Number of Gases and Gas Types / Composition):
(5) Temperature Requirements:
- Maximum Process Temperature (°C) and Duration(Sec.):
- Typical Steady-State Temperature(°C) and Duration(Sec.):
- Longest Steady-State Temperature(°C) and Duration(Sec.):

(6) Susceptor Requirement (Base , Lid , Both or Others):

Section 3: Previous Experience & Brand Awareness

(1) Have you previously used any RTP system that met your requirements? If yes, please specify brand and model:

(2) Are you familiar with AG Associates, Allwin21, or MPT RTP systems? If yes, please specify the model(s):

Section 4: Process Evaluation & Performance Metrics

(1) How do you evaluate RTP performance? Please specify methods and required specifications (e.g., sheet resistivity, mV, mW, visual appearance, others):
(2) Do you require Double O-Ring sealing for O_2-sensitive applications or production (Yes or No):
(3) Do you require an O_2 Sensor / Analyzer for O_2-sensitive applications or production (Yes or No):
(4) Do you require network / automation functions such as EAP, GEM/SECS (Yes or No):

Section 5: Project & Procurement Information

(1) Approximate Budget:
(2) Estimated Purchase Timeline:
(3) Throughput Requirements (e.g., wafers/hour/Day/Week/Month/Year):
(4) Application Background and Other Special Requirements:

Why We Ask for Section 1 Information?

This information helps us ensure the highest level of service while complying with U.S. regulations:

1. Compliance with U.S. Export Controls: U.S. law requires us to screen all customers before supplying our equipment. Collecting this information allows us to confirm that we are not selling to restricted or prohibited parties.
2. Personalized Product Recommendations: Understanding the type of customer you are enables us to recommend the most suitable RTP model and configuration based on our extensive experience serving similar clients.
3. Local Support and Service Coordination: We work with trusted global partners to provide professional local sales, installation, and technical support. Your information helps us assign the right partner with the capability to serve you effectively, or to provide any necessary training to ensure high-quality support and service.

By providing these details, you help us deliver the best possible solution for your needs while ensuring compliance and reliable local support

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Why We Ask for (1) of Section 2 Information?

We ask you to specify whether you require a Semi-Automatic or Fully Automatic RTP system. This helps us recommend the most suitable configuration for your applications:

1. Semi-Automatic RTP: The operator manually loads and unloads wafers, opens/closes the chamber, and selects the recipe to run. The system then executes the recipe automatically. Semi-automatic systems are ideal for research, development, or small-volume production. They can accommodate a wide range of wafer sizes (2–8 inch) by simply using the appropriate wafer carrier or quartz tray. Semi-automatic RTPs are significantly more cost-effective, typically 20–50% of the price of fully automatic systems depending on wafer size.
2. Fully Automatic RTP: The operator loads wafers in cassettes, selects the recipe, and the system runs automatically. Fully automatic systems can include SMIF automation to match wafer fab automation requirements, making them ideal for high-volume production. However, they are generally configured for 1–2 specific wafer sizes, limiting flexibility for small samples or varied wafer sizes.

Recommendation: For customers who may require fully automatic operation in the future, we often suggest starting with a semi-automatic system—especially for 2–6 inch wafers. This approach provides flexibility, lower initial cost, and allows gradual scaling to full automation when production requirements grow.

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Why We Ask for (2) of Section 2 Information?

We ask you to specify the minimum and maximum substrate diameter or dimensions for your RTP system. This information is critical to ensure the recommended system meets your current and future needs while optimizing cost:

1. Cost Considerations: 6-inch semi-automatic RTP systems are significantly more affordable than 8-inch systems. Based on our experience installing over a thousand systems across more than 40 countries, selecting the right maximum substrate size can reduce initial investment without limiting future flexibility.
2. Practical Recommendation: For customers currently using wafers up to 6 inches, especially in compound semiconductor fabs or research labs, we often recommend starting with a 6-inch semi-automatic RTP system, even if future plans may include 8-inch wafers. This approach provides a cost-effective solution while supporting most current applications.
3. Equipment Examples:

- AccuThermo AW610M: Supports wafers up to 6 inches, circular or square.
- AccuThermo AW820M: Supports wafers up to 8 inches, circular or square.
- AccuThermo AW820R: Supports wafers up to 8 inches, circular or square.

By providing your substrate size range, we can recommend the most suitable RTP system for your application, balancing flexibility, performance, and cost.

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Why We Ask for (3) of Section 2 Information?

We ask you to specify the substrate material(s) for your RTP system. This information is essential to ensure consistent, repeatable processing results and to select the most suitable system configuration:

Material-Dependent Heating: Modern RTP systems use halogen lamp infrared heating. Different substrate materials absorb infrared energy differently:

1. Silicon: Opaque to infrared light, absorbs heat efficiently, providing uniform temperature across the wafer.
2. Compound Semiconductors (e.g., gallium arsenide, gallium nitride, indium phosphide, gallium indium phosphide, silicon carbide): Transparent or semi-transparent to infrared light, absorbing heat less efficiently. Special care is needed to achieve uniform heating.
3. Metal-Coated Substrates: Metal layers absorb infrared energy quickly, which can lead to non-uniform temperatures and inconsistent process results.

Recommendation: Based on your substrate material, budget, and production requirements—and drawing from our experience installing over a thousand RTP systems across 40+ countries—we will recommend the most appropriate wafer susceptor or carrier and system configuration to ensure reliable, repeatable results. Providing accurate substrate material information helps us optimize your RTP setup for both performance and process uniformity.

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Why We Ask for (4) of Section 2 Information?

We ask you to specify the number of gases and types/compositions required for your RTP system. This information allows us to recommend the most suitable configuration based on your applications and budget:

1. Gas Capacity: All our RTP models can be configured with up to six process gas lines. Typical gases include nitrogen, oxygen, argon, nitrogen forming gas, argon forming gas, helium, nitrous oxide, and ammonia.
2. Flexible Configuration: Customers can start with only one or two gases, such as nitrogen, to reduce initial cost, especially when using mass flow controllers (MFCs) and shut-off valves. Additional gas lines can be easily added later. Our modular design allows customers to upgrade to multiple gas lines in 1–2 hours using parts we provide.
3. Application-Based Selection: For customers with diverse applications but limited budget, we recommend configuring the system for the maximum number of gases likely to be used simultaneously, installing MFCs for the most common gases and using nitrogen MFCs for others. Gas cylinders can be connected via multi-way valves, allowing flexible on-demand operation.
4. Full Configuration Option: If budget allows, the system can be pre-configured with all required gases, providing maximum convenience and readiness for production.

Providing accurate information about your process gases helps us ensure your RTP system meets your technical needs efficiently, while maintaining flexibility and cost-effectiveness.

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Why We Ask for (5) of Section 2 Information?

This information helps us recommend the most suitable system, sensors, and process approach:

Application Suitability: Temperature requirements determine whether a furnace or RTP is appropriate. Furnace: Best for thick oxide/nitride layers or long anneals, such as ion implantation or titanium annealing, typically taking tens of minutes to hours. RTP: Ideal for thin-film processes (~110 Å) and high-throughput applications. Standard RTP processes usually run in under 2 minutes, sometimes as short as 30 seconds, with recipe optimization reducing even low-temperature alloy processes to 2–6 minutes. High Temperature / Long Duration: RTP can handle elevated temperatures and extended times, but exceeding typical conditions may affect system lifetime. Recipe optimization can often achieve desired results safely and efficiently.

Temperature Measurement and Control: To ensure process repeatability, fast and accurate temperature measurement is critical. Standard fine K-type thermocouples are recommended for alloy processes between 150–650°C, with maximum up to 750–840°C. While coarse thermocouples can measure higher temperatures, their slower response may reduce process repeatability. For temperatures above 450°C, or for high-temperature/fast-response requirements, we recommend our patented ERP high-temperature pyrometer. Unlike thermocouples, the ERP pyrometer measures temperature at the speed of light, ensuring stable, repeatable results without direct contact, making it ideal for demanding RTP applications. System Selection and Safety: For high-temperature or long-duration processes, we will recommend the appropriate RTP model, sensor configuration, and advise on facility requirements and operational precautions. Accurate temperature information ensures the right RTP system, optimal sensor selection, and reliable, repeatable process results.

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Why We Ask for (6) of Section 2 Information?

This information helps us recommend the most suitable design for your substrate, process, and production needs:

Purpose of Susceptors: Susceptors are typically used when processing compound semiconductor wafers, small samples, wafers with a metal layer on top, or wafers with non-uniform bottom surfaces or color variations when you use ERP Pyrometer. They help ensure uniform heating and process repeatability.

For sensitive applications requiring high process repeatability and stability, we recommend using a susceptor with both base and lid, even though some customers only use the base.

The industry-standard susceptor is made of graphite coated with CVD silicon carbide, meeting semiconductor specifications. These high-quality susceptors are relatively expensive

Design Considerations: Susceptor size and thickness influence heating and cooling rates. On a 6-inch RTP, a susceptor can hold one 3 to 6 inch wafer, or multiple smaller wafers (e.g., four 2-inch or three 3-inch wafers). On an 8-inch RTP, a susceptor can hold up to 16 of 2 inch wafers, 4 of 4 inch wafers, or 5 of 3 inch wafers. Recommended operating temperature is generally below 1000°C.

Customization: Based on your application, budget, and throughput, we will help you select the most suitable susceptor. Drawing from our experience installing over a thousand RTP systems across 40+ countries, we have also designed custom susceptors and carriers with different materials, sizes, and configurations for special applications.

Providing accurate susceptor requirements ensures optimal process uniformity, efficiency, and repeatability for your RTP system.

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Why We Ask for (1) of Section 3 Information?

This information is very important for us to understand your level of RTP experience and tailor our communication and recommendations accordingly:

For Experienced RTP Users: If you have used an RTP system before and are familiar with its performance, knowing the specific brand and model helps us identify what worked well (or not) for you. With this background, we can ask better questions to uncover your real needs and recommend an RTP model and configuration that truly match your expectations — perhaps with improved process stability, reliability, or configuration that addresses past limitations.

For First-Time RTP Users: If you have never used RTP before, or have limited experience, we will draw on our track record of installing over a thousand systems across more than 40 countries and regions. Based on your application and requirements, we will provide basic, clear information about viable RTP options. This helps you make an informed decision when specifying your needs.

On Market “Concept” RTP Providers: There are many suppliers marketing so-called “RTP systems” that lack substantial production experience or proven process reliability — sometimes referred to in industry slang as “rapid trash processors.” If your previous experience involves such systems, please flag this. We will focus on understanding what pain points you encountered, what you expect now, and recommend a configuration that delivers real process repeatability, stability, and long-term reliability.

By sharing your RTP usage history and experience level, we can more accurately recommend a system that fits — whether you are an experienced user seeking higher performance, or new to RTP and need fundamental guidance.

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Section 3: Previous Experience & Brand Awareness

(1) Have you previously used any RTP system that met your requirements? If yes, please specify brand and model:
(2) Are you familiar with AG Associates, Allwin21, or MPT RTP systems? If yes, please specify the model(s):

Section 4: Process Evaluation & Performance Metrics

(1) How do you evaluate RTP performance? Please specify methods and required specifications (e.g., sheet resistivity, mV, mW, visual appearance, others):
(2) Do you require Double O-Ring sealing for O_2-sensitive applications or production (Yes or No):
(3) Do you require an O_2 Sensor / Analyzer for O_2-sensitive applications or production (Yes or No):
(4) Do you require network / automation functions such as EAP, GEM/SECS (Yes or No):

Section 5: Project & Procurement Information

(1) Approximate Budget:
(2) Estimated Purchase Timeline:
(3) Throughput Requirements (e.g., wafers/hour/Day/Week/Month/Year):
(4) Application Background and Other Special Requirements:

Why We Ask for (2) of Section 3 Information?

This information is highly valuable because familiarity with these platforms gives us important insight into your expectations, past challenges, and preferred operating style.

AG Associates RTP Systems: AG Associates became the dominant RTP supplier in the 1990s, and their 4–8 inch systems are still widely used in universities and high-volume manufacturing fabs worldwide. If you have operated these tools, we can quickly align on process behavior, temperature control expectations, and system limitations you may want to overcome.

MPT (Modular Process Technology) Systems: MPT's technology originated from AG Associates around 1985, largely replicating early AG RTP designs but without an ERP pyrometer. If you have used MPT systems, we pay special attention to any issues you experienced with repeatability, stability, or temperature measurement accuracy so we can recommend the right improvements.

Allwin21 RTP Systems: Since acquiring the AG Associates RTP rights in 2006, Allwin21 has significantly enhanced the platform with proprietary real-time control software, improved process features, and modern fab capabilities such as EAP automation, RMS, FMC, and advanced diagnostics. If you already know Allwin21 tools, we can focus directly on what new features or configurations best support your next application.

Understanding your familiarity with these RTP systems helps us communicate more efficiently, identify your true needs, address past pain points, and present the Allwin21 AccuThermo AW Series advantages that matter most to you.

Allwin21 Corp.

Choose the Right RTP—Avoid Risks, Avoid Overspending

Customer Inquiry RTP Requirements Survey

Please provide as much information as possible in the following survey and email it to to sales@allwin21.com / allwin21corp@gmail.com. The more complete and accurate your responses, the better we can recommend the most suitable RTP model or configuration for your specific needs, based on our 45 years of RTP experience and thousands of successful installation worldwide. Completing the survey thoroughly will ensure optimal system performance while avoiding unnecessary options that do not contribute to your application. We greatly appreciate your time and effort.

Section 1: Contact Information

(1) Full Name:
(2) Email Address:
(3) Company Name:
(4) Company Address:
(5) Phone Number (Option):

Section 2: RTP System Requirements

(1) Type of RTP System Required (Semi-Automatic or Fully Automatic):
(2) Substrate Size Range (Minimum& Maximum Diameter / Dimensions):
(3) Substrate Material(s) (e.g., Si, GaAs, sapphire, others):
(4) Process Gases Required(Number of Gases and Gas Types / Composition):
(5) Temperature Requirements:
- Maximum Process Temperature (°C) and Duration(Sec.):
- Typical Steady-State Temperature(°C) and Duration(Sec.):
- Longest Steady-State Temperature(°C) and Duration(Sec.):

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Section 5: Project & Procurement Information

(1) Approximate Budget:
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Why We Ask for (1) of Section 4 Information?

This information ensures we understand your performance expectations and can recommend the most effective setup and optimization path.

Based on our experience supporting more than a thousand RTP installations across 40+ countries, we have found that many users initially evaluate RTP only by temperature uniformity. After further discussion, most customers adopt more practical and meaningful metrics—such as sheet resistivity, milliampere , milliwatt, and visual inspection—often achieving significant improvements in process stability, cycle time, temperature requirements, and even equipment lifetime. Simple methods such as a “U-shaped” process evaluation curve can quickly guide recipe optimization.

It is important to note that RTP heating is inherently non-equilibrium. Traditional thermocouples or TC wafers cannot accurately reflect the true thermal gradient of the actual substrate—especially above 500 °C, where thermocouple contact and environmental effects create large measurement errors. As the industry often says, “You never know the exact temperature of your real substrate.” What matters is whether the process results are uniform, repeatable, and meet your specifications.

Allwin21’s AccuThermo AW Series builds on the proven AG Associates platform and adds advanced real-time control technology. With features such as PowerSum and 6 to 10 independently controlled lamp banks, the system can be tuned to meet even the most demanding process requirements.

For these reasons, we strongly recommend using sheet resistivity, milliampere , milliwatt, and visual appearance, rather than high-temperature chamber uniformity measurements—to evaluate and optimize your actual RTP process, especially above 500 °C.

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(1) Approximate Budget:
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Why We Ask for (2) (3) (4) of Section 4 Information?

These Double O-Ring and Oxygen Sensor/Analyzer options are for processes requiring controlled low-oxygen conditions. Most RTP applications do not require these features—forming gas or nitrogen purge can usually maintain chamber oxygen below 20 ppm, sufficient for most applications.

For some high-volume production customers requiring 10 ppm or 5 ppm oxygen, we provide a two-layer protection design: Double O-Ring sealing enables pre-process oxygen leak checks. Runs stop automatically if oxygen exceeds the threshold, protecting expensive wafers. Oxygen sensor / analyzer continuously monitors oxygen during processing, halting the run if instability is detected to prevent scrap.

Tighter oxygen limits may reduce throughput due to extended purging and monitoring. We recommend determining oxygen requirements via a simple “U-curve” evaluation. 20 ppm suffices for most applications, though the AccuThermo AW Series can achieve 10 ppm or 5 ppm if necessary. For R&D or low-volume users, these features are generally unnecessary unless budget is not a concern.

These network/automation functions are intended for large-scale fabs requiring automated recipe management, factory integration, and production tracking. Establishing a full automated fab network is costly. Small-scale or research users typically do not need these functions. However, if SMIF is required, network/automation functionality becomes necessary.

Providing accurate responses for these items helps us configure the RTP system appropriately—balancing process reliability, throughput, and cost for your production needs.

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Section 5: Project & Procurement Information

(1) Approximate Budget:
(2) Estimated Purchase Timeline:
(3) Throughput Requirements (e.g., wafers/hour/Day/Week/Month/Year):
(4) Application Background and Other Special Requirements:

Why We Ask for Section 5 Information?

Providing these details allows us to recommend the most suitable RTP model and configuration for your needs:

Budget: Knowing your budget helps us suggest the most appropriate models and configurations. For customers with limited budgets, we can propose proven alternative solutions that are less expensive yet still effective. Examples include: using a shielded thermocouple (TC) with SiC cap instead of an ERP pyrometer, silicon wafer or silicon wafer with pocket instead of a susceptor, susceptor made from silicon ingot, or using a TC wafer as a carrier, and limiting to one nitrogen gas line. These alternatives may be slightly less optimal but allow you to achieve acceptable results at lower cost. For higher budgets, we can recommend full-featured options including ERP pyrometers and advanced susceptors.

Purchase Timeline: If procurement is planned in the near term, we focus on understanding your actual requirements to provide a formal, accurate quotation. If the purchase is planned for a later date, only a preliminary price estimate is needed, as formal quotes are valid for three months and future changes may affect costs.

Throughput Requirements: Understanding your production needs allows us to recommend configurations that maximize capacity and process efficiency—for example, multi-wafer susceptors, dual-layer or dual-chamber automation, or other optimizations to support high-volume processing.

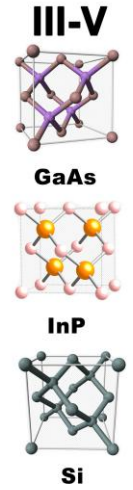
Application Background and Special Requirements: Each customer's needs are unique. To provide the best recommendation, we ask that you describe your process background, application goals, and any special requirements. Our RTP experts have decades of experience in front-end semiconductor processes and will use this information to guide you toward solutions that support your success. This information is also important for planning future installation, training, and service support.

Accurate project and procurement information ensures that we can provide the most effective system recommendation, optimize your process performance, and deliver long-term support tailored to your application.

Allwin21 Corp.

Let's *All win* in the *21*st Century

Allwin21 Corp.



Email: sales@allwin21.com