



AERC 100

**Standard for Rating the Energy Performance of Fenestration
Attachments**

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1. Scope

The Scope of the *AERC 100 National Standard for Rating the Thermal Performance of Fenestration Attachments* establishes:

- a. The categories of participation and the requirements and processes governing all facets of participation by program participants
- b. All procedures for developing ratings for the thermal performance of window attachment products
- c. All procedures governing the submission of product thermal performance ratings for inclusion to the AERC Certified Products Database
- d. All ongoing responsibilities of program participants and the *Attachments Energy Ratings Council*, in operating the *AERC Product Certification Program*.

2. Program Documents

AERC 100 Standard for Rating the Thermal Performance of Fenestration Attachments is the master document referencing all program requirements including any/all program subdocuments, appendices, and annexes as delineated below, or incorporated through revision to an existing document.

Collectively these documents represent the full breadth of *Program Guidelines* governing participation in the *Attachments Energy Rating Council Product Certification Program*.

- a. *AERC 1 Procedures for Determining Energy Performance Properties of Fenestration Attachments (AERC 1)*
- b. *AERC 1.1 Procedures for Determining the Optical and Thermal Properties of Window Attachment Materials (AERC 1.1)*
- c. *AERC 1.2 Physical Test Methods for Measuring Energy Performance Properties of Fenestration Attachments (AERC 1.2)*
- d. *AERC 1.3 Simulation Documents - Technical Reference Manual (AERC 1.3)*
- e. *AERC 2 Procedures for Determining Heating and Cooling Annual Energy Performance Ratings of Fenestration Attachments (AERC 2)*
- f. *AERC 300 Manufacturer Participant Guidelines (AERC 300)*
- g. *AERC 301 Independent Inspection Agency Program Requirements (AERC 301)*
- h. *AERC 302 Accepted Calculation Entity/Accepted Simulator Program Requirements (AERC 302)*
- i. *AERC 400 Policies and Procedures (AERC 400)*

3. Definitions

All significant terms referenced for participation in the *Attachments Energy Ratings Council Product Certification Program* are defined in *AERC 400 Policies and Procedures, Appendix A*. Where there is a difference in definition between AERC 400 Appendix A and other reference documents, the definition from AERC 400 shall take precedence. Terms specific to understanding the provisions of this document are listed below:

- a. Accepted Participant – is one of the several categories of applicants who have achieved the status of fully qualified and accepted as a participant by the *AERC* under the provisions of the governing documents.
- b. Accepted Simulator – An individual who has the proven training, skills, and experience qualifying them to perform simulation and calculation services under the direct supervision of an *Accepted Calculation Entity* in evaluating product configurations seeking qualification under the program requirements using *AERC* approved tools, protocols and requirements.
- c. AERC – Attachments Energy Rating Council
- d. Automation – The use of any of the following: sensors, real-time weather data, schedules, programs, or algorithms to open, close, reposition, or change optical properties of an attachment product without direct human interaction.
- e. AERC Automation Rating – Optional rating for window attachment products that can be operated using an automated control system with minimum capabilities as described in the AERC Automation definition. Products are rated according to the schedules defined in AERC 2 Appendix A respective of the attachment type and interior or exterior end use application.
- f. AERC Product Certification Program - defines the process and expanse of all program documents describing the full terms of program governance.
- g. AERC Certified Products Database (CPD) – A database, accessible to the public, listing all products then in good standing, accepted by the *AERC* as conforming to program requirements.
- h. ANSI – American National Standards Institute
- i. Applicant – An individual or entity who has submitted an application to participate in the AERC product certification program as a *Manufacturer Participant, Independent Inspection Agency, Accepted Simulator* or *Accepted Calculation Entity*.
- j. Application – A series of documents and supporting evidence, composing an application for the class of participation.
- k. Authorization Agreement – Specific document, under program requirements, outlining the terms of participation by *Program Participants* and the roles and responsibilities of the parties to the agreement.
- l. Board of Directors – the full board of the Attachments Energy Rating Council, as defined in the currently accepted bylaws.
- m. Calculation Entity – A legal organization that acts as the responsible party in developing the objective evidence of qualification, used to evaluate and establish the eligibility of attachment products for listing under program guidelines.

- n. Certified Product Listing Report (*CPLR*) – A certified report, created by an *Accepted Calculation Entity*, validated by an *AERC Independent Validator*, and accepted by the *Administrator* that encompasses all products and derivations of products, including discrete fabrics, colors, installation methods and conditions, comprising the products to be submitted by a manufacturer for inclusion to the *AERC Certified Products Database*. *Manufacturer Program Participants* are, on the basis of an accepted *CPLR*, as evidenced by an *Authorization Agreement*, authorized to represent these products as "Certified" products in accordance with all program requirements.
- o. Certification – the acts, undertaken by the *Manufacturer Participant*, in certification of the ratings of his products under the specific *Authorization Agreement* of the *AERC* issued to empower the participant to that purpose. Participants “certify” to the strict terms and responsibilities of the *Authorization Agreement* issued to it.
- p. Complex Glazing Database (CGDB) –Data store of thermal and optical properties for critical components utilized by the approved software to calculate the ratings for EPc, EPh, EPc-Auto, and EPh-Auto along with Solar Heat Gain Coefficient (SHGC), U-factor and Visible Transmittance (VT).
- q. Component Manufacturer – Manufactures one or more critical component(s), as specified by program documents and procedures.
- r. Conformity Assessment – a process conducted by an independent third party to assess the compliance of an entity with their obligations under some program of governance.
- s. EPc –Annual Energy Performance Index (cooling zone) for window attachments ranging from 01 through 110, reported as a whole number, and calculated as the ratio of annual HVAC cooling energy savings resulting from the manual schedule use of the fenestration attachment product to the annual energy use caused by the baseline fenestration in the standardized model house without the attachment in the designated zone, multiplied by 100. Higher values are indicative of greater energy savings.
- t. EPc-Auto – Annual Energy Performance Index (cooling zone) for window attachments with automation option ranging from 01 through 110, reported as a whole number, and calculated as the ratio of annual HVAC cooling energy savings resulting from the AERC automation schedule use of the fenestration attachment product to the annual energy use caused by the baseline fenestration in the standardized model house without the attachment in the designated zone, multiplied by 100. Higher values are indicative of greater energy savings.
- u. EPh – Annual Energy Performance Index (heating zone) for window attachments ranging from 01 through 110, reported as a whole number, and calculated as the ratio of annual HVAC heating energy savings resulting from the manual schedule use of the fenestration attachment product to the annual energy use caused by the baseline fenestration in the standardized model house without the attachment in the designated zone, multiplied by 100. Higher values are indicative of greater energy savings.
- v. EPh-Auto – Annual Energy Performance Index (heating zone) for window attachments with automation option ranging from 01 through 110, reported as a whole number, and calculated as the ratio of annual HVAC heating energy savings resulting from the AERC

automation schedule use of the fenestration attachment product to the annual energy use caused by the baseline fenestration in the standardized model house without the attachment in the designated zone, multiplied by 100. Higher values are indicative of greater energy savings.

- w. Fenestration Attachment – A device intended to provide some varying degree of sun control and privacy mounted over a window, or door, either to the interior or exterior of the structure.
- x. Independent Inspection Agency – An entity accepted according to the requirements of the *AERC Program Guidelines* that provides inspection services in association with conformity assessment oversight on *Accepted Calculation Entities* and *Manufacturer* program participants.
- y. Listing - A specific record of a product, verified component, and/or colors qualified under this program, maintained in a written or digital format, based on an accepted *Certified Product Listing Report*.
- z. Manufacturer Participant – A manufacturer of one or more products included in the *AERC* product certification program who has had products accepted for inclusion in the *Certified Products Database* and who is authorized under a *Certificate of Authorization* to attest the product meets all requisite program requirements relating to their inclusion in the program.
- aa. Quality System Documentation – specific, written plan detailing the system devised by a participant under which the assurance of control of quality in production is managed for better outcomes.
- bb. Quality Management System (QMS) – A program of quality management, designed in accordance with the principles of ISO 9001 or another outline of minimum quality system documentation.
- cc. Type 2 Category Participants – are manufacturers who elect to have their participation verified by surveillance of products purchased on the open market and tested to verify critical component compliance and performance based on some known standard.
- dd. Type 3 Category Participants - are manufacturers who elect to have their participation verified by factory inspections that include a review of the operation of the Quality Management System as described in the participant’s Quality System Documentation, supplemented by testing of products to verify critical component compliance and performance based on some known standard.

4. Program Participation

Below are listed the various categories of program participation. Participation is dependent on an application and the payment of fees as specified in the program documents.

- a. Participant Categories
 - i. Manufacturer Participant – a manufacturer of window attachments that falls within the *Program Guidelines* is eligible to participate on the basis of submitting product for rating in accordance with the program requirements. All details regarding participation by manufacturers are detailed in *AERC 300* and the other relevant program documents.

- ii. Independent Inspection Agencies – provide inspection services to *Manufacturer Participants*. By qualifying for acceptance as an *AERC Independent Inspection Agency*, they can efficiently assist program participants in complying with the *AERC Program Guidelines*. All details regarding participation as an inspection agency are included in *AERC 301* and the other relevant program documents.
- iii. Accepted Simulators and Accepted Calculation Entities – All details regarding participation by *Accepted Simulators* and *Accepted Calculation Entities* are detailed in *AERC 302* and other relevant program documents.
 - (1) Accepted Simulator – is an individual who has the requisite skills and experience to perform thermal modeling services required to produce ratings for the various window attachments rated under program guidelines. *Accepted Simulators* have presented evidence of their qualifications for acceptance based on the detailed experience, and the education and training requirements stated in the governing document.
 - (2) Accepted Calculation Entities – are organizations that serve as the entity responsible for preparing and issuing all the documentation that comprises the objective evidence that a particular product meets the *AERC Product Certification Program Guidelines*. *Accepted Calculation Entities* have shown they have the resources, skills and processes to perform competently their duties as outlined in the specified document above. *Accepted Calculation Entities* are required to employ at least one *Accepted Simulator* by contract or employment as a condition of their acceptance.
- iv. Component Manufacturers – provide the basic materials constituting the major components affecting the thermal performance of window attachments in the ratings process. Component manufacturers participate by submitting materials for listing in the *Complex Glazing Database* in accordance with the procedures delineated in *AERC 1.1* and other relevant program documents.
- v. Accredited Testing Laboratories – perform testing services in limited circumstances related to product certification. The one specific criteria of participation they must have, is an existing accreditation to ISO 17025, in a scope that qualifies them to the standard tested and reported.

5. Eligibility – Applicant Qualifications for Participation

- a. *Primary Manufacturers* - Foundational to any application for acceptance, is the ownership of the product design and manufacturing processes, or the proper licensing of the designs of another, or the existence of all products put forth by a participant existing within the public domain. It is the sole responsibility of the applicant to comply with all laws and requirements relating to copyright and patent and establish the clear right to promote his products for acceptance to the *AERC Certified Products Database*. Applicants agree to hold harmless the AERC for all claims of patent infringement or trademark/servicemark violation in connection with any application and product listing.

- b. *Secondary Manufacturers* accepted for participation as a class of *Manufacturer Participant* are subject to participation on the basis of a *Secondary Listing*, founded on an active, accepted *Primary Listing*. Additionally, the rights of a holder of a *Secondary Listing* are subservient to those of the holder of the *Primary Listing* and they have only the rights enumerated here and in the breadth of the program requirements, as limited by the same.
- c. *Independent Inspection Agencies* – foundational to eligibility is an accreditation to ISO 17020 issued by an AERC accepted accreditation body, or deemed equivalent by the administrator. They must additionally meet all other requirements listed in AERC 301.
- d. *Accepted Simulators* – Must have the required combination of education training and experience to qualify for consideration as defined in detail in AERC 302.
- e. *Accepted Calculation Entities* – Must meet the requirements of ISO 17025, have the required combination of resources, experience, education, training and processes to qualify for consideration as defined in detail in AERC 302.

All applicants must accept the terms of the *Authorization Agreement*, and any subsidiary agreements thereto, as specified by the *Administrator* as a condition of acceptance for participation.

6. Responsibilities of the AERC

The *Attachment Energy Ratings Council* will implement and manage a product certification scheme, compliant to ISO 17065 for the specific purpose of providing useful, credible rating methodologies for the purpose of providing the consumer, and other stakeholders the ability to make informed judgements about the energy performance impact of fenestration attachments. The AERC will also implement and manage the certification scheme to the specific obligations of all stakeholders recognized in the structure of the governing body of the association. Additionally, they will manage an on-going and credible oversight process to ensure compliance with all program requirements. Specifically, the AERC will:

- a. Provide ongoing credible and efficient management of the product certification schemes respecting its obligations to the ISO 17065 requirements for the equal protection of the interests of all program stakeholders who are reliant on a credible fenestration attachments rating program.
- b. Will develop methodologies to discretely quantify the important thermal and optical characteristics of window attachments.
- c. Seek to establish the program as an *ANSI* accepted national standard and meet all the requirements to obtain and maintain such status.
- d. Maintain a publicly available website displaying the current listings accepted into the AERC Certified Products Database.
- e. Accurately, and in a timely fashion, manage the status and information of each of the participant's listings in the AERC CPD.

- f. Treat all of the participant's information and interactions with the program, not specifically detailed as publicly available by program requirements, as private property, under the ownership and control of the participant and thus private by and between the participant and the Administrator.

7. Responsibilities of Program Participants

- a. Manufacturers
 - i. To apply for acceptance of their products in conformance with the requirements established herein.
 - ii. Manufacture products accepted for inclusion in the *AERC Product Certification Program* as true and faithful replications of the originally evaluated and accepted product.
 - iii. Comply with all requirements of their selected participation path as delineated below, and all other relevant program documents.
- b. Simulators, ACEs and Independent Inspection agencies
 - i. Deliver services they are authorized to provide in accordance with all program documents.
 - ii. Diligently comply with all provisions of the quality assurance requirements mandated in *AERC 400 Policies and Procedures*, subject to the selected participation path.
 - iii. Comply with all record keeping requirements as documented in the *Program Requirements*.
- c. Comply with all the requirements as agreed to in the *Authorization Agreement*.
- d. Diligently act to resolve instances of program variance in a manner acceptable to the Administrator and in a timely fashion in order to avoid falling into a state of non-compliance.
- e. Conduct all actions of certification in strict accordance with program requirements and instructions to protect the marks of the *AERC*, and to respect the integrity of the program requirements for the protection of the interests of all program stakeholders.

The responsibilities of all participants are fully detailed in the program documents specific to their area of participation listed in Section 2 above.

8. Application

Applicants seeking acceptance as a *Program Participant*, shall do so utilizing the latest program form specified by the *Administrator* for their class of participation.

9. Acceptance Decisions

Final decisions as to the acceptance of *Participants* are the exclusive prerogative of the *Administrator* under authority granted him by the *AERC Board of Directors*, subject to the appeal procedures as established in program documents.

10. Term of Acceptance

The terms of a participant's participation are established in the document(s) governing their participation, subject to annual renewal, payment of required fees and continued compliance to all program requirements.

11. Suspension and Revocation of Acceptance

Acceptances are subject to suspension and/or revocation for any action deemed by the *Administrator* to be a violation of the *AERC Program Requirements*, including, but not limited to, the following:

- a. Failure to submit to compliance inspections in accordance with the participant's authorization agreement per their selected path of participation.
- b. Failure to implement corrective actions as required by any notice of non-conformance in association with any conformity assessment process.
- c. Failure to pay all fees required for program participation.
- d. The filing of an application for bankruptcy under any chapter of Federal Law by the participant.
- e. Failure to submit to or cooperate with the *Administrator* in performing inspections.
- f. Failure to submit *Variance Resolution* plans based on any conformity assessment process or based on failure of products subject to the governance of *AERC Program Requirements* to meet the verification testing protocols based on their selected path of participation.
- g. Any action, which is determined by the *Administrator* to pose a threat to the credibility or good name of the *AERC*, the *AERC* product certification program, or its status as a certification body.
- h. Any violation of the *Authorization Agreement*, determined by the *Administrator* to be an intentional act by the *Program Participant*, its principals, employees or agents, that violates the use of the marks and other representations of the *AERC* in the act of labeling or certification, either written or oral.

All actions in regards to suspension or revocation of acceptance under the *Program Requirements* are subject to appeal per the provisions established in *AERC 400 Policies and Procedures*.

12. Reinstatement after Suspension.

An *Accepted Participant*, whose participation has been suspended for some violation of *AERC Program Requirements*, may apply for re-instatement of their authority, subject to the procedures established by program requirements and the payment of all fees specified by the *Administrator*, incurred as a result of the suspension.

13. Changes to Guidelines

AERC Product Certification Program Guidelines are subject to review and revision no less often than every five years. A program review and revision can be undertaken at any time in accordance with the provisions stated in *AERC 400 Policies and Procedures*. As a consensus body, all such program changes and revisions shall be subject to the consensus provisions of the bylaws and program documents and all other relevant provisions of the program documents as specified therein.

14. Inspection of Participant Facilities

To the extent stated in the documents governing participation, each *Program Participant* may be subject to continuing oversight inspections of their facilities and *Quality Management System*, depending on specific provisions governing their category of participation. Participants must look to the specific document referenced in Section 2 above governing their participation for the full details of this provision.

15. Variances to Compliance and Non-Compliance

Variance to participant compliance arising in the course of their terms through inspection, surveillance testing or consumer complaint must be addressed by the *Program Participant* with an acceptable plan for resolution within fifteen days of notice by the *Administrator* in the form of a Notice of Non-Compliance. The acceptability of the resolution plan is at the sole discretion of the *Administrator*. Failure to address a *Notice of Non-Compliance* will lead to an elevated action by the *Administrator* to either resolve the conditions that led to the state of non-compliance or; in the case of inability or refusal by the participant to resolve the issues leading to the state of non-compliance, removal of the participant from the program may result.

16. Removal from the Program

Participants, who fail to resolve variances and fall into a state of non-compliance, shall be removed from participation and have all their rights in participation terminated. Participants who are removed from participation may appeal in accordance with the provisions delineated in *AERC 400* unless the removal is at their specific, written request.

17. Reinstatement

Any participant whose participation has been removed by the *Administrator* for reasons of non-compliance, or voluntary withdrawal may reapply for participation. Any applicant removed for reasons of non-compliance will have to resolve those issues upon which the termination of their participation was based before they can be accepted back into the program. Applicants must also pay any and all fees that may have been outstanding from their previous participation before acceptance.

18. Membership in the AERC

While membership and participation in the *AERC* is encouraged, it is not required for participation and is expressly excluded as a factor in evaluating any application for participation; or any other aspect of participation in the *AERC Product Certification Program*. Only the express provisions of the various program documents as written, or as may reasonably be inferred, may be considered by the *AERC*, its appointees and assigns in evaluating the participation of any entity described as a category of participation herein.

19. Severability

If any part of the breadth of documents composing the whole of the *AERC 100 Standard for Rating the Thermal Performance of Fenestration Attachments* is declared unenforceable or invalid, the remainder will continue to be valid and enforceable.