

All Certification Programs are not Equal

BY BRIAN MILLER

Several certification programs are available for fabricators, but each one has its own nuances. Here's an overview of the major differences.

“WHAT’S THE DIFFERENCE?” That’s the question that stakeholders in the steel industry frequently ask AISC and QMC staff members in reference to quality-focused programs such as AISC’s *Certification Standard for Steel Building Structures*, the ISO 9001:2000 standard, and the International Accreditation Service (IAS) AC172 criteria.

The comparison requests come from a variety of steel industry stakeholders looking for value in steel fabrication capability and competitive pricing. What organization is responsible for developing the program criteria and how do they come up with the requirements? How are the programs audited? What does it cost to participate in each of the programs? Who bears the cost of participating? How many fabrication firms in my area are participating in these programs? Do these programs meet building code requirements for approved fabricators? Does one program support better quality or help me control risk better than another?

I will describe here some of the ways that I believe the AISC, ISO, and IAS programs stack up against one another, and try to provide information to help you determine which program (or programs) best suit your individual needs. To keep the comparisons meaningful, the focus of the descriptions is confined to conventional steel building fabrication.

The AISC, ISO, and IAS programs all support quality steel fabrication. By quality,

let’s agree that we mean “characteristics that fulfill requirements.” The AISC and ISO programs originated with quality as their primary goal more than twenty years ago. The IAS program began less than ten years ago and comes to quality through a dedication to safety and code compliance. Each program employs documented program requirements or criteria that recognize and encourage the use of widely accepted quality principles and tools, many of which were introduced long ago by well-known quality practitioners such as J. M. Juran and W. E. Deming.

Who develops the program criteria?

The AISC program is supported by the AISC *Certification Standard for Steel Building Structures* (AISCQC001), which originated in a publication titled *Engineering and Quality Criteria for Steel Structures*. The current customer-focused, management-driven, process-based model used for the certification standard reflects an evolution from quality control criteria that supported only compliance auditing, to criteria that guide the structuring and implementation of a quality management system and support decision-making within the certified firm. The current standard supports performance-based auditing, which combines compliance auditing with an assessment of quality management system effectiveness and suitability. The AISC criteria have closely followed

the evolution of the criteria developed and used by the ISO program.

ISO quality programs may be supported by a number of standards-based requirements, but *Quality Management Systems—Requirements* (ISO 9001:2000) is most often used to support steel fabrication. ISO 9001:2000 originated in 1987 as part of a family of standards and has evolved to the current model, which reflects eight specific quality management principles:

1. Customer focus
2. Leadership
3. Involvement of people
4. Process approach
5. System approach to management
6. Continual improvement
7. Factual approach to decision-making
8. Mutually beneficial supplier relationships

The ISO 9001:2000 criteria capture supports such as Plan-Do-Check-Act (PDCA) in the process approach to decision-making. PDCA drives top management involvement in planning, executing, measuring, analyzing, and acting to continually improve quality. The ISO 9001:2000 criteria are open enough to accommodate a wide variety of product and service organizations. The criteria address design development and verification and include a requirement for a preventive action procedure. The criteria rely on the individual organizations to define and measure their own business-specific prescriptive requirements. Management is charged with the responsibility for measuring and evaluat-

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ing the effectiveness and suitability of the overall quality management system.

The IAS Fabricator Inspection Program for Structural Steel is based on accreditation to the *Accreditation Criteria for Fabricator Inspection Programs for Structural Steel* (AC172). The AC172 criteria provide a good basis for a compliance-based audit of steel fabrication. Procedure requirements align closely with the AISC certification standard through specific additional documentation requirements for procedures to address: handling, storage, and delivery; internal audits; and training. The AC172 criteria depart from the AISC and ISO criteria in the inclusion of a number of prescriptive requirements for personnel qualifications and credentials, and in the inclusion of requirements for specific product inspections. The usefulness of the AC172 criteria as a basis for performance-based auditing is limited by its prescriptive aspects and few requirements that would provide guidance and structure for the quality management system. The fabrication firm's management is provided limited opportunity to analyze data and make their own risk-based decisions that are responsive to their customers' requirements.

How are the program criteria developed?

AISC, ISO, and IAS program criteria are all developed in a publicly open process. In the United States, the ISO criteria are developed and maintained as an American National Standard ANSI/ISO/ASQ Q9001:2000 using the ANSI process, which implies a consensus of those substantially concerned with the scope and provisions of the standard. The AISC criteria are developed by an AISC Certification Committee whose membership represents the balance of interest required for the ANSI process. The IAS criteria are developed by an IAS Accreditation Committee whose membership is not restricted to the ANSI process interest requirements. The IAS Accreditation Committee supports technical advisory committees and public hearings to gather input to the criteria development process.

Although all of the criteria development processes are publicly open, practical participation in each of these processes is worth considering. The ISO criteria development process accommodates the interest of providers and consumers of a broad range of products and services. Fabricated steel is a small portion of the range of ISO

Certification Programs Compared

| | AISC Certification | ISO Registration | IAS Accreditation |
|---|--|--|--|
| Criteria support for compliance auditing | Yes | Yes | Yes |
| Criteria support for performance-based auditing | Yes | Yes | Limited |
| Open criteria development process | Yes | Yes | Yes |
| Industry involvement in criteria development | Full | Limited | Limited |
| Type of periodic evaluation | Compliance and performance audit | Compliance and performance audit | Compliance inspection |
| External costs borne by participating firm | Program fees (annual audit fees and expenses included) | Program fees (annual audit fees and expenses included) | Program fees (periodic surveillance fees included; quarterly inspection fees and expenses are in addition to program fees) |
| Program participation by conventional steel building fabricators (March 2007) | 490 | 15 | 10 |
| Meets IBC Chapter 17 requirements for approved fabricators | Yes | Yes | Yes |

applicability. The AISC criteria development process is specific to the fabricated steel industry. As a result of the program's widespread (and growing) adoption, the criteria development process is actively monitored and influenced by not just fabrication firms, but all building construction stakeholders. Producers, specifiers, designers, owners, contractors, inspectors, building officials, and quality professionals serve on the AISC Certification Committee and are actively involved in the criteria development process. The IAS criteria are developed publicly, but practical industry participation in the process by people other than building officials and inspectors does not match that of the AISC criteria development process.

How are the programs audited?

The AISC, ISO, and IAS programs all require initial and periodic third-party evaluations. AISC and ISO programs require annual performance-based audits of the quality management system to evaluate:

- Compliance to program criteria and the documented quality management system
- Effectiveness of the quality management system
- Suitability of the quality management system for achieving an organization's goals

In both the AISC and ISO programs the periodic evaluations are performed by individuals who have education and experience in audit science and steel fabrication. ISO qualifies auditors through the certification

of registrars to established criteria. The certified registrars then in turn qualify and direct individual auditors to perform the periodic evaluations. AISC qualifies auditors through its wholly owned subsidiary, the Quality Management Company, LLC (QMC). QMC exists solely to support the AISC Certification programs. QMC qualifies, provides regular training to, and directs individual auditors performing periodic evaluations for the AISC program. As the sole auditing organization for AISC, QMC is positioned to assemble and analyze audit data to develop focused auditor training and assist the AISC Certification Committee in risk-based development of program criteria.

The IAS program periodic evaluation is a combination of initial and on-site surveillance by IAS representatives (not to exceed two years) and quarterly unannounced inspections by IAS-accredited inspection agencies. IAS inspector accreditation requires technical inspection competency and education, but no education or experience in audit science. In spite of the frequency of evaluation for the IAS program, the inspection-based qualification of the evaluators considered with the prescriptive nature of the program criteria limits the value of the evaluation to compliance with little or no opportunity to assess performance.

What does it cost to participate in each of the three programs?

The application and annualized fees for participation in each of the three programs are similar and borne by the fabrication firm. Fees for the AISC program are collected on an annual basis in advance of the on-site evaluation. Fees are discounted for AISC members; however, participation in the program is in no way dependent on AISC membership. AISC program fees vary based on the size of the fabrication firm and whether a full or annual periodic evaluation is scheduled.

Fees for the ISO program vary based on the size of the firm and may also vary depending on the particular registrar selected by the fabrication firm to perform the periodic evaluation and manage the registration. Fees for the ISO program are usually collected in advance for a full three-year cycle.

IAS program fees are based on the size of the fabrication firm and allow for one-, two-, or three-year renewal options. The IAS levied fees do not include the cost of the required quarterly unannounced inspections by an IAS-accredited inspection agency; the fabricator must obtain and pay for these services independent of the program fees. The cost of participation in the IAS program may vary significantly based on the availability and fees charged by an IAS-accredited inspection agency, particularly if significant travel expenses are incurred. Less quantifiable, but worth consideration, is the cost of production disruption that may result from the frequent required inspections.

How many fabrication firms are participating in these programs?

Fabrication firms around the world may participate in the AISC, ISO, and IAS programs. It is difficult to fully assess participation in these programs abroad (particularly ISO), but here in the United States, the AISC program leads in both building industry recognition and number of participants. Steel fabricators certified to the AISC *Certification Standard for Steel Building Structures* numbered 490 in early March 2007, with participating firms located throughout the United States. IAS program participants involved in conventional steel fabrication number about 10, with the remaining 60 or so firms participating in the program being primarily involved in joist and metal building manufacturing.

Many of the conventional steel fabrication firms participating in the IAS program are located in the western United States. Domestic participation in the ISO program (ISO 9001) by structural steel fabricators numbered 104 in early March 2007, with fewer than 15 of these involved in conventional steel building fabrication. Firms participating in the ISO program are not concentrated in any one particular area of the country.

Do these programs meet the International Building Code Chapter 17 requirements for approved fabricators?

The short answer is yes, in spite of what you may have heard or read claiming that only one of the three programs satisfies this requirement. The word “approval” in the IBC refers specifically to the building code official or authority having jurisdiction. The AISC certification program is widely recognized for its effectiveness in assuring quality, and is usually accepted by code authorities as a basis for approval. The ISO and IAS program criteria also provide for the written procedures, quality control documentation, and periodic auditing required in IBC Chapter 17.

Do any of the programs support better quality or help me control risk better than others?

It's my opinion, but I value quality programs with criteria that support performance-based auditing and which use evaluators with audit science-related education and experience. Quality is increased and risk is reduced when a firm's top management focuses on customer requirements and is actively engaged in the establishment and continual improvement of quality-related processes and systems. In the end, it is the fabrication firm that is responsible for product quality, not AISC, ISO, IAS or the agencies that provide periodic evaluations. No amount of unannounced on-site inspections can make up for a lack of management support for goal-setting, measurement, and risk-based decision-making regarding the effectiveness of the quality management system. MSC

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