

# **ASABE and International Standardization: A Decade of Harmonization and Collaboration**

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## **1. Introduction**

While the American Society of Agricultural and Biological Engineers (ASABE) has been involved in the development of engineering standards for a century, the last decade has seen the focus shift from mostly national standards towards an increasing portfolio of international standards. This shift was initiated by ASABE members and done in cooperation with key US equipment trade associations, the American National Standards Institute (ANSI), and other peer engineering societies.

In the past decade ASABE has assumed responsibility for several additional ISO Technical Advisory Groups and has nationally adopted a significant number of international standards. Most of this activity is related to standardization of agricultural field equipment within ISO Technical Committee 23, Tractors and Machinery for Agriculture and Forestry. The national adoption process has been an ongoing priority and is especially important to design engineers at multinational and/or global equipment companies. The national adoption of an international standard often includes the withdrawal of a related national standard. The end result being fewer engineering hours spent on comparative reviews of duplicative standards and elimination of potentially conflicting requirements.

The ASABE focus on international standards is fully expected to continue in the years ahead and recognizes the importance of ISO standards that are globally relevant. Educational and outreach activities are planned to increase the use of international standards by smaller manufacturers, engineering students, and additional countries. Greater emphasis is being placed on standardization of irrigation equipment and systems. The gains made possible by emerging technologies, such as precision agriculture and electrification, have also introduced new safety challenges. In all of these topics, and many more, the collective knowledge base of the international community can help reach agreeable solutions – just as has been the case since ISO/TC 23 was formed in 1952.

## **2. ASABE Background**

ASABE was founded in 1907 as the American Society of Agricultural Engineers (ASAE), currently has approximately 8,000 members and is based in St. Joseph, Michigan in the North Central United States (US) [1]. The society is the primary Standards Development Organization (SDO) for agricultural equipment in North America. In the US, the American National Standards Institute (ANSI) is the official US representative to the International Organization for Standardization (ISO) and accredits organizations, including ASABE, to develop national standards and to represent the United States in the development of international standards [2]. As an organization, ASABE is well connected within both the standards development community and within the agricultural industry. This promotes collaboration and exchange of information during the development of standards and provides for ongoing dialogue with various North American trade associations representing the manufacturers of agricultural equipment.

### **3. ISO Standardization for Agricultural Equipment**

Within the ISO technical committee hierarchy, ISO Technical Committee 23 (ISO/TC 23), Tractors and machinery for agriculture and forestry [3], contains the body of knowledge pertinent to the design of agricultural equipment. Due to the extensive nature of the topic, there are currently eleven established subcommittees which address standardization of specific topical areas such as tractors or irrigation and drainage. Within the US, ASABE administers the national position for ISO/TC 23 and eight of the established subcommittees as noted below. These national committees are often referred to as the “mirror committee” or the US Technical Advisory Group (US TAG).

- ISO/TC 23/SC 2, Common Tests
- ISO/TC 23/SC 3, Safety and comfort
- ISO/TC 23/SC 4, Tractors
- ISO/TC 23/SC 6, Equipment for crop protection
- ISO/TC 23/SC 7, Equipment for harvesting and conservation
- ISO/TC 23/SC 14, Operator controls, operator symbols and other displays, operator manuals
- ISO/TC 23/SC 18, Irrigation and drainage equipment and systems
- ISO/TC 23/SC 19, Agricultural electronics

The remaining three ISO/TC 23 subcommittees are administered by other organizations as noted directly below. ASABE has ongoing dialogue with both organizations as well as many common members.

- SAE International:
  - ISO/TC 23/SC 15, Machinery for forestry
- The Outdoor Power Equipment Institute:
  - ISO/TC 23/SC 13, Powered lawn and garden equipment
  - ISO/TC 23/SC 17, Manually portable forest machinery

The ASABE committees which focus on the ISO committees noted above do not focus exclusively on international standards. Most of these committees are also responsible for one or more national standards. Thus when a need for a new standard is discussed, a decision must be made by the committee as to whether the need is best met by a national or an international document. In many cases, the content of a national standard ultimately becomes the technical basis for the international standard.

### **4. Embracing ISO Standards**

In many cases, the simplest way to acknowledge that an ISO standard is the preferred source of information is for an organization to purchase and use the document. However, the purchaser would not easily know the national opinion during the development of the document. There may be compelling reasons why the document may not meet the needs of a particular country or region. A specific national mirror committee may have voted disapproval on the standard at each step of the process.

As an alternative, the national mirror committee could take additional steps to document their acceptance of the document. While there are different methods to document acceptance, ASABE has chosen to predominantly pursue the national adoption process. The ASABE Standardization Procedures include guidelines and formats for the harmonization of ASABE standards with international standards [4]. These procedures allow both identical adoptions and adoptions with deviations. The identical adoptions are the most straight-forward. They basically include the content of the international standard. In cases where there would be issues with the identical use of the standard, documentation of consensus deviations to the document is allowed. This allows additional technical guidance to accompany the full content of the ISO standard. Ultimately, the responsible ASABE committees would prefer to have all identical national adoptions, but in some cases the adoption with deviations will be pursued until the international standard can be revised to include the additional information covered in the national deviation.

To date ASABE has nationally adopted 40 international standards. Most of these adoptions resulted in the withdrawal of a national standard that was used as a technical basis of the international standard. To date the 40 adoptions are evenly split between identical adoptions and adoptions with deviations. Additionally there are 10 more proposed national adoptions in the queue with more under discussion. The next group of adoptions will include a subset of the ISO 11783 series for ISOBUS technology [5].

An alternate method utilized by ASABE committees to document acceptance of an international standard is to include the international standard as a normative reference in a national standard. This is referred to as incorporation by reference and is not as widely utilized as the national adoption process.

SAE International and the CSA (Canadian Standards Association) committee for agricultural machinery have proceduralized yet another method to document acceptance of international standards. They ballot international standards for industry endorsement. Once approved for this list, staff at SAE and CSA each maintains a record of these endorsed standards for use by their respective constituents. This method is much simpler than the national adoption in that the responsible organization does not need to publish the endorsed documents or pay royalties on a perpetual basis.

The various methods of embracing international standards all have a common thread. Those that are actively involved in the development of standards want to avoid duplicative standards and work towards one standard that is acceptable worldwide. When multiple standards exist for the same topic, this necessitates additional review and introduces complexity for the designer. For multi-national companies, it also can create issues with international commerce. In many cases a product would require modification to allow export or import.

## 5. Conclusions

Over the past decade ASABE committee leadership and staff has worked to expand the use of international standards and to promote increased participation in the development process by both US organizations and additional countries. Over this time period, ASABE has assumed responsibility for seven additional mirror committees within the ISO/TC 23 structure as well as three in other areas related to agricultural engineering interests. Ten years ago discussions began regarding national adoptions of international standards. Today an increasing percentage of the national standards published by ASABE (i.e. 40 out of 256) are adopted international standards and even more adoptions are being pursued. These trends are expected to continue and progress to date documents that ASABE definitely views international standards as an opportunity, not a problem.

## References

- [1] **American Society of Agricultural and Biological Engineers.** Available at: <http://www.asabe.org>
- [2] **American National Standards Institute.** Overview. Available at: [http://www.ansi.org/about\\_ansi/overview/overview.aspx?menuid=1](http://www.ansi.org/about_ansi/overview/overview.aspx?menuid=1)
- [3] **ISO TC 23.** Overview. Available at: [http://www.iso.org/iso/home/standards\\_development/list\\_of\\_iso\\_technical\\_committees/iso\\_technical\\_committee.htm?commid=47002](http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=47002)
- [4] **ASABE Standardization Procedures**, approved by ANSI. Available at: [http://www.asabe.org/media/41352/2011-03-04\\_ansi-approved\\_asabe\\_standardization\\_procedures.pdf](http://www.asabe.org/media/41352/2011-03-04_ansi-approved_asabe_standardization_procedures.pdf)
- [5] **Wikipedia**, 2013. Overview of ISO 11783. Available at: [http://en.wikipedia.org/wiki/ISO\\_11783](http://en.wikipedia.org/wiki/ISO_11783)