

A quarterly newsletter published by the U.S. Department of Energy for the U.S. fuel cell industry to foster development and adoption of codes and standards

ICC Merger Will Benefit Fuel Cell Industry

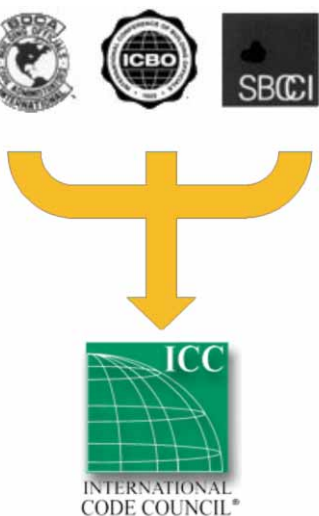
The members of three model code organizations, the Building Officials and Code Administrators International, Inc. (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Code Congress International, Inc. (SBCCI), approved resolutions in Fall 2001 authorizing the development of a plan to merge these organizations into the International Code Council (ICC).

Combining the efforts of these organizations to produce a single set of codes will benefit the fuel cell industry and impact how it does business. One code organization and one set of codes will make it easier for stakeholders to participate in the code development process. One consistent set of requirements throughout the Nation will simplify code compliance for contractors, system integrators, and installers, and will help code enforcement officials determine compliance.

Since the resolutions were approved, the CEOs for BOCA, ICBO, and SBCCI have been meeting to develop the model, transition, and implementation plans for the ICC. Agreements have been reached on several key components, including the consolidation of certification examinations. Other issues discussed at these meetings include by-laws, the internal structure of the future organization, regional locations, personnel, membership needs, and organizational services.

In September 2001, the ICC appointed William J. Tangye, P.E., formerly the CEO of SBCCI, as its first CEO. Ronald L. Nienaber, CBO., chairman of ICBO stated, "This important appointment exemplifies the close working relationship the three founding organizations now have, which will benefit our members and our pursuit of world safety."

Mr. Tangye is responsible for the complete operation and management of the ICC. "As the three model code organizations move toward the goal of being one organization under the ICC umbrella, we will continue to consolidate efforts to ensure that our members and customers will continue to receive quality services and products," said Tangye.



Mr. Tangye has named Bob Heinrich, Executive Vice President of ICBO, as the ICC's Chief Operating Officer. Terry Leppellere, P.E., Vice President of BOCA; Les Moran, Corporate Vice President of ICBO; and Dominic Sims, CBO Executive Vice President of SBCCI, have been named as Senior Vice Presidents of the ICC.

The resolutions will be delivered to BOCA, ICBO, and SBCCI members at the Joint Annual Conference in Ft. Worth, Texas, on September 29-October 3, 2002. An affirmative vote on the plan will authorize its implementation and the merger. The final step will be to implement the merger plan, with a projected target date of January 2003.

Recognizing a global market for economic and efficient code development, the ICC was founded in 1994 as a nonprofit organization dedicated to developing a single set of comprehensive and coordinated national construction codes to serve as national and international models for adoption.

For more information, contact Richard Kuchnicki, ICC Executive Vice President, at (703) 931-4533 Ext. 13 or via email at kuchnicki@intlcode.org.

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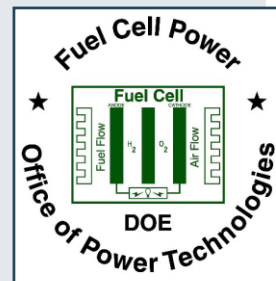
Visit the Fuel Cells website at:
www.pnl.gov/fuelcells

Announcing Fuel Cells Summit VI

Each year the U.S. Department of Energy's Office of Power Technologies brings the fuel cell development community together for the Fuel Cells Summit. The summit provides industry with information and organizational support in developing performance, installation, and operation standards for fuel cell technologies. Additionally, the summit gives developers an opportunity to monitor the progress of fuel cell technologies and ancillary equipment (inverters, fuel reformers), and to identify issues related to the ready acceptance of their own products in the building code community.

Be sure to mark the **Fuel Cells Codes & Standards Summit VI** on your calendar for May 29-31, 2002. The site is the Inn

and Conference Center at the University of Maryland in College Park, Maryland. For more information on the summit or to register, contact Maude Wickline at (703) 617-4254 or via email at maude.wickline@pnl.gov, or visit www.pnl.gov/fuelcells.



Participating in the Codes and Standards Process

Developing, adopting, implementing, and enforcing codes and standards is a lengthy and often difficult process. The voluntary sector, not government, develops and publishes most of the codes and standards that apply to buildings and their systems, as well as vehicles and the infrastructure that serves them.

A standard is a published technical document that represents industry consensus on how a material, product, or assembly is to be designed, manufactured, tested, or installed to obtain a specific performance level. Industry organizations and professional associations develop standards in response to an identified need, based on experience, knowledge, testing, analyses, research, and views of interested parties.

A code establishes minimum quality and performance criteria for the materials and methods to be regulated by the code based on referenced standards. Model codes are cost-effective, uniform, consistent, and supported alternatives to locally- or regionally-developed codes. A standard is a referenced resource that becomes law when the code referencing it is adopted by a jurisdiction.

Standards organizations include ASTM International, NFPA, UL, CSA International, and IEEE. In addition, SAE is involved in the development of standards to support fuel cell applications on vehicles. ANSI coordinates U.S. standards development to ensure consensus and acts as a focal point for U.S. involvement with international standards development.

BOCA, ICBO, and SBCCI have developed and maintained three separate model codes over the past several years. Recognizing the need for one U.S. model code, these three organizations formed the International Code Council (ICC) in 1994 as a nonprofit organization dedicated to developing a single set of comprehensive and coordinated national construction codes.

NIST is a nonregulatory federal agency involved in coordinating federal agency participation in the private-sector codes and standards development process. NIST's mission is to develop and promote measurements, standards, and technologies to enhance productivity, facilitate trade, and improve the quality of life.

Although many levels of government within the United States can adopt codes and standards, most building regulations are adopted at the state and local level. Local jurisdictions are typically responsible for implementing and enforcing building codes. Plans and specifications are approved by the authority having jurisdiction (AHJ) based on compliance with specific requirements of the jurisdiction's codes and standards or, absent specific requirements for the technology, are approved based on equivalency with the intent of adopted codes and standards.

Once approved and installed, the AHJ official inspects the technology for compliance with the approved plans and specifications and conditions of the permit covering the installation. In addition, the serving electric and gas utilities may become involved in the approval process when they have requirements associated with interconnecting to the electric grid or providing service piping to a building. The review and approval process may also involve testing to verify compliance with adopted standards by a third party such as UL or International Approval Services.

For more information, contact your local code official or Richard Kuchnicki, ICC Executive Vice President, at (703) 931-4533 Ext. 13 or via email at kuchnicki@intlcode.org.

Model codes are revised every few years to address the latest technical advances and industry concerns. Any interested party can submit a code change proposal and participate in the code change proceedings, which involves several steps:

1. ***Interested parties submit code change proposals to the model code organization.***
2. ***A public hearing is held to allow interested parties to present their views on code change proposals.***
3. ***The code development committee considers the proposals and places the committee action on each code change proposal before the hearing assembly for discussion.***
4. ***Following the floor discussion, committee members either approve or disapprove each code change proposal.***
5. ***The results of the public hearing are published and made available for public comment.***
6. ***Organization members vote on a final determination on all code change proposals.***
7. ***The final action on each code change is published. Any person has the right to appeal a substantive or procedural action or inaction.***
8. ***Model codes are revised to incorporate approved code changes.***

Standards Committee Activity Updates

- ▶ **ISO TC 197, Hydrogen Technologies.** Europeans are pushing for rapid development of a standard for on-board liquid hydrogen storage based on material developed over several years by European corporations and the European Commission under the European Integrated Hydrogen Project (EIHP). Germany's Transportation Ministry has submitted the EIHP-developed draft regulations on liquid and gaseous hydrogen storage tanks to the European Economic Commission (CEN). The EIHP expects to complete new draft regulations for vehicle components and systems, refueling procedures, and periodic inspections in January 2004 (see www.eihp.org). CEN, as an organization within the United Nations (UN), can request that the UN harmonize standards globally. The United States is not participating in the development of EIHP regulations. The standard being developed is different from the standard ISO has been developing over the past several years. The U.S. concern is that advanced technologies are not adequately considered in the standards process, U.S. approaches to testing and certifications will not be incorporated in draft standards, and U.S. stakeholder interests will not be considered in drafting the proposed standards. At the recent ISO TC 197 WG 6 meeting addressing on-board hydrogen storage tanks for vehicles, the Europeans asked for changes in the standards to make them consistent with the proposed tank standard submitted to CEN. A standing committee of the UN that deals with vehicle emissions (GRPE) is forming the ad hoc Hydrogen Work Group to recommend whether to adopt the EIHP regulations, and how to handle those regulations. Contact: Karen Miller (NHA), (202) 223-5547, email: kmiller@tccorp.com.
- ▶ **ANSI Z21.83 - 1998/CSA, Fuel Cell Power Systems.** At the first meeting of the CSA America Fuel Cell Technical Advisory Committee, Kelvin Hecht, UTC Fuel Cells, was selected as committee Chair. Hecht is Chair of IEC TC 105 US TAG and Convener of IEC TC 105 WG 1 and WG 3. A working group was established to prepare a proposed national standard for portable fuel cell power generators (proposed ANSI/CSA FC 3). Serge Comtois of H Power, Chair of the working group, will also be the Convener of the newly proposed International Portable Fuel Cell Working Group for IEC TC 105 (Fuel Cell Technologies). CSA International Requirement 3.01 U.S. for Portable Fuel Cell Power Generators (November 2001 draft) is the seed document for CSA FC 3. The working group will teleconference on February 12, 2002, to review proposed changes to the draft CSA FC 3. The next meeting of the Technical Advisory Committee and the working group will be in Las Vegas, Nevada, April 17-19, 2002 (following the IEC TC 105 WG 3 Stationary Fuel Cell - Safety meeting). Contact: Steve Kazubski (CSA America), (216) 524-4990 Ext. 8303, email: steve.kazubski@csa-america.org or steve.kazubski@csa-international.org.
- ▶ **IEC TC 105, Fuel Cell Technologies.** The initial meeting of IEC TC 105 WG 6 (Propulsion) was held in Frankfurt, Germany, with representatives of the National Technical Advisory Groups from the United States, Japan, and Germany, along with liaison representatives from ISO TC 22 SC 21 (Electric-Powered Road Vehicles). Uncoordinated development of codes and standards for fuel cells is viewed as a potential barrier to successful deployment of fuel cells, and the level of activity is alarming. The IEC and ISO want to coordinate their consensus-developed standards to enhance the commercialization of fuel cell-powered electric vehicles. The next meeting of IEC TC 105 WG 3 Stationary Fuel Cell-Safety will be in Las Vegas, Nevada, April 15-16, 2002. The next meeting of IEC TC 105 will be in Montreal, Quebec, in June 2002. Contact: Steve Kazubski (CSA America), (216) 524-4990 Ext. 8303, email: steve.kazubski@csa-america.org or steve.kazubski@csa-international.org.
- ▶ **ASME PTC 50, Performance Test Code on Fuel Cell Power Systems.** Industry review comments on the proposed Test Code are being addressed by the committee and changes will be made accordingly. Contact: Jack Karian (ASME), Secretary of PTC 50, (212) 591-8552, email: karianj@asme.org.
- ▶ **NFPA 853, Installing Fuel Cells.** NFPA 853 is complete. There were no public proposals to include residential or small fuel cells for the next edition (Annual 2002). However, Don Drewry, Chair, and the Fuel Cell Task Group are meeting to address fuel cells smaller than 50kW. They will present their changes to the full committee on February 19-21, 2002, in Orlando, Florida. Contact: Don Drewry (Hartford Steam Boiler), email: Don_Drewry@hsb.com or Richard Bielen (NFPA), (617) 770-3000, email: rbielen@nfpa.org.
- ▶ **NFPA 70 - Article 692, Fuel Cell Plant.** The 2002 National Electrical Code (NEC) is available. Contact: Jean O'Connor, (617) 984-7421, fax (617) 984-7070, email: joconnor@nfpa.org.
- ▶ **National Evaluation Service (NES).** The Protocol for Evaluation of Stationary Fuel Cell Power Plants is available to help fuel cell manufacturers and technology users better understand the testing and documentation that may be necessary to validate compliance with U.S. model building codes, and to secure more timely and widespread acceptance by the building community and approval by code officials. A copy of the protocol is available at www.nateval.org (copy and distribute as appropriate). Contact: Darren Meyers (BOCA), (708) 799-2300, email: dmeyers@bocai.org.
- ▶ **IEEE P1547, Distributed Resources and Electric Power Systems Interconnection.** The Draft 8 ballot resulted in an increase of returned ballots, reaching 96%, and an increase in the number of affirmatives, up to 103, again with 66% affirmatives; however, 75% affirmatives are required to proceed with a proposed standard to the IEEE Standards Board. At the October 16-19, 2001, P1547 Working Group and Ballot Group Meeting, participants developed recommended wording changes and encouraged Chair DeBlasio to intensify efforts for recirculation of another draft. The next P1547 Working Group and Ballot Group Meeting was held January 31-February 2, 2002, in Washington, D.C. Contact: Richard DeBlasio (NREL), (303) 384-6452, email: ddeblasio@tclink.nrel.gov or Tom Basso (NREL), (303) 384-6765, email: thomas_basso@nrel.gov.
- ▶ **UL1741, Standard for Inverters, Converters and Controllers for Use in Independent Power Systems.** UL plans to adopt the P1547 requirements in UL1741 once P1547 is published. Contact: Tim Zgonena, (847) 272-8800 Ext. 43051, fax (847) 509-6298, email: timothy.p.zgonena@us.ul.com.

**2002****FEB****MAR****Calendar of Events**

- 21-22 **Mid-Atlantic Distributed Energy Resources Workshop**, Sheraton Rittenhouse Square Hotel, Philadelphia, PA. Contact: MaryLee Blackwood at Energetics, Inc., (410) 953-6277. See: www.eren.doe.gov/pro/cal.html or www.energetics.com/DERPhilly.html.
- 3 **Operating Procedures of U.S. TAGs to ISO: Strengthening the U.S. Voice in International Standardization (ANSI course)**, ANSI Headquarters, New York, NY. Contact: Pamela Suett at (212) 642-4976, psuett@ansi.org.
- 4-7 **SAE 2002 World Congress and Exhibition**, Cobo Center, Detroit, MI. See: www.sae.org/congress.
- 7-8 **Distributed Generation**, Embassy Suites South, San Francisco, CA. See: www.aeecenter.org/seminars.
- 11-13 **6th Annual Distributed Generation and On-Site Power Conference**, Marriott Marquis, Atlanta, GA. Contact: Ken Dee at (508) 427-9470, gesi@mediaone.net. See: www.dist-gen.com/.
- 12 **10th Annual National Energy Modeling System/Annual Energy Outlook Conference**, Crystal Gateway Marriott, Arlington, VA. Contact: Peggy Wells at (202) 586-0109, (202) 586-3045 (fax), peggy.wells@eia.doe.gov. See: www.eia.doe.gov/oiaf/aeo/conf/index.html.
- 12-14 **U.S. DOE Microturbine Program Review**, Fairfax, VA. Contact: Debbie Haught at (202) 586-2211.
- 13-15 **Power Systems Conference 2002: Impact of Distributed Generation**, Clemson University, Clemson, SC. Contact: Adly Girgis at powsys2002@ces.clemson.edu.
- 14-15 **Fundamentals of Energy Management**, Embassy Suites Convention Center, Las Vegas, NV. Contact: (702) 893-8000. See: www.aeecenter.org/seminars.
- 17-19 **EGSA's Annual Spring Convention**, La Mansion Del Rio Hotel, San Antonio, TX. Contact: Electrical Generating Systems Association at (561) 750-5575, (561) 395-8557 (fax), c.mally@egsa.org. See: www.egsa.org.
- 20-22 **VIIth Distributed Resources Conference and Exhibition**, Westin Galleria Dallas, Dallas, TX. Contact: Laura Goldie at (650) 855-2560, (650) 855-2287 (fax), lgoldie@epri.com. See: www.epri.com.
- 20-23 **Building Energy 2002 Conference**, Tufts University, Medford, MA. Contact: (413) 774-6051, (413) 774-6053 (fax), nesea@nesea.org. See: www.nesea.org.
- 21 **How Your Organization Can Benefit from Participating in the National and International Standard Development Process (ANSI course)**, McCormick Place Complex, National Manufacturing Week Trade Show, Chicago, IL. Contact: Pamela Suett at (212) 642-4976, psuett@ansi.org.
- 24-26 **The 4th Annual National Green Building Conference**, The Westin Seattle in Seattle, WA. Contact: NAHB at (888) 602-HOME.
- 25-26 **Fundamentals of Cogeneration & Onsite Generation**, Philadelphia, PA. See: www.aeecenter.org/seminars.
- 27-28 **Globalcon Energy/Facilities Management Conference and Expo**, Philadelphia, PA. See: www.aeecenter.org/seminars.
- 8-10 **Fuel Cell Transportation Technology Summit II (8th), SAE Fuel Cell Standards Committee Meeting (9th-10th), and SAE Fuel Cell TOPTEC: Designing Practical Vehicle Solutions (10th)**, Ritz Carlton Hotel, Dearborn, MI. Contact: Marcie Hineman at (724) 772-4074, hineman@sae.org.
- 8-19 **Public Hearings on Code Change Proposals and Code Committee Meeting**, Radisson Hotel, Green Tree, Pittsburgh, PA. Contact: International Code Council at (703) 931-4533, (703) 379-1546 (fax), staff@intlcode.org. See: www.intlcode.org/codes.
- 15-20 **Hannover Fair: Group Exhibits on Hydrogen and Fuel Cells**, Hannover, Germany. Contact: Arno A. Evers at ++49.8151.99892.3., +49.8151.99892.43. (fax), arno@fair-pr.com. See: www.fair-pr.com.
- 21-22 **Mid-Atlantic Distributed Energy Resources Workshop**, Philadelphia, PA. See: www.eren.doe.gov/pro/cal.html or www.energetics.com/DERPhilly.html.
- 29-31 **Fuel Cells Summit VI**, College Park, MD. Supported by the U.S. Department of Energy, Office of Power Technologies. Contact: Maude Wickline at (703) 617-4254, maude.wickline@pnl.gov. See: www.pnl.gov/fuelcells.

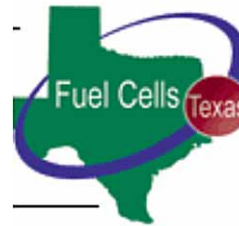
APR**MAY**

Industry Promoting Fuel Cells in Texas

Companies in the fuel cell business are promoting the use of fuel cells in the state of Texas. A new nonprofit trade association representing the fuel cell industry is seeking to accelerate the broad commercialization and deployment of fuel cells in the Lone Star State through public education, policy alignment, and development of state-sponsored initiatives.

Incorporated in September 2001, Fuel Cells Texas was established to promote the benefits of fuel cells and to bring together the public and private sectors interested in advancing and commercializing fuel cells. Fuel Cells Texas provides leadership and industry input to many fuel cell-related activities throughout the state.

Current Fuel Cells Texas initiatives include working with the State Energy Conservation Office and its Fuel Cell Initiative Advisory Committee to develop a statewide plan to define potential opportunities for the rapid deployment of fuel cells and the growth of this exciting new industry in Texas. The plan is scheduled to be delivered to the legislature in September 2002. It could include incentives for installing fuel cells such as utility rebates, tax incentives, net metering provisions, and other similar measures.



Fuel Cells Texas is working with the Texas Natural Resource Conservation Commission Fuel Cell Partnership to promote public awareness of fuel cells through demonstrations, identify barriers to wide-

spread deployment, demonstrate the viability and benefits of fuel cells, and stimulate market demand for this exceptional technology. It is also working with other private and public companies, institutions, and interests to advance the technology's penetration into the marketplace throughout the state.

Fuel Cells Texas has contracted with Good Company Associates to manage the association and to represent its interests and policies publicly and in both state regulatory and legislative arenas.

For more information, contact Deanna Altenhoff, Executive Director of Fuel Cells Texas, at (512) 480-2218 or via email at daltenhoff@goodcompanyassociates.com, or visit www.fuelcellstexas.org or www.goodcompanyassociates.com/subfuelcell.php.

IEC TC 105 Developing International Standards on Fuel Cell Technologies (cont'd from page 6)

WG 4 - Performance. WG 4 is addressing the performance of stationary fuel cells. Seven countries with a total of 16 members (mostly manufacturers and some utilities) are participating in this effort. WG 4 is identifying the scope, a definition of a common diagram, test items, test uncertainty, the base for fuel heat value, and needed definitions. The working group is looking at other ISO standards related to other co-generation technologies. The major testing items are likely to be in the areas of operation, safety, and environmental categories. The Project Leader is O. Yamamoto.

WG 5 - Installation. Several discussions on the differences between WG 3 and WG 5 have occurred. At the London meeting in September 2001, committee members clarified that installation applies to the interaction of the power plant with the surrounding environment, and WG 3 applies to the acceptability of the power plant itself from a safety standpoint. The United States has submitted forms to establish WG 5 as an official working group of TC 105. The vote on this proposal should be complete in February 2002. The working group will likely use NFPA 853, which covers the same subject, as a starting point.

WG 6 - Propulsion. This ad hoc working group is focusing on fuel cell systems in transportation, with subgroups covering automotive propulsion or auxiliary power units and other applications outside

automotive propulsion. WG 6 expects to become an official working group after formal approval of its status later in 2002. The goal of WG 6 is to ensure no problems exist for the vehicular industry as fuel cells are introduced into the marketplace. Committee members clarified the role of the vehicle and the fuel cell within the vehicle at the London meeting because various groups are responsible for each role. The WG has an agreement to coordinate its work with IEC TC 22 SC 21 (electric road vehicles). Committee members also identified the need to work with SAE.

WG 7 - Portable Fuel Cells. IEC TC 105 has assembled an ad hoc committee to work on standards for portable fuel cells and has submitted forms required to formalize this working group. Discussions in London included the definitions of portable, nonportable, and transportable applications.

CSA America, Inc., is the Secretariat to the U.S. Technical Advisory Group (TAG) that is involved with the activities of IEC TC 105. The U.S. TAG also reviews the activities of the full TC and prepares U.S. positions on those TC activities, which are taken to TC 105. For more information on IEC TC 105 activities, contact Steve Kazubski at CSA America, Inc., (216) 524-4990 Ext. 8303, email: steve.kazubski@csa-america.org or steve.kazubski@csa-international.org.

IEC TC 105 Developing International Standards on Fuel Cell Technologies

(Courtesy of David Conover, National Evaluation Service)

The International Electrotechnical Commission (IEC) Technical Committee (TC) 105 on Fuel Cell Technologies was formed a few years ago to develop international standards for fuel cell technologies, including stationary, transportation, and auxiliary power units, and portable power generation systems capable of being used in any country. Currently, the TC 105 membership includes 13 Participating countries (Australia, Canada, China, Denmark, France, Germany, Italy, Japan, Netherlands, Spain, Switzerland, United Kingdom, and the United States) and 10 Observer countries (Austria, Belgium, Egypt, Finland, Korea, Norway, Poland, Portugal, Sweden, and Yugoslavia).

Developing international standards at this stage is important to help create global acceptance of fuel cell technologies, and thus facilitate commercialization, international trade, and approval procedures. International standards can support global acceptance of fuel cell technologies and preclude the development of multiple national and regional codes that further complicate the approval procedures for fuel cells. Like U.S. standards, international standards are incomplete because of the time required to develop the standards and because fuel cell technologies are currently moving from the research and development stage to commercialization.

Creating an infrastructure to support fuel cell technologies, which includes garages, tunnels, service stations, and tanks, as well as addressing refilling, storage, and related safety issues associated with the use of hydrogen, are also vital to successfully market these technologies. TC 105 is working with committees such as the ISO TC 197 on hydrogen, which has a cooperative agreement with TC 105, and organizations such as the National Hydrogen Association, the International Code Council, and the Society of Automotive Engineers in the United States to address issues related to infrastructure and safety.

TC 105 first met in Frankfurt in February 2001 and again in London in September 2001. The committee will meet again in Montreal in June 2002. At these meetings, attendees discuss activities by TC working groups, activities by various countries, and liaison work that is underway with other committees in the IEC and ISO organizations, as well as other organizations such as the Society of Automotive Engineers (SAE). Ongoing activities by seven TC working groups (WG) are supporting the committees' involvement in the development of international standards for fuel cells:



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

WG 1 - Terminology. WG 1 recognizes the importance of using standard terms and definitions throughout TC 105 and the industry. Committee members from seven countries and the ISO TC 197 on hydrogen are preparing a technical report defining terms for TC 105. The report will support all standards developed by TC 105 and will be a resource guide to the other working groups under TC 105. The working group is using the Oxford Dictionary, the IEC Dictionary, the U.S. Fuel Cell Council Glossary, Japanese Standards Association (JSA) TCR C 0001, and SAE information report J2574 (draft) as resources for the report. WG 1 listed terms to be defined and circulated a draft of these terms for comment. Initial responses suggested a need for clarifying what is covered by the various standards. WG 1 has been directed to create generic fuel cell diagrams that all working groups within TC 105 can use. A second draft of the document, which includes drawings, definitions, and equations, has been circulated for committee member comment. The draft will be presented at the Montreal meeting. The Project Leader is Kelvin Hecht.

WG 2 - Fuel Cell Module. Germany is convening this working group to develop a standard that will address the safety and performance of a fuel cell module (e.g., the fuel cell stack alone). WG 2 members and ISO TC 197 received a draft standard and have held meetings to develop draft text for the standard. A committee draft is expected in May 2002. The Project Leader is G. Filip.

WG 3 - Stationary Safety. The United States is convening this working group to develop a standard that will establish performance requirements for the design, construction, testing, and marking of packaged stationary fuel cell power plants. Eight countries are participating in this effort, along with representatives from ISO TC 197. WG 3 is reviewing ANSI Standard Z21.83 with revisions, two versions of a Canadian document, and Japanese and German standards on fuel cells. The scope of the standard covers stationary systems for domestic, commercial, and industrial use. Requirements may differ for domestic and commercial/industrial use and for grid-parallel or grid-independent systems. Other variables include whether the unit outputs AC or DC power, employs heat capture, or operates on multiple fuels. The standard will not cover portable or propulsion fuel cell systems. WG 3 has held several meetings and has scheduled more for 2002 to develop a draft standard. The Project Leader is Kelvin Hecht.

(cont'd on page 5)