29th Nuclear Air Cleaning Conference
Tuesday July 18, 2006

AG-1 Code on Nuclear Air and Gas Treatment

Background

Air cleaning standards have been in existence for many years. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) and the National Bureau of Standards were actively engaged in developing and producing such documents applicable to commercial and industrial air cleaning equipment and systems. The Department of Defense published standards and specifications for air cleaning protection equipment and systems for military use. In the late 1960's, when the nuclear power generation industry became a reality, there were no specific standards available covering air cleaning equipment and testing of the unique systems that were required to protect both plant personnel and the general public from potential radiological hazards.

In early 1971, the then Atomic Energy Commission staff met with a number of suppliers and engineers to review the various factors that affect the design of power plant systems, particularly standby gas treatment systems of boiling water reactors. Out of these meetings came a recommendation to form a group to prepare a standard covering the design, installation, maintenance and testing of standby gas treatment systems. The ANSI N45-8 Committee was established and assigned to ASME. Over the next couple of years, standards development activities recognized the need to expand the scope to include all nuclear air and gas treatment equipment and systems. In 1975, the ASME elected to transfer the responsibility to the Nuclear Codes and Standards supervision (now the Board on Nuclear Codes and Standards).

Codes & Standards

The Committee on Nuclear Air and Gas Treatment (CONAGT) came into existence with the scope to prepare codes and standards for all engineered safety features air and gas treatment equipment and systems. The primary document that would contain these requirements was labeled the AG-1 Code. The Code contains a number of sections that provide requirements for the specific components used in air cleaning systems and the general requirements for all components and systems.

The current edition of the AG-1 Code is separated into 4 Divisions and 27 Sections:

Division I General Requirements
Section AA Common Articles

Division II Ventilation Air Cleaning and Ventilation Air Conditioning
- Section BA Fans & Blowers
- Section DA Dampers & Louvers
- Section SA Ductwork
- Section HA Housings
- Section RA Refrigeration Equipment
- Section CA Conditioning Equipment
- Section FA Moisture Separators
- Section FB Medium Efficiency Filters
- Section FC HEPA Filters
- Section FD Type II Adsorbers
- Section FE Type III Adsorbers
- Section FF Adsorbent Media
- Section FG Mounting Frames
- Section FH Other Adsorbers (In course of preparation)
- Section FI Metal Media Filters (In course of preparation)
- Section FJ Low Efficiency Filters (In course of preparation)
- Section FK Special Round Filters (In course of preparation)
- Section IA Instrumentation & Controls

Division III Process Gas Treatment
- Section GA Pressure Vessels, Piping Heat Exchangers & Valves (In course of preparation)
- Section GB Noble Gas Hold-up Equipment (In course of preparation)
- Section GC Compressors (In course of preparation)
- Section GD Other Radionuclide Equipment (In course of preparation)
- Section GE Hydrogen Recombiners (In course of preparation)
- Section GF Gas Sampling

Division IV Testing Procedures
- Section TA Field Testing of Air Treatment Systems
- Section TB Field Testing of Gas Process Systems (In course of preparation)

In addition to the AG-1 Code, there are three other major ASME standards that are applicable to the design and testing of air cleaning systems that CONAGT maintains:

ASME N509 Nuclear Power Plant Air-Cleaning Units and Components
ASME N510 Testing of Nuclear Air Treatment Systems
ASME N511 In-Service Testing of Nuclear Air Treatment, Heating, Ventilating, and Air Conditioning Systems (In course of preparation)

The AG-1 Code essentially replaces ASME N509 for component design and ASME N510 for system and component acceptance testing of systems and components. However, these documents are maintained and continued to be published for older power plants that were designed to the N509 standards and currently tested following the applicable requirements on N510. The new standard covering inservice testing of systems and components is in the final stages of publication.

CONAGT Panel Discussion Agenda

Several current topics on nuclear air treatment equipment and systems have been selected for presentation and discussion. Key members of the ASME Committee on Nuclear Air & Gas Treatment (CONAGT) will provide a brief presentation of these topics and will lead discussions and provide responses to any questions.

Panel Moderator	Tom Vogan	Chairman CONAGT Standards Committee
Filtration	Jack Hayes	Chairman Subcommittee Filtration
Ducts, Dampers & Housings	Mark Saucier	Chairman Subcommittee Common Equipment
Structural Design	Raj Raheja	Chairman Subcommittee General Requirements
Field Testing	Walt Wikoff	Chairman Subcommittee Field Testing
Emerging Technology	Roger Zavadosky	Chairman Technology
Code Administration	Oliver Martinez	ASME Staff

At sessions such as this, feedback on the quality of the Code and needs of the user is solicited. At a past presentation of the AG-1 Code, users questioned whether criteria for repairs and replacement of air cleaning equipment could be incorporated into the Code. As a result this feedback, the Committee has undertaken the development of a new Article AA-10000 that will incorporate the requirements for repair and replacement activities for components.