

Tribute to [William \(Bill\) J. Coad, 1931 to 2014](#)

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In Dr. Mumma's (Mumma) opinion, Bill has contributed more to the HVAC industry thru his engineering innovation and winsome example than most could ever hope for.

Mumma's first encounter with Bill was in the fall of 1985 at an NSF conference designed by director Gifford Albright to address the research needs of the HVAC industry.

Mumma had recently joined the [Architectural Engineering Department at Penn State](#) and was given a mandate to develop productive leaders in the Building Mechanical (HVAC) industry. [Bill's conference presentation](#) dealt with the engineering approach (philosophy) to HVAC design which resonated with Mumma's new mandate. Bill characterized the two approaches to engineering design as follows:

- One, he called the *erector set approach*, where existing off the shelf products (tinker toys) are patched together as best they can be to meet a design objective.
- The other approach, he called the *first principles approach*, which seeks to understand the fundamental requirements of a project and conceptualize the best equipment and materials (based on engineering fundamentals) to satisfy the fundamental needs.
 - If the specific hardware etc. exists to meet the need, employ it/them.
 - Where the specific item does not exist, invent it and get it built.

From the first hearing in 1985 until the present Mumma shared these two approaches with all under his instruction. While both approaches can work, it is the *first principles approach* that establishes leadership in the industry.

In 1989, ASHRAE issued a new version of Std. 62, ***Ventilation for Acceptable Indoor Air Quality***, that generally raised the outdoor air (OA) requirement from 5 to 15 or 20 cfm/person, seriously elevating the tension between good energy stewardship and Indoor Environmental Quality (IEQ).

This caused Bill to conceptualize a system, as discussed in his 1999 HPAC paper [Conditioning Ventilation Air for Improved Performance and Air Quality](#) based on his *first principles approach*.

Parallel with Bill's work, but completely independently, Mumma and his students were attacking the challenge of meeting ASHRAE's OA requirements without excessive over ventilation of the non-critical spaces typical of the near universal VAV multi-zone all air systems. Eventually ([about 1997](#)) that work led to what they called a dedicated outdoor

air system (DOAS), culminating in the following first wave of six ASHRAE Technical papers published in 2001:

- [Overview Of Integrating Dedicated Outdoor Air Systems With Parallel Terminal Systems](#)
- [Achieving Dry Outside Air in an Energy Efficient Manner](#)
- [Selecting The Supply Air Conditions For A Dedicated Outdoor Air System Working In Parallel With Distributed Sensible Cooling Terminal Equipment](#)
- [Integration of Hydronic Thermal Transport Systems with Fire Suppression Systems](#)
- [Ceiling Radiant Cooling Panels As A Viable Distributed Parallel Sensible Cooling Technology Integrated With Dedicated Outdoor Air Systems](#)
- [Dedicated Outdoor Air-Dual Wheel System Control Requirements](#)

It was at an ASHRAE meeting in about 1997 that Coad and Mumma discovered their mutual interest and similar solution to the energy and IEQ dilemma. Bill's encouragement and support emboldened Mumma to become a zealot for DOAS, resulting in many papers, ASHRAE lectures, Short courses, and engineering graduates fluent in the technology.

In 2000 Bill was elevated to the ASHRAE office of president elect, and a year later to president. Those familiar with ASHRAE politics know that those who ascend to leadership positions most often go along to get along, sometimes called [groupthink](#). Bill was a man of principles who executed assigned action only consistent with his core values. This admirable back-bone trait caused some in leadership at the time to falsely think Bill shirked some responsibilities. Fortunately for ASHRAE, and our industry the skeptics did not prevail, and Bill served with distinction as President while inspiring may to excellence.

In 2006 ASHRAE began planning for the renovation of its Atlanta headquarters facility. To do so, a number of advisory committees were established to scope the project. Mumma was ask to be chair of the HVAC equipment advisory committee, and was free to pick members of his committee which only met by phone and electronically. Bill made himself available for this advisory committee. The advisory committee's [guidelines](#) resulted in DOAS becoming a central part of the renovation design, with Bill's complete support.

Finally, Mumma had several opportunities to address the St. Louis chapter of ASHRAE as an ASHRAE distinguished lecturer. In each case Bill made a special effort to be present, and to spend time after the meeting to discuss technical issues.

Few humans have impacted Mumma's thinking and technical approach more than Bill has. He truly was a giant in our industry.