The Origin of Hydrail and the *International Journal of Hydrogen Energy*

By Stan Thompson, Co-Founder, The Mooresville Hydrail Initiative

In 2004, the Mooresville South Iredell Chamber of Commerce had, for a couple of years, been pursuing with limited success the creation of an inevitable, but yet-to-be-born revolution in railway traction—hydrogen fuel cells. Working with the Charlotte Area Transit System (CATS), Mooresville was seeking to pioneer the world debut of hydrogen commuter trains for pollution and climate change abatement. Our immediate priority was to attract federal innovation funding to help fund Mooresville’s portion of a proposed Charlotte-Mooresville commuter line.

The players in this audacious game were the rising Chairman of the Chamber (and soon to be Mooresville’s Mayor) Bill Thunberg; an engineering wizard from Ingersoll-Rand named Jim Bowman; and myself—a recently retired long-range planning engineer, corporate planner, and futurist from what is now AT&T.

Our efforts had met with some interest by a railcar company and with strong interest by the U.S. Department of Transportation’s “think tank” at the Volpe National Transportation Systems Center in Cambridge, MA. In August, 2003, I was invited to Volpe by Senior Engineer Gary Ritter to present “The Mooresville Hydrail Initiative” to a US Department of Defense and Industry team designing a hydrogen switching locomotive.

Our top priority was making government agencies and the public aware that a new, potentially carbon-free, and non-polluting railway technology was possible.

I realized that it would be a challenge to convince industries with massive capital assets that hydrogen was the way to go because change can be extremely expensive.

To make hydrail credible, I surfed the internet for fuel cell rail projects around the world. One day, I found that some Cal Tech Scientists were concerned that hydrogen leakage might exacerbate the Antarctic ozone hole problem, but that a Dr. T. Nejat Veziroglu of the University of Miami disagreed. I contacted Dr. Veziroglu and told him about Mooresville’s hydrail initiative. He was intrigued by the rail angle and, as President of the IAHE, asked me to submit a story about it for the non-peer-reviewed “News and Views” section of the IJHE. I did, and it appeared in the February 2004 issue.

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IAHE Objective

The objective of the IAHE is to advance the day when hydrogen energy will become the principal means by which the world will achieve its long-sought goal of abundant clean energy for mankind. Toward this end, the IAHE stimulates the exchange of information in the hydrogen energy field through its publications and sponsorship of international workshops, short courses, symposia, and conferences. In addition, the IAHE endeavors to inform the general public of the important role of hydrogen energy in the planning of an inexhaustible and clean energy system.

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International Association for Hydrogen Energy

International Association for Hydrogen Energy
This introduced “hydrail” into the English language. Thanks to the internet, hydrail soon became the generic term used for all wireless rail vehicles carrying electric energy onboard as hydrogen.

“Hydrail” was coined in the IJHE to provide a unique searchable target word and helped integrate work on the subject by scientists and engineers around the world.

By far, the biggest hurdle for hydrail implementation was making the public aware that familiar 19th century trolley technology was no longer the future of railway electrification. To prove to Charlotte that it was OK to consider a new option, we wanted to show that we were not alone.

To that end, on May 5, 2005, we organized the First International Hydrail Conference (1IHC) in Charlotte. The USA, Canada, Denmark, and Japan participated in the conference. The EnviroTeam at the Bank of America’s headquarters was the primary funding sponsor.

Because of hydrail’s air quality improvement potential (Charlotte was faced with draconian US EPA sanctions), Charlotte’s Chamber of Commerce, the Centralina Council of Governments and the State of North Carolina’s Energy Office also helped fund the hydrail conference. Jason W. Hoyle of Appalachian State University’s Energy Center produced the event and created the hydrail web site, which remains hydrail’s academic clearing house.

In 2006, Denmark hosted 2IHC and in 2007, 3IHC was held at Catawba College in North Carolina. 4IHC was held in Valencia Spain, and by then the focus was getting actual hydrail trains on the ground as early as possible. In 2010, with help from Dr. Veziroglu, 6IHC was hosted in Istanbul by the United Nations Industrial Development Organization. 7IHC was held at the University of Birmingham’s Centre for Railway Research and Education.

At 8IHC in 2013, at Ryerson University in Toronto, Canada, the keynote presenter was Hydrogenics CEO, Daryl Wilson. There he connected with train builder Alstom Transport of France and, after a year of quiet planning, Alstom and Hydrogenics announced in Berlin at InnoTrans 2014 that the first fleet of forty hydrail trains would be in service in four German states by 2020.

Just as planned, the international hydrail conferences had birthed a new, green, fuel cell rail industry.

In 2013, I went to Shanghai as a guest of the Southwest Jiaotong University for the Fifth World Hydrogen Technology Conference, dedicated to Dr. Veziroglu. There I spoke and chaired the hydrogen locomotive session. Two years later, Chinese hydrail trams were being manufactured by CSR Sifang Co., Ltd. and Tangshan Railway Vehicle Company.

In September 20, 2016, eleven years after 1IHC, I was invited to Berlin for the unveiling of the prototype of Alstom Transport’s first full-scale hydrail train, the Coradia iLint.

Today the international hydrail conferences’ climate protection goal is to supplant diesel railway traction with wind, solar, hydroelectric, and other carbon-free sources as rapidly and as widely as possible and to forestall stranded investment in “wired” railway electrification.

Just as diesel trains replaced steam, hydrail has begun replacing diesel. The Twelfth International Hydrail Conference will be in Graz, Austria, June 27-28, 2017.

China and Japan have inquired about hosting in the future.

Mooresville’s hydrail vision in the February 2004 issue of the IJHE has now been realized.
Hydrail Photo Gallery

Inside of the Coradia iLint hydrail train


CSR Qingdao Sifang tram

Tangshan Railway hydrogen-powered tram

Stan Thompson, at InnoTrans 2016 in Berlin, with the hydrail train he described in the IJHE’s February, 2004, issue.