



PROFESSIONAL QUALIFICATIONS

Professional Background, History and Education

Dr. Jeffrey M. Seisler is the Chief Executive Officer (CEO) of Clean Fuels Consulting with offices in Brussels, Belgium and Washington, D.C. Clean Fuels Consulting is a private company whose mission is to facilitate the commercialization of clean fuels and technologies. Clean Fuels Consulting began in 2004 and the Brussels office was opened in October 2007.

Jeffrey M. Seisler was the first Executive Director of the European Natural Gas Vehicle Association (ENGVA) starting in July 1994 to October 2007. Prior to that he was the first Executive Director of the Natural Gas Vehicle Coalition (NGVC) in Washington, D.C. starting in August 1988.

For five years beginning in 1983 Dr. Seisler was the Associate Director of New Market Development at the American Gas Association. Prior to A.G.A. he ran his own management consulting business, specialising in energy and marketing analysis for the gas and electric industry as well as for other private sector and government clients. He has worked for several consulting firms including Booz, Allen and Hamilton in the areas of energy conservation, utility and solar energy policy analysis, and marketing analysis.

Dr. Seisler received his B.A. in International Affairs and Communications from the George Washington University in Washington, D.C. He received his M.Sc. and Ph.D. from the University of London (London, England) in International Relations, where he specialised in studies on communications, decision making and conflict resolution.

Dr. Seisler was one of the founders of the International Association for Natural Gas Vehicles (IANGV) in 1986 and has been a Vice President and Executive Committee member from 1990 to 2008. He served two terms as President of the IANGV, from May 1998 to October 2002 and currently operates the Brussels office of the IANGV and remains active with the Association's government relations work at the United Nations.

Other Activities and Accomplishments

Lobbying and Government Relations

Dr. Seisler was active in the development of alternative fuel provisions in the Clean Air Act Amendments of 1990 and the Energy Policy Act of 1992 in Washington, D.C. He provided expert testimony at a variety of Senate and House of Representatives hearings and played an important role in the establishment of a number of Executive Branch policies through the rule-writing process and through personal channels within various Executive Branch agencies.

In Europe Dr. Seisler has worked extensively with the European Commission, the European Parliament and the United Nations in the development of technical standards, emissions regulations and policies favoring natural gas and alternative fuels. On behalf of ENGVA he introduced the Environmentally Enhanced Vehicle target standard (EEV) and a non-methane hydrocarbon standard (NMHC) that was included in the Euro 4 heavy duty vehicle regulations in 1999. He was a main participant and advocate of the European Commission's policy to replace 10% of petroleum in the transport sector by 2020 with natural gas (2003). More recently his efforts lead to the inclusion of the definition of biomethane in Euro 5/6 light duty regulations and was responsible for the creation of international fuelling station signage for CNG and LPG within the United Nations.

Clean Fuels Consulting has lobbied the European Parliament and worked with the European Commission on behalf of clients interested in combined heat and power (CHP) systems in Southern Europe, hydrogen-natural gas blending, and advancing liquefied NGV (L-NGV) systems in Europe. Dr. Seisler also has prepared lobbying position papers for European clients advocating certification procedures for dual-fuel (natural gas/LPG-diesel) heavy trucks; to change restrictive underground parking regulations for CNG; and to require national regulators to create tariffs for biogas feed-in projects in accordance with European law.

Industry Analyses

- Has written over 300 articles, monographs, and papers on a wide variety of energy topics, with a strong focus on alternative fuels and specifically natural gas vehicles. Dr. Seisler was a regular contributor to the Washington Post, High Technology Magazine, Consumer Research Magazine the Kiplinger Press and others between 1983 and 1989 on different energy and energy conservation topics.
- Presentations to all major NGV and alternative fuel conferences on wide-ranging marketing, political and technical topics affecting NGVs, hydrogen and related alternative fuels. Topics include fuelling station infrastructure development, vehicle and fuel storage technology, NGV and hydrogen safety, country reports and evaluations, political and policy analysis of individual legislation and regulations as well as more strategic views to initiate government relations and lobbying strategies favorable to the industry.

Training

- Supported the development of two training institutes in the U.S. (including helping to secure a \$1 million Congressional grant for one institution) while director of the U.S. NGV Coalition (1988-1994).

- Created the European Gaseous Fuels Training Institute at the European Natural Gas Vehicle Association (starting in 2004) and developed curricula for standards, market development, government relations and lobbying, as well as oversaw the development of courses on vehicle technologies (CNG, LNG and hydrogen) and fuelling station development, economics, and planning.
- Currently is developing of the International Clean Fuels Training Institute, based in Belgium and the Netherlands, to offer courses on politics, technology, marketing, CNG and hydrogen safety, and CNG cylinder inspection and analysis.

NGV & Hydrogen Standards and Regulations

- In 1988 in the U.S. and again in Europe in 1994 Dr. Seisler was responsible for leading the way in the early development of standards for natural gas vehicles and fuelling stations. In Europe he spent between 1994 and 1995 creating the framework and support for the development of Committee of European Normalization (CEN) standards, and was the liaison for several years between ISO and CEN to ensure there was no duplication of efforts once the standards process was undertaken at both ISO and CEN.
- Since 1995 Dr. Seisler has participated at the Group of Experts on Pollution and Energy at the United Nations where he has fostered and supported numbers of new regulations and amendments to existing UN regulations for natural gas vehicles, fuelling stations, and international road signage for CNG (and LPG) fuelling stations. He has been able to amend critical regulations regarding dual fuel engine systems that has allowed them to operate legally and was responsible for amending regulations related to high pressure flexible fuelling hoses that alleviated a major road-block to getting articulated natural gas buses into European markets.

Developing Emissions and Other Regulations

- Dr. Seisler has been a regular participant at the European Commission's Motor Vehicle Emissions Group (MVEG) representing NGVs in the development of Euro 4 emissions regulations light and heavy duty vehicle emissions regulations (1996-1999) and most recently has participated in the development of Euro 5/6 light duty emissions regulations and Euro VI heavy duty vehicle emissions regulations. Both of these are on-going activities.
- In 2005 Dr. Seisler initiated at the United Nations Working Party 29 on Worldwide Harmonization of Vehicle Regulations the creation of an effort to undertake a UN/ISO/IANGV/ENGVA program to Harmonize Gaseous Fuel Vehicle Standards that culminated in a Round Table in January 2007, and now is being implemented under the auspices of the IANGV and ISO.
- Dr. Seisler currently (since September 2007) is the co-secretariat to a new Working Group on Gaseous Fuelled Vehicles within the U.N. Group of Experts on Pollution and Energy. He is uniquely placed to introduce new work items for amendments to UN regulations for hydrogen and natural gas.

Public Relations, Conference, Workshop and Special Event Development & Management

Dr. Seisler has organised at least one major conference and exhibit (250-1000 attendees) per year since 1984. Many of these were combined with political events in the U.S. and Europe. These include conferences, exhibitions and events at the Indianapolis Speedway, (Indiana, USA), Disneyland (California), Disney World (Florida), the U.S. Capitol (Washington,

D.C.), AutoWorld (Brussels), and most recently (June 2007) in Strasbourg, France inside and in front of (with an NGV exhibition) the European Parliament. Dr. Seisler was in charge of two of the largest public relations events for the U.S. natural gas industry, the Rally for Fuel Savings (1984 and 1986) when caravans of NGVs were taken to 32 U.S. cities to promote NGVs and the Type II aluminum hoop wrapped CNG cylinder. He also has organised and run numerous workshops, round tables, public relations and related events for the NGV industry in the U.S. and Europe.

Since March 2008 Clean Fuels Consulting currently develops and hosts 'Critical Issues Workshops' on various topics of importance to the NGV industry. The first of such workshops, *CNG Cylinders: Opportunities, Challenges and Strategies*, was held in Brussels in March 2008; *LNG is HOT: Opportunities, Challenges and Strategies as a Vehicle Fuel* in December 2009 in Brussels; and *Dual Fuel (Gaseous/Diesel) Engines: Opportunities, Challenges and Strategies to Expand the Market*, 30-31st March 2010. Each of these workshops results in development of a Strategy Plan for the sector of the industry based on the discussion and inputs received at each workshop. The Dual Fuel workshop has had a direct result of beginning the creation of dual fuel engine certification regulations within the United Nations Group of Experts on Pollution and Energy, starting in April 2010.

Market Research & Market Strategy Development

Dr. Seisler has a long history of developing questionnaires and research instruments starting in his early days as a post-graduate student in London and part-time market researcher. He was client/manager of the first and largest survey of the U.S. NGV industry fleet operators in 1991. As a consultant to the American Gas Association in 1982 Dr. Seisler helped develop the first industry-wide Strategic Marketing Plan for the U.S. gas industry. He later created a marketing strategy for the International Association for NGVs and has worked extensively on a variety of European Commission-funded projects involving data collection, questionnaires, and market-based studies and Decision Guides for the NGV industry and the biomethane industry as part of the BiogasMax program (still on-going).

Since 2007, Clean Fuels Consulting has supported clients in strategic market evaluations of the worldwide LNG heavy duty trucking market; an evaluation of CNG cylinder opportunities in Asia, Eastern Europe and South America; a survey of LNG tank manufacturers and LNG fuelling stations outside North America; and supported a research team doing an investigation of the CNG compressor station business in nine countries on four continents.