



ASGE

1ST Quarter 2020 newsletter



President's Message

Hello fellow ASGE members, welcome to 2020. We are cruising into another conference just around the corner and Eric Bruton has been working to get another great line up of speakers. Read on in this newsletter for list of those speaking and their topics so far.

We will be hearing about the topic of electrification which is taking hold in California and could be a serious issue affecting the gas industry. If you haven't heard, California is paving the way to eliminate fossil fuel use by replacing new and existing construction with electric appliances only. Of course, this idea is spreading to other states.

Another topic we will hear about is the growing field involving Internet of Things (IoT). With the expanding use of smart phones and smart speakers controlling appliances this is getting to be an everyday occurrence affecting many Americans. We are still lining up other speakers so stand by for more information in the coming months.

Our own ASGE member, Bob Cowan, has graciously submitted a synopsis on the topic of Hydrogen fuel which is included in this newsletter.

I hope to see many of you at the conference, so please make plans to be there if you can. If you haven't already done so, please check out the website at ASGE-national.org and sign up to take the Certified Gas Engineer exam in June or encourage your fellow work peers to join the society.

We plan on having a great time at the conference this year.

Ray Maddock, CGE—President of ASGE

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PLATINUM MEMBERS



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2020 Conference Presenters

Mark Mason – Maxitrol – Communication Compatibility with HVAC Equipment, IoT

John Gorman – CSA - Non-metallic venting

Stuart Saulters – American Public Gas Association APGA – Battling electrification

Jim Ranfone – AGA – Debunking commercial gas cooking electrification

More to come....

2020 Officers and Board

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- Vice President, Eric Bruton
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- Director, Mike O'Donnell
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American Society of Gas Engineers

NATIONAL TECHNICAL CONFERENCE

South Point Hotel & Casino – Las Vegas, Nevada June 1 – 2 , 2020

Early Bird Registration - \$50 Discount

Register by April 30, 2020

[Conference Agenda](http://www.asge-national.org) (soon at www.asge-national.org)

Mon. June 1 – 8:00 AM to 11:00 AM	C.G.E. Review
Mon. June 1 – 7:00 AM to 12:00 PM	Golf Tournament
Mon. June 1 – 1:00 PM to 4:00 PM	C.G.E. Exam
Mon. June 1 – 7:00 PM to 10:00 PM	Board Meeting
Tue. June 2 – 8:00 AM to 4:00 PM	Technical Presentations
Tue. June 2 – 6:00 PM to 8: 00 PM	President’s Awards Dinner



ASGE National Conference Registration Form

Name _____

Company _____

Guest Name _____

Email Address _____

Conference Fee	\$275 _____	Send Payment by Check to:
(after April 30, 2020)		
Early Bird Fee	\$225 _____	ASGE
Dinner Guest	\$60 _____	P.O. Box 311069
Golf	\$95 _____	Independence, OH
C.G.E. Exam	\$150 _____	44131
C.G.E. Study Guide	\$150 _____	or by PayPal to
Less Corporate Discount	_____	asgecge@aol.com
Total	_____	

South Point Reservation: 866-791-7626. Reserve by 05/15/2020. \$65 per night Sun-Wed + \$14 resort fee – Group Code: ASG0529

Hydrogen in Our Future

By Robert Cowan

In the struggle to move away from natural gas as a carbon-based fuel and reduce CO₂ emissions, hydrogen has emerged as a likely candidate. Visionaries envision massive amounts of hydrogen generated by seawater through a process known as electrolysis. Direct current is applied to water (H₂O) separating the hydrogen (H₂) from the oxygen (O₂). The required electricity to accomplish this, would come from the excess electricity generated during non-peak times at the power plants providing an unending supply of high-quality gaseous fuel to warm our homes, heat our water, and cook our food. The combustion of hydrogen (H₂) produces only water vapor (H₂O) thus making it carbon free and the perfect fuel for an environmentally sensitive planet. It is only a little ironic that the cheapest way to produce Hydrogen is by cracking natural gas (CH₄) with steam, producing carbon dioxide (CO₂) and hydrogen (H₂).

This is where the challenges begin. Most of us have built our careers around perfecting gas appliances using natural gas which is generally 90% methane (CH₄). Natural gas has proven to be clean, safe, economical, and efficient. The flame is easily controlled for a wide variety of applications. The size of the Methane (CH₄) molecule is large enough that it is easily contained. Its high BTU content, flame speed, and combustion characteristics make it suitable for a large number of appliances in the home as well as commercial and industrial applications.

The problems start when you try to convert a natural gas appliance to Hydrogen. There are some who think that just by adding a little hydrogen to “green up the natural gas” will help the planet. It is generally accepted that adding 10% hydrogen to natural gas will not significantly affect an appliance’s performance. When you move up to 20% hydrogen some modification of the appliance starts to become necessary. At some point you will need to drastically change the appliance’s basic design.

Europe is way ahead of us in development of appliances suitable for hydrogen fuels. Since the 1980’s CE has included tests for ignition, cross lighting, and flame stability with a fuel mixture of 23% hydrogen. There is an aggressive plan in the Leeds City Gate Project (<https://www.h21.green/projects/h21-leeds-city-gate/>) to have an entire town of 300 homes be heated by hydrogen by 2028. I won’t address the problem of hydrogen generation on a large scale, but our gas plumbing will necessarily need to change. Traditional iron pipes with threaded joints will need to be replaced with polypropylene tubing with compression coupling.

Hydrogen burns at a faster flame speed, and at higher temperatures than natural gas, requiring smaller burner ports and more expensive steel alloys to confront the higher temperatures. Unlike Natural Gas, the hydrogen flame is almost colorless and can be difficult to see. There are thoughts of adding various chemical salts to create a green or blue color for applications such as stove top cooking where flame appearance is important.

Flame safety is another challenge. Hydrogen combustion does not work well with flame rectification or traditional thermocouple safety systems whose response time is too slow. Thermocouples will need to be connected to sensitive electronic circuits to provide a more rapid response time.

In the near future gas appliances may be required to be hydrogen ready. Conversion kits may be required to convert your natural gas appliance to hydrogen. The problem for the designer is which gas (methane or hydrogen) should the appliance be optimized for in trying to maximize safety, performance and efficiency. Burners, controls, ignition and flame sensing will need to be different for hydrogen. To deal with differences in flame speed, flame temperature, dew point, and flame geometry, heat exchangers and all other appliances designed for natural gas may not be suitable for hydrogen.

I am not an expert on hydrogen fuel, but the point of this article is to start the conversation. Within our membership at ASGE are some top experts on gaseous fuel combustion, and it is important that we understand and get the word out about the benefits and challenges of switching to hydrogen before those with lesser knowledge start making decisions about our industry for us. There are both challenges and opportunities here and it is up to us to lead.