January 8, 2019 Meeting

The January 9, 2019 Waterloo Technical Society (WTS) meeting was called to order by Vice President Stevenson at 7:20 pm. Vice President Stevenson welcomed visitors and noted that this was the fourth meeting of the 105th year of the Society.

A total of 28 members and guests attended.

Treasurer's Report. Ken Friend reported a beginning balance of $875.17. Income of $120.00 from memberships with expenses of $20.00 for the November speaker's meal, no other expenses leaving a new balance of $975.17. Treasurer Friend's report stated a total of 8 honorary and 39 paid members yielding a membership roster of 47 members.

Current Officers. Officers for the 2018-2019 year (year 105) are:

President:	Gary Dorhout
Co-Vice Presidents:	Jerry Mohling and James Stevenson
Treasurer:	Kenneth Friend & Paul Anderson
Dinner Reservations:	Derek Eagles & Steve Lang
Secretary:	James Stevenson
Publicity/Recognition:	Todd Whiting
Auditing:	Bill Mitchell & Jim Garrett
Nominating Committee:	Open
Web Site:	Tim Schoenfelder / Jim Volgarino

Old Business. The topics for this year were reviewed. The dates, speaker and topics for the 105th WTS are:
Speakers for the 2018-2019 Meeting Year (Year 105)

12 Sep 2018—Austin Maginnis—Tiny House Project at UNI

10 Oct 2018 – Steve Lang – Early Electronic Digital Computers

14 Nov 2018 – Jim Volgarino – History of Tunis Speedway

9 Jan 2019 – Chuck Nielson – Airgas Gas Supply

13 Feb 2019 – Chad Emerson – Emerson Crane

13 Mar 2019 – Vasko Popovski – Advanced Heat Treat (Mike Woods)

10 Apr 2019 – Mark Albright—MidAmerica Energy, LNG Waterloo, Tom P.

8 May 2019 – AECOM Engineering Services, Waterloo, IA

(Architecture, Engineering, Construction and Operations Management)

Discussion on the May 2018 motion to donate $250 to Tiny House Program at UNI concluded with a decision to identify where donations have been made and prioritize alternatives for donations for action at the November 14, 2018 meeting. President Dorhout and Treasurer Friend are to make a list and members to identify possible recipients. Item tabled until the January 2019 meeting. No discussion on this topic. Tabled until February 13, 2019 meeting.

New Business. No new business discussed.

Guest Speaker. **Chuck Nielsen**, District Manager with Airgas USA.

Mr. Chuck Nielsen is a District Manager with Airgas USA in the Eastern Iowa area and manages 5 stores in Cedar Falls, Cedar Rapids, Mason City, Fort Dodge and Fairfield. Chuck's piece of the Airgas organization includes 5 branch managers, 5 accounts managers and 35 drivers and inside sales associates in his district. The 5 locations generate roughly $27 million in sales.

Chuck's career in the packaged gases business started in 1993 when he applied for a position at Miller Medical Service in Waterloo in the home medical field of the business in sales and service. In 1999 Chuck took a patient services position with Apria Healthcare until he was approached in 2004 by Apria's supplier Airgas about working for Airgas starting in their medical division. After 1 year with Airgas in the medical division Chuck moved to branch manager for the Cedar Falls location and in 2008 became an operations manager for Iowa, Nebraska and South Dakota. In 2014 he returned to the Cedar Falls branch as the areas account manager and in 2017 entered his current position of district manager.

Chuck was born and raised in Waterloo, IA graduating from Waterloo West High, Hawkeye Community College and Upper Iowa University. Chuck is the father of two children Grayson 14 and Carson 11 and coaches a youth traveling baseball team and a youth traveling basketball team in his free time.

Highlights. Airgas, an Air Liquide company, is a supplier of gases, welding equipment and supplies, and safety products. With more than one million customers, Airgas sells the following:

- Industrial, medical and specialty gases
- Welding equipment and supplies
- Safety products
- Atmospheric gases
- Carbon Dioxide
- Dry Ice
- Nitrous Oxide
- Ammonia
- Process Chemicals



The company has 18,000 employees in the following industries:

- Manufacturing and metal fabrication
- Non-residential construction (energy and infrastructure)
- Energy and chemicals (upstream, midstream and downstream)
- Life sciences and healthcare
- Food, beverage and retail services
- Materials and power
- Government, defense and aerospace

Its integrated network of about 1,100 locations includes branches, cylinder fill plants, production facilities, specialty gas laboratories, and regional distribution centers. Airgas markets through multiple channels, including

its own branches and outside sales force, a Strategic Accounts Team focused on large customers, distributors and resellers, telesales, catalog and e-Business channels.

History. Airgas was founded by Chairman and Chief Executive Officer Peter McCausland in 1982, and became a publicly traded company in 1986. Through more than 450 acquisitions and internal growth, Airgas built the largest national distribution network in the packaged gas industry.

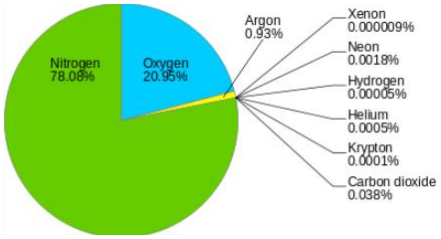


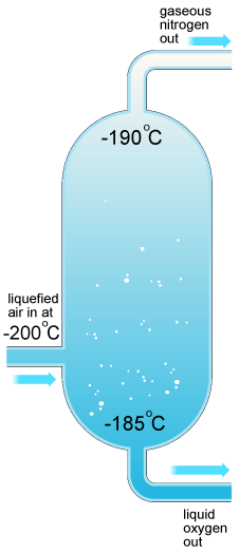
On 8 September 2009, Airgas replaced Cooper Industries in the S&P500 index. In October 2009, John McGlade, the President and Chief Executive Officer of Air Products, a competing concern, privately asked McCausland whether he'd be interested in merging the two companies. McCausland rejected the idea. In February 2010, Air Products initiated a public tender offer for Airgas. The offer was extended, and the price increased, throughout the subsequent year. Air Products abandoned the effort on February 15, 2011, after a decision by the Delaware Chancery Court that upheld Airgas's extensive use of a "poison pill" defense.

In November 2015, Airgas agreed to be acquired by France's Air Liquide for a total of $13.4 billion. This deal was approved by the Airgas Board of Directors and shareholders. The acquisition was finalized and announced on May 23, 2016 and Airgas is now a wholly owned subsidiary of Air Liquide.

There are few producers of gas products. The major producers, Union Carbide (Praxair), Air Products, BOC (Brin's Oxygen Company) Ltd. and Air Liquide make up 60% of global sales.

Operations. The air in Earth's atmosphere consists of nitrogen (78 percent), oxygen (21 percent), argon (0.93 percent), carbon dioxide (0.038 percent) and other trace gases, including water vapor and other noble gases. Scientists can extract trace gases from air by using filters or cooling the air. For example, carbon dioxide turns into a solid at −79 °C (−110 °F). To separate a sample of air into its primary components – nitrogen and oxygen – they have to cool the air significantly more, down to −200 °C (−328 °F), which is almost as cold as the surface of Pluto. The process is known as the fractional distillation of liquid air or cryogenic distillation. It requires an air separation unit which is not unlike a conventional distillation tube used for purifying water.





How Separation of Gases by Fractional Distillation Works. Each gas has a characteristic boiling point, defined as the temperature at which it transforms from a liquid into a gas. If you have a random sample of gases, you can separate them by gradually cooling the sample until each component gas liquifies. The liquified compound falls to the bottom of a collection vessel. After all of the liquid has been retrieved, cooling continues until the temperature drops to the boiling point of the next compound and it liquifies. Some compounds, such as carbon dioxide, never liquify. Instead, they turn directly into solids, which are easier to retrieve than liquids.



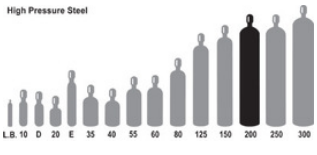
The Fractional Distillation of Liquid Air. An air separation unit is often called an oxygen or nitrogen generator, since its purpose is to extract one or both of these elements from the air. In the distillation process, the air is first passed through a filter that absorbs all the water vapor.

Then the cooling process begins. It involves the use of turbines and high-energy refrigeration systems. Carbon dioxide and other trace gases settle out when the temperature reaches each of their sublimation or boiling points. Sublimation describes the change of state directly from a solid to a gas.



Airgas now has separator plants in Chicago, IL and Madison, WI.

Divisions. The largest division is the supply of gases for welding. Arcs and sparks accounts for 25% of sales. Airgas makes its own cylinders which are sold to manufacturers, fabricators and individuals. Argon, carbon dioxide and oxygen as well as acetylene gases are the most popular. Fabrication of cylinders is still a major business. Cylinders are exchanged and tested then refilled. The oldest has been in service since 1911. Some cylinders had to have swastikas removed from the 1940s.



The second largest consumer is the Healthcare products used by hospitals, dental offices, and clinics. Oxygen, nitrous oxide and precise mixing valves are most popular.

Parties generally have balloons filled with helium. This gas is supplied by the distillation of petroleum oil. Natural caverns underground store most of the helium in the world. The U.S. caverns are near Amarillo, TX. Helium is getting scarce as the reserves are used up. Helium usage is regulated by the U.S. Government as this resource is now becoming very limited in supply.

Who supplies the rocket fuel for space travel? The hydrogen and oxygen fuels used to power the booster rockets are supplied by Airgas.

When shortages exist, Airgas has to prioritize supply. Medical, then Laboratory followed by Industrial then Party users are prioritized in that order.

Airgas also provides helium, krypton, refrigerant, and ammonia gases. Not much propane and no anhydrous ammonia are produced.

Distribution. Airgas USA has an unparalleled distribution platform. Local distributors decide relationships with customers within national Standard Operating Procedures. In Waterloo, IA the Cleveland Company and Newkirk Supply were acquired by Airgas. 60% of customers can be supplied within 1 day, 35% within 2, and 5% within 3 days. 95% of the population can be reached within 2 days.

Other. Airgas is a complete supplier, especially in the welding business. In addition to shielding gas, electrodes, abrasives, welding machines, robots and power tools are available to customers from their catalogs. Cryo repair of refrigeration systems. Safety equipment such as aprons, gloves, helmets, etc. are available. Safety procedures are taught to customers. Red-D-Arc provides weld automation, fixtures for robotic welding. Welderentals is also a way to rent equipment on a short term rental or longer term lease for job sites or customers just opening a business.

Next Meeting. The next meeting will be February 13, 2019. Chad Emerson will speak about Emerson Crane.

Meeting adjourned at 8:50 pm.

Respectfully submitted,

James R. Stevenson, Vice President and Secretary