

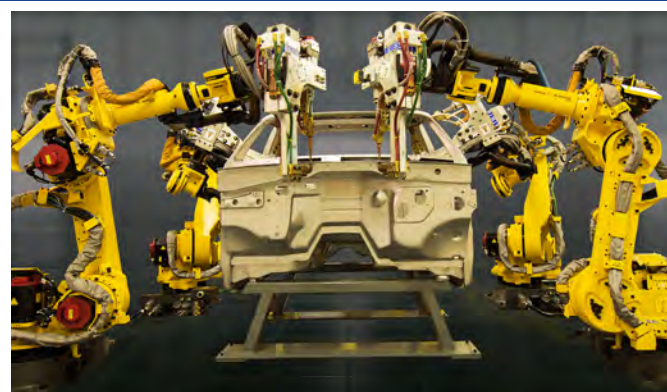
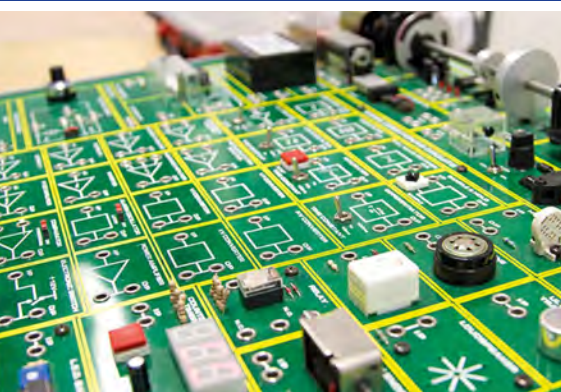


THE

PULSE

SEPTEMBER 2022 | VOL. 69, NO. 7

OF LONG ISLAND



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Welcome back from the summer hiatus. everyone. I hope your summers have all been relaxing and somewhat of a return to normal. This upcoming year see the Section getting back on track with a full calendar of events for September. Later, in November, the **Power Electronics Symposium** renews its annual meeting. Things are really starting to look up.

Several highlights from the summer are:

1. Thanks to the efforts of Bill Wilkes, we have the newly created **Robotics Chapter**. The Robotics Chapter still needs to develop a live website. Anyone wishing to help out can contact Bill to offer their services.
2. The tour of **Brookhaven National Lab** (below), thanks to Lon Chu's leadership and coordination. [Click here for more tour pictures.](#)



Highlights from the Brookhaven National Lab tour

3. Due to Lonni, the planning for the **Sunken Meadow State Park Picnic**, which I hope will become an annual kickoff party in the fall.
4. The **IEEE LI Member Social Hours** have returned thanks to James Colotti. See the picture on page 6 of July's well-attended social, a good time was had by all.
5. And finally, Lonni has also put together the details for our upcoming **Student Design Competition**. See the flyer on page 7 for more information.

Also in this issue is another historical highlight article by Mort Hans (*pages 9-11*) on the development of aeronautical instrumentation. It details the progress and first successful blind flight in 1929. It is remarkable to note that only 40 years later another essentially blind flight landed US astronauts on the moon.

In the future, we are looking forward to more tours, perhaps of Cold Spring Harbor Laboratory and CEWIT at Stony Brook

Arnold Stillman

IEEE Long Island Section Chair, 2022

THE PULSE OF LONG ISLAND



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THE IEEE LONG ISLAND SECTION WEBSITE

The IEEE LI Section website is regularly updated to reflect recent section activity and upcoming events. Each Society and Affinity Group has a dedicated page that describes their function and includes contact information.

www.consult-li.com

CONSULTANT'S NETWORK OF LONG ISLAND

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BBQ PICNIC

STEM MAJORS/PROFESSIONALS

REGISTER TODAY:

<https://forms.gle/ERk7yNzuwfg76Jvd8>

WHEN: SATURDAY, SEPTEMBER 10, 2022

WHERE: SUNKEN MEADOW STATE PARK

TIME: 1:00 PM - 5:00 PM

RAIN DATE: SUNDAY, SEPTEMBER 11, 2022

COME SOCIALIZE & PLAY!

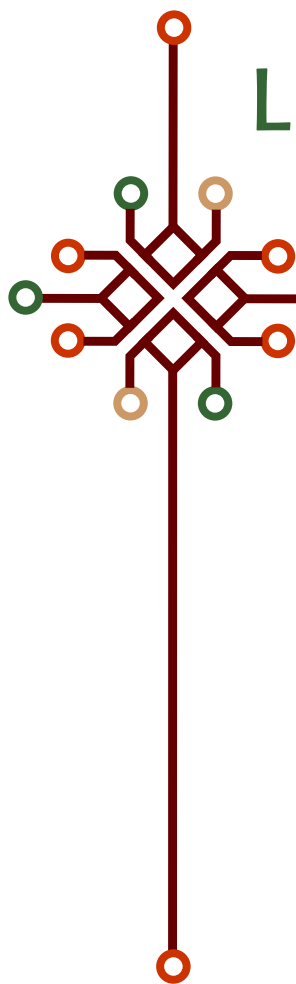
PROFESSIONALS:

Come Network in the last Summer Sun

STUDENTS:

Find out about Your Intended
Majors from the Real Deal.

Email food choices to lmc2020.ieee@gmail.com,
with Subject Line: **IEEE BBQ Picnic**



CALL FOR LONG ISLAND TECHNICAL STUDENT INTERNS

SUBMISSION DUE DATE:

Friday September 30, 2022

SUBMISSION FORMAT:

docx or txt or pdf

SUBMISSION EMAIL:

education@ieee.li

SUBJECT LINE:

IEEE Student Internship Summary

GOOGLE FORMS SUBMISSION:

<https://forms.gle/7JtgMEVJLLsaaQubA>

- Have your Long Island Internship summaries published in an upcoming **2022 IEEE LI Pulse** Newsletter.
- Promote your experience to a local engineering professional newsletter
- Engineering and all STEM Majors
(Including Computer Science and Data Science disciplines accepted)
- Fall 2021 - Fall 2022 Internship Summaries accepted
- Non IEEE Members accepted
- For more more details, go to: <https://ieee.li/committees/education/>



LOOKING FOR AN UPDATE ON SECTION EVENTS?

FOR UPDATES ON ALL LONG ISLAND SECTION EVENTS, CHECK OUT THE IEEE LONG ISLAND SECTION WEBSITE:
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After a Covid induced hiatus, the IEEE LI Member Socials are back. Pictured here is the lively July gathering where almost 40 partook. All IEEE LI members and their guest are invited to attend for an evening of complimentary food and enlightening conversation in a relaxed setting. Stay tuned for upcoming socials.

For more information:
www.ieee.li/pes



THURSDAY, NOVEMBER 3, 2022 POWER ELECTRONICS SYMPOSIUM (PES)

The annual PELS PES has been rescheduled for November 3, 2022 because of concerns regarding the on-going COVID pandemic. After careful review of the issues hosting this event the PES committee has decided to take a safe conservative approach and postpone this event to 2022 when we have a better handle on the limitations with regard to social interaction. While this was a difficult decision the committee is ensuring that the high standards with regard to; number of exhibitors and participant attendance and robust presentations we developed over the previous events will be maintained when we host again.

While we are all anxious to get back to our "Normal" industry dynamics, rest assured we are committed to continuing with the annual PES event. Please keep an eye out for future announcements on the future date for the PES and other PELS events.

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CIRCUITS

SOLAR POWERED SPEED LIMIT SIGN

CONTEST

DESIGN THE CIRCUITRY FOR A SOLAR POWERED SPEED LIMIT SIGN

Contest Evaluated on Three Parts: Logistics, Electronics, and Power

DESIGN PARAMETERS

All projects must include:

- A. Solar Powered Panels
- B. Rechargeable battery
- C. LED Configuration [~10"]
- D. Main computing area
- E. All Weather Proof Materials
- F. Long Range Sensor (>100ft)
- G. Self-Contained
- H. Components Specified
- I. Parts available on the market
- J. Container Size & Weight Needed
- K. Total Cost Needed

CONTEST PRIZE:

\$100/\$75

SUBMISSION EMAIL:

chairman@ieee.li

DEADLINE:

October 31, 2022

The construction should be reasonable and able to be created in any garage area. (Soldering iron here we come.) These signs will be coordinated with local communities and expected to be implemented in neighborhoods around Long Island.

1. Main computing area [needs algorithms used to connect the system]
2. All Weather Proof materials. Estimate lifespan of elements.
Solar panels, battery, LED's
 - Would like the Speed numbers to Flash if senses greater than any speed.
 - Show algorithm for this
3. Parts can be 3-D printed; but prices should be estimated; reliability determined; and of course the design of the piece provided
4. Rechargeable Battery Power Supply determined and qualifications determined
5. Solar panels Size recommended; Qualifications determined.
Amount of sunlight needed for something like 70% charge.
Energy loss in panel to battery estimation?
Does the element heat up too much? Maybe How much sun needed to work the Radar and Panels. 80% Sunlight?
6. Circuitry for connections of solar panels, main computer, rechargeable battery and sensor
7. Overall size and weight should be determined
8. Steps for implementation should be provided

LET YOUR VOICE BE HEARD

WRITE TO THE PULSE

The Pulse of Long Island is a newsletter for the members of the IEEE Long Island Section. You can let your voice heard by writing to the Editor. How to bring more value to our members? Interesting new technology, or a project? An issue of interest to members of the IEEE Long Island, Long Island engineers and computer professionals, or Long Island technical community at large? Write to the **Pulse**. Let your letter be read, and your voice heard.

HOW CAN I CONTRIBUTE TO THE PULSE?

Send your letters or articles via email to pulse@ieee.li. If selected for publication, the letter or article will be edited before being published.



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CONTRIBUTION DEADLINE:

20th of a month for the next month edition.

CONTRIBUTIONS FROM LONG ISLAND TECHNICAL & ENGINEERING COMPANIES:

Publish your technology-related press release (up to one page) at no cost. Please send the press release as a PDF file attached to email to pulse@ieee.li, addressed to the Editor, with a Subject line "**Pulse -PR**" followed by your company name, and the responsible contact person's name, email and phone number in the email body.



THE **PULSE**
OF LONG ISLAND

CONTRIBUTE TO THE PULSE – LET YOUR LETTER BE READ and LET YOUR YOUR VOICE BE HEARD

Lithograph by Charles Hubbell, 1961, Lt. James H. Doolittle's First All-Blind Flight, 1929, in a Consolidated NY-2 biplane



How an Unusual
Philanthropy Contributed
to the Beginning of the
Aviation Industry in
the United States

THE DOOLITTLE BLIND FLIGHT: AN IEEE MILESTONE

Over four generations, beginning with Meyer Guggenheim in the 1800s until the death of Harry Guggenheim in 1970, the Guggenheims by 1918 according to Forbes, had become be the second richest family in America. By the mid 1920s, the family had created several of the leading and perhaps the most diverse of the existing philanthropies, foundations and other charitable institutions. With the Daniel Guggenheim Fund for the Promotion of Aeronautics, it was the first time that a fund had been created for a specific industrial purpose and is considered to have marked the start of the aeronautics industry. Daniel's son, Harry, was the President and James Doolittle, the director of the fund's Full Flight Laboratory at Mitchel Field where the work leading to the first blind flight was accomplished..

Daniel Guggenheim's interest in aviation started before 1925, the year he endowed New York University with \$500,000 to establish a department of aviation..That his son Harry Guggenheim had been a naval pilot during WWI and had continued his interest in flying after the war and continued his wartime contacts with individuals who subsequently became influential in government and industry no doubt played a part in his father's interest in aviation, but Daniel Guggenheim was also interested in the possibility of aviation becoming a new industry and business opportunity.

At the time, only MIT offered a program in aeronautics. And when Harry Guggenheimer, attended a meeting at which Chancellor Brown of NYU announced that the school was looking for an endowment to establish a department of

aeronautics, Harry Guggenheim agreed to write a solicitation letter for the school to distribute. Soon after, when visiting his father at Hempstead House in Sands Point, he asked his father to critique it. The following morning, he surprised his son by announcing that he had decided to endow the school himself by creating the Daniel Guggenheim School of Aeronautics. It was in keeping with his belief that aviation could become a new industry and business, but it required reliable flying by both industry and the public and that in turn required schools for the training of pilots, airplane designers, engineers and technicians.

The first blind flight on September 24th, 1929 was the culmination of a series of events that began with Daniel Guggenheim's endowment to NYU. His son, Harry, a World War I naval pilot had ideas about aviation as a business and industry that went far beyond endowing an aeronautical department at NYU. Harry proposed setting up an independent fund for the promotion of aviation that would include representatives of the government, industry and aviation pioneers, a cooperative effort that resulted in the establishment of the Full Flight Laboratory at Mitchel Field. It involved a dozen organizations from industry, finance, aviation, academia, government laboratories and the Army and the Navy. It would be the first time a philanthropic organization would be created with specific goals. Until then the major foundations, philanthropies, trusts (such as the Rockefeller, Carnegie and Ford Foundations) and benefactors specified only the amounts and the institutions, not the specific purpose with exception of private library and art works which specified the recipient libraries and museums.

CONTINUED ON PAGE 10 ►

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In organizing the Fund, Harry Guggenheim contacted prominent American scientists, financiers and leaders in aviation to serve on the Fund's Board of Trustees. Among the well known figures who agreed to serve were: Adm. H.I. Cone, Assn't Sec'y of the Navy; Charles Lindbergh; Dr. A.A. Michelson, Physicist; Dr. R.A. Millikan, Physicist; Orville Wright and George Goethals, the Panama Canal's chief engineer. With the exception of George Goethals who had died and Dr. A.A. Michelson, they were also on the Board of Trustees of the Daniel and Florence Foundation (photo below), formed in 1924 to support, education and medicine.



The board of the Daniel and Florence Guggenheim Foundation: The foundation established in 1926 supported research in many areas of aeronautics including the artificial horizon. L. to R., standing: Secretary J.W. Miller, F. Trube Davison, Elihu Root, Jr., Hutchinson Cone, Charles Lindbergh, Harry Guggenheim and Robert Millikan. L. to R., seated: John D. Ryan, Daniel Guggenheim, Orville Wright and William Durant.

At the time, during the 1920s there were no significant programs addressing the safety and reliability of aircraft, particularly during times of near zero visibility with the exception of the radio beacon navigation systems that the Bureau of Standards started in 1920 and subsequently restarted in 1926 by the Aeronautics Branch in 1926. The Fund established several other programs to further the development of commercial aviation. Among them were the 1927 Safe Aircraft Competition, which offered a \$100,000 prize and five \$10,000 prizes for the safest aircraft that could be built. The award went to the Curtiss Tanager whose design included such advanced features as automatic leading-edge slots, automatic and manual trailing-edge flaps, shock absorbing landing gear and wheel brakes.

The Fund also created a model airline between San Francisco and Los Angeles. The airline demonstrated to the American public that commercial passenger service could be safe, dependable and comfortable. The service began on May 26, 1928, flying a Fokker F-10 Super Trimotor that the Fund provided. Although not profitable, the scheduled flights were heavily used and

demonstrated that regular, safe passenger service was a reality. A special radio weather reporting service was also implemented along the California air route. It was taken over by the Weather Bureau in June of 1929 and eventually spread nationwide. During its yearlong test, not a single weather-related accident occurred.

At the time the generally accepted practice by commercial pilots was to turn back or not to start in the presence of fog. The presence of fog had at the time a greater impact on the regularity of scheduled flights than the question of flight safety so that the former was considered to be the major factor affecting the reliability and efficiency of commercial flights and ultimately the profitability of an airline. An advisory committee to the Guggenheim Fund that included Assistant Secretaries of the War and Navy as well as representatives of the Dept. of Commerce, Post Office and the Weather Bureau recommended the establishment of a Full Flight Laboratory at Mitchel Field to reduce the effect of fog on flying.



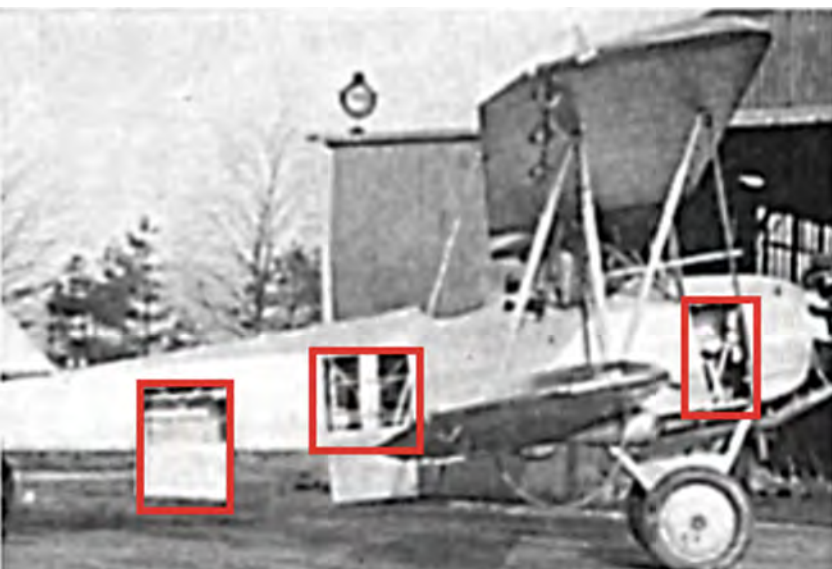
First Lieutenant, James H. Doolittle

CONTINUED ON PAGE 11 ▶

◀ CONTINUED FROM PAGE 10



The Instrument Panel: The Kollsman altimeter is on the upper right. The radio beacon and direction finder from Radio Frequency Laboratory is the octagon-shaped device in the lower left hand corner and the Sperry artificial horizon is on the lower left of the bottom instruments row.



Consolidated NY-2 Husky: Radio Navigation & Guidance Locations

The objectives of the Laboratory were: 1) Dissipation of fog; 2) Means of locating airfields from the air in fog; 3) Instruments for the accurate measurement of altitude; 4) Improved instruments allowing planes to fly in fog and 5) Penetration of fog by light rays. With the establishment of the Full Flight Laboratory under the technical direction of 1st. Lt. James Doolittle and assisted by Lt. Benjamin Kelsey and Professor William Brown of MIT's Aeronautics department, the laboratory made available for the first time technical experts, capable pilots and the experimental equipment for testing and evaluating possible solutions for the problem of flying in fog.

The work of the laboratory was decidedly a team effort. While the Fund provided the money, the Army provided the pilots, technical personnel and one of the test planes while the Navy provided the other. The Bureau of Standards provided its Beacon Ranging and Localizer systems. The Sperry Gyroscope Company



Lieutenant, Benjamin Kelsey

developed the Horizon Attitude and Directional Gyro devices based upon initial designs by Doolittle. The Kollsman Instrument Company, a special version of its high accuracy altimeter. The Radio Frequency Laboratories, its Beacon radio receiver and vibrating reed display. The Bell Telephone Laboratories its radio transmitters and the Pioneer Instrument Company, the cockpit dashboards.

The result was the right organizations and people assembled at the right place and time attacking a problem that had until then been considered impossible to solve by both pilots and engineers. With the success of the blind flight, the question of "seat-of-the-pants flying" vs. reliable cockpit instruments was finally put to bed. Having accomplished its purpose by demonstrating the feasibility of flying by instruments alone and without sight of the ground or any visual reference both the Full Flight Laboratory and the Guggenheim Fund were liquidated in February 1930, a little more than three years after Daniel Guggenheim's endowment to New York University. His philanthropy created the Fund for the Promotion of Aviation which not only achieved its goals but marked the beginning of the aviation industry in the United States.

FOR FURTHER READING:

Hallion, Richard,
"Legacy of Flight," University of Washington Press, 1977

Unger, Irwin and Debi,
"The Guggenheims," Harper Collins, 2008

IEEE Long Island Chapter, IEEE Milestone Program,
"First Blind Flight," IEEE Docket #: 2013-21," 2013

For more information:
www.ieee.li/pes



THURSDAY, NOVEMBER 3, 2022 • RADISSON HOTEL, 110 MOTOR PKWY, HAUPPAUGE LI • NOON TO 8 PM

IEEE LI SECTION POWER ELECTRONICS SYMPOSIUM 2022

All professionals (engineers, managers, etc.) involved in the use, design, qualification, test or manufacture of power supplies, power converters, power management, servos or energy storage are invited. All sectors of power electronics are represented including military, industrial, medical, space, consumer and automotive.

CALL FOR PAPERS

Abstract, viewgraphs, speaker bios and speaker contact information are due **October 10, 2022**. Scheduling of qualified papers is accomplished on a first-come/first-served basis. Notification of acceptance by **October 21, 2022**.



FREE GENERAL ATTENDANCE

REGISTRATION OPENS AUGUST 2022

A free invitation is extended to all Engineers, Managers, other Professionals and Students involved in the use, design, qualification, test or manufacture of power supplies, power converters, power management or energy storage. Registered attendees will receive complimentary networking lunch, admission to the exhibit floor, technical lectures, and a complimentary networking dinner.



EXHIBITORS

REGISTRATION OPENS JUNE 2022

Limited exhibitor space is available to Long Island companies and reps that cover Long Island involved in the design, qualification, test or manufacture of power supplies, power converters, power management or energy storage. Tables are 2.5' x 8' and are provided with two chairs. All exhibitors are invited to provide business cards and giveaways for the swag bags. Exhibitors are also invited to enjoy the complimentary networking lunch and the complimentary networking dinner. Exhibitor tables are offered at \$400



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A sponsorship entitles you to one free table with preferential placement. In addition, your company logo is prominently placed on the 200 swag bags, symposium flyer, and on all event posters. As a sponsor, you are also entitled to have up to two business cards and two items placed in the event swag bags. The number of sponsorship opportunities is limited to five and are available on a first-come, first-served basis. Sponsorships are offered at \$1000.

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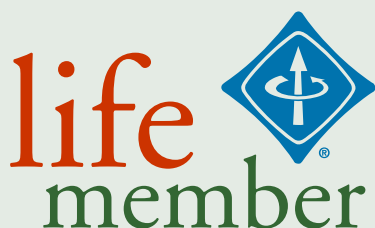
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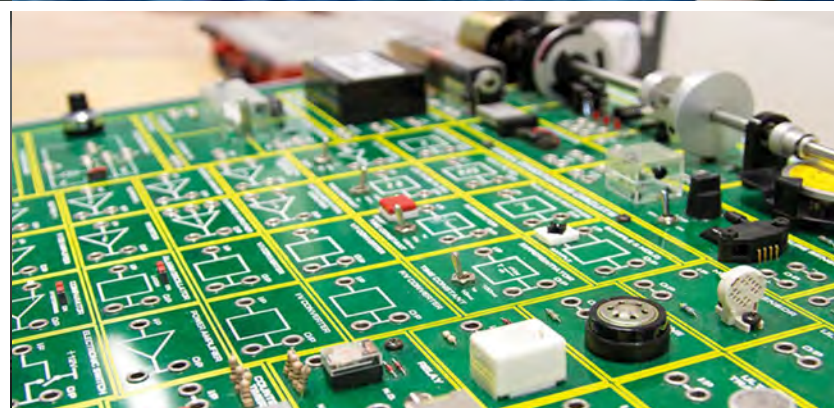


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