

Syracuse Elfun Society

2023 Summer Newsletter



We have been saddened to learn of the deaths of the following current or former members of the Syracuse Elfun Society:

- **John Francis Lepkowski**, 86, passed away peacefully with his family at his side on June 18, 2022.
- **George Oehling**, 88, of Syracuse, died in his Onondaga Hill home on Wednesday, February 15, 2023.
- **Marvin ("Marv") E. Hahn**, 95, of Cicero, passed away at home on Monday, April 10, 2023.
- **James F. Jaeger**, 91, of North Syracuse since 1962, passed away on Wednesday, May 3, 2023.
- **James V. Vaccaro**, 98, of Fairmount, passed away at St. Camillus Health & Rehabilitation Center on May 16, 2023.

Complete obituaries for local individuals can usually be found online at Syracuse.com/obituaries/Syracuse. If you are not able to locate an obituary, steve.auyer@gmail.com can provide you a copy by return e-mail.

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Chairman's Column

The Syracuse Elfun Society held our Annual Meeting on Zoom at 2:00 PM on Friday June 9, 2023. Following is a summary of what we covered on the call.

We had light but consistent attendance at our live events, Syracuse Mets baseball, Merry Go Round Theater, and Holiday Party. Thanks to all who attended. With many of our members located all around the US and Canada (21 states and provinces), 'communications' is a very important part of our chapter's mission.

Our chapter publishes 4 newsletters each year which include information about chapter activities and fascinating feature articles such as the GE comic books, the radio telephone and the "Zone" burglar alarm. Thanks to Steve Auyer for all he does to make this happen. Steve also sends out special interest emails.

Our website is www.syracuseelfunsociety.org. You can see information on membership, how to contact chapter officers, download past and present newsletters and view details on our social events. Ron Panetta set up and maintains our website and has assumed responsibility for Membership.

At the beginning of 2023, we had 212 members. So far, we have heard from 170 of you. Thanks to those who have already responded, and we look forward to hearing from the rest of you.

We began the fiscal year 2022-2023 with \$5,495 in our treasury. Our major sources of income were dues payments and interest, and the largest expenses were mailing costs, liability insurance and the PO box. Our projected year end statement follows:

<u>Income</u>	
Dues	\$2,914
Misc. Income/Dividends	\$51
Total Income	\$2,965

<u>Expenses</u>	
Event Subsidies	\$528
P.O. Box Rental	\$258
Post Newsletter	\$3,143
Insurance	\$633
Total Expenses	\$4,562

Assets at year-end 2023 \$3,898

Four directors were unanimously re-elected for 3-year terms by mail-in ballot. Congratulations to Steve Auyer, Pete Scalzo, Nick Vaccaro and Fred Wenthien. For 2023 – 2024, we increased our dues from \$15 to \$20. In addition to repeating the three activities mentioned earlier, we are looking at hosting a social lunch in the middle of September. The CopperTop Tavern and the Spinning Wheel Restaurant are two locations that were suggested. Contact Cindy with your comments.

Carl Chermak

Social Events

**Elfun Family Day at the Ballpark
Sunday July 16 @ 1:05 pm**

By the time you read this, our day at the ballpark will be here. We are hoping for nice weather and a big group of Elfuns and extended families. Watch for game results and lots of pictures in the fall newsletter.

**Broadway in the Finger Lakes
"BEAUTIFUL The Carole King Musical"
Dinner at The Springside Inn
Tuesday August 29 @ 2 pm**

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Reservations closed July 7 for the 2 pm matinee of "Beautiful" followed by dinner at The Springside Inn. If you don't have your reservations in, you will miss out! We enjoy the opportunity to mingle after the show, and so this remains one of our most popular events.

Holiday Luncheon - TBA

We are still investigating venues for a nice weekday lunch. Watch for reservation details in the fall newsletter. And/or a special flyer.

Future Events

We would appreciate your input regarding your interest in one or all of the following:

Weekday Luncheon in the \$40 range
Weekday Luncheon in the \$25 range
Weekday Clambake in the \$50 range
Please add your ideas!

As our group grows smaller, and restaurants become less flexible in accommodating groups, we want to ensure we are offering activities that are appealing and accessible to as many of us as possible. Call or email me with your thoughts and suggestions. We hope to see you at one or more of our outings this year.

Cindy Chermak
(315) 637-0380
chermak@msn.com

Remembering Marv

The Elfun Board says Goodbye to our long time work projects coordinator Marv Hahn. We relied on his technical expertise and ability to assemble his trusty group of volunteers, and we are so proud of his relationships with the non-profits we



served: Francis House, Camp Talooli, Enable, The McMahon Ryan Child Advocacy Center, Friends of Beaver Lake, The Newland Center, Hope for Bereaved, and a host of other Syracuse non-profits have so richly benefited from the work of all of our dedicated Elfun volunteers.

As our group aged, our projects decreased in scope, and The Butterfly Garden of Hope remained our last steady project. Marv's family tells us that in the past couple of years there were times when he could not get volunteers due to schedule conflicts but would do the task on his own. When he needed a new timer for the gazebo lights and was not internet savvy, his daughter ordered it for him. Apparently, each family outing required a side trip to check on the lights. Just last month, the family located some of the stain for the benches and went to the garden to have a staining party. What a nice way to remember!

The Syracuse Eflun Society BoD has purchased a Memorial Brick for Marv, as has Hope for Bereaved. (If anyone

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deserves two bricks, it is Marv) Here is the link to their June Newsletter with a farewell article on Page 4

hopeforbereaved.com/wp-content/uploads/2023/05/June-2023-Newsletter.pdf.

Thank you, Marv, for your friendship and service to our community and the Syracuse Chapter.

Cindy Chermak

Active Elfun Organizations

In the summer of 2014, the General Electric Company announced that it was disbanding the national GE Elfun organization. Local Elfun chapters were given the option of continuing their activities under the Elfun name, provided they establish a new not-for-profit entity and not use General Electric in its name. Here are the local Elfun organizations that we're aware of at this time:

[Elfun Society of Florida](#)

Jim Kotas, President of the Elfun Society of Florida, attended our June 9 annual meeting via ZOOM. We were delighted to have him attend and were lucky enough to have him share some information about one of the handful of remaining active chapters.

Like our chapter, Florida incorporated as a social entity when GE disbanded the national Elfun organization. Membership is currently around 100, with dues \$10 annually. Activities, too, are similar to ours and include lunches, outings to events, and volunteer projects. Communication is via email and the newsletter distribution is online, rather than our hybrid model of online or hard copy.

Syracuse Snowbirds - If you will be in the vicinity of Daytona Beach, FL and would like to participate in the activities of this group during your winter months, contact Jim at kotasgofish@gmail.com or check the chapter website at elfunsocietyfl.org. Jim tells us that they would love to host you at some of their events.

[Elfun Society California North](#)

Active, with a membership of 319 at the beginning of 2022, and a number of activities each year. Their website is elfunnorcal.org.

[Greater Boston Elfun Association](#)

Active, with a number of yearly events. Their website is gbea.wildapricot.org.

[Elfun Greater Cincinnati](#)

Active, with a membership of both current and retired employees and a number of events each year. Their website is elfungc.org.

[Wisconsin Elfuns](#)

Active with a recent membership of over 250 and a membership of both current and retired GE employees. Their website is: memberplanet.com/wisconsin-elfuns

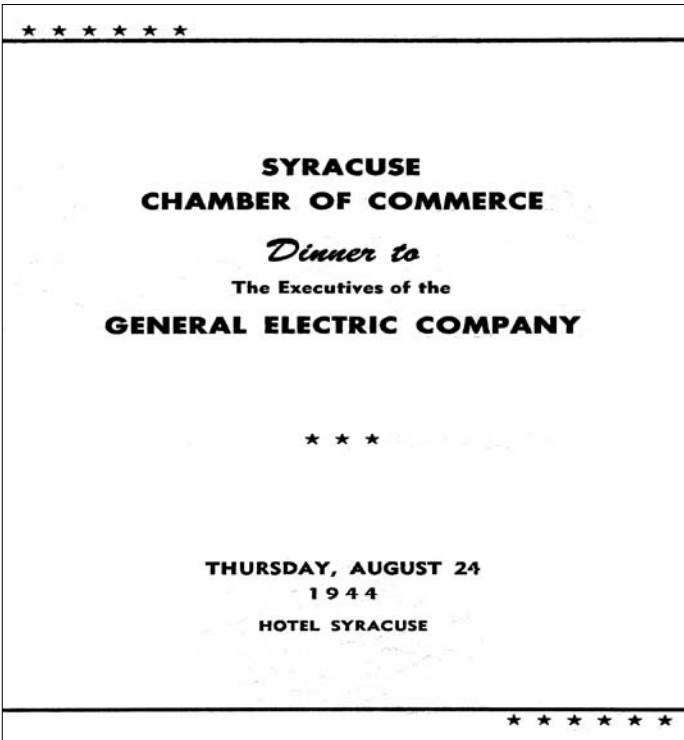
Electronics Park Nears 80

Something was about to happen in Syracuse in August of 1944. Few local residents were quite sure but it was rumored that whatever it was, it would have a big impact on the future of the Syracuse area.

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It all became clear on August 24, 1944 during a dinner and meeting in the Grand Ballroom of the Hotel Syracuse where it was announced by Gerard Swope, President of the General Electric company, that a major new facility would be constructed just north of Syracuse in the Village of Liverpool:

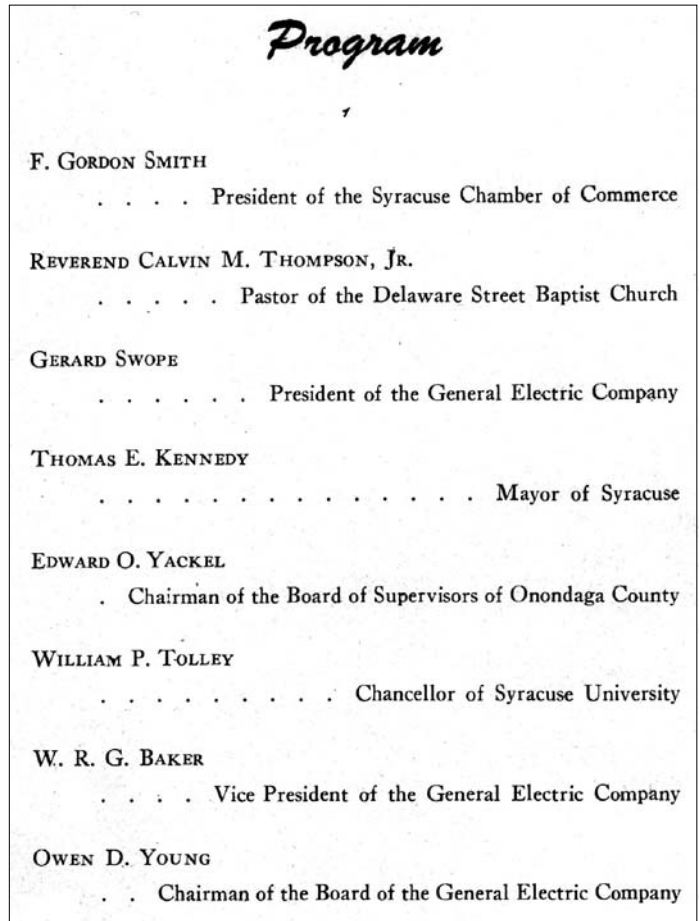


That announcement was made 79 years ago which means that next year will be the 80th anniversary of that event.

So, what was the story behind the announcement?

Prior to World War 2 General Electric was an industry leader in the generation, distribution and consumption of electrical power – everything from the powerful generators that produced the electricity to the small appliances in many homes that consumed the electricity.

World War 2 forced General Electric to devote its resources to producing products that supported the war effort,



converting facilities that had produced consumer goods to facilities that could produce items needed by US troops.

One of the problems that GE had was that this production was carried out in 49 locations throughout the United States, ranging from parts for proximity fuses produced in Andover, OH, to the turbine drive systems, radars and jet engines produced in Syracuse, NY, to the incandescent lamps that were produced in Youngstown, OH.

Coordination of these efforts was complex, and it became apparent that electronics would not only play an important role in the war but also a major role in the increasingly complex consumer products following the war. GE's solution was to centralize electronics development and production in the Syracuse area at the new facility to be

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named Electronics Park.

The new facility was planned to have about 6,000 employees working a single shift, 5 days a week. Consumer demand greatly exceeded projections and employment rose to about 20,000 with some areas of the facility operating 3 shifts/day, 7 days/week – but that’s a tale for another time.

The **October 1948** edition of **Electronics Magazine** contained a 24-page article on Electronics Park, focusing on three areas:

- Part 1 – The Park and Its People
- Part 2 – The Engineering Organization
- Part 3 – The Production Technique

The article is interesting, not only because it offers a window into the technology that existed back in the mid-1940’s, but also because it attempts to look into the future and speculate about the new products that would be developed. No, the “**Pocket-sized Atomic Radiation Detectors with Alarm**” never became a product (thankfully). But the “**High frequency heater for thawing frozen foods in homes**” became the microwave oven in today’s kitchens!

Copies of the article are being made available to Syracuse Elfun. The article runs 28 pages in length and the printing and mailing costs of hard copies are more than several times that of our typical newsletter.

Copies in either hard copy or PDF format are available on a first-come, first-served basis from steve.auyer@gmail.com. Just specify whether you want a hard copy (sent by postal mail) or a PDF copy (sent by e-mail).

Pag’s Bet Pays Off !

In the 1970’s GE’s Syracuse radar business bet that the future of military radars lay with solid-state digital designs and began using company funds to develop this technology. The first successful application was the AN/TPS-59 for the US Marine Corps. This was followed by a higher performance version designated the “GE-592”, with that name being chosen because the new design offered “2 Times” the performance of the TPS-59.

Several “592” radars were sold, and the design then evolved into the FPS-117 which was used to upgrade US and Canadian early warning systems. Foreign sales of the FPS-117 followed and a transportable version, the TPS-117, was

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developed. The latest version is the TPS-77 currently being sold worldwide by Lockheed Martin.

This brief summary does not address the challenges that development of this radar product line posed, nor the key GE individuals that guided this program, but the following 1979 article that ran in Aviation Week & Space Technology on May 21, 1979 provides more background on both:

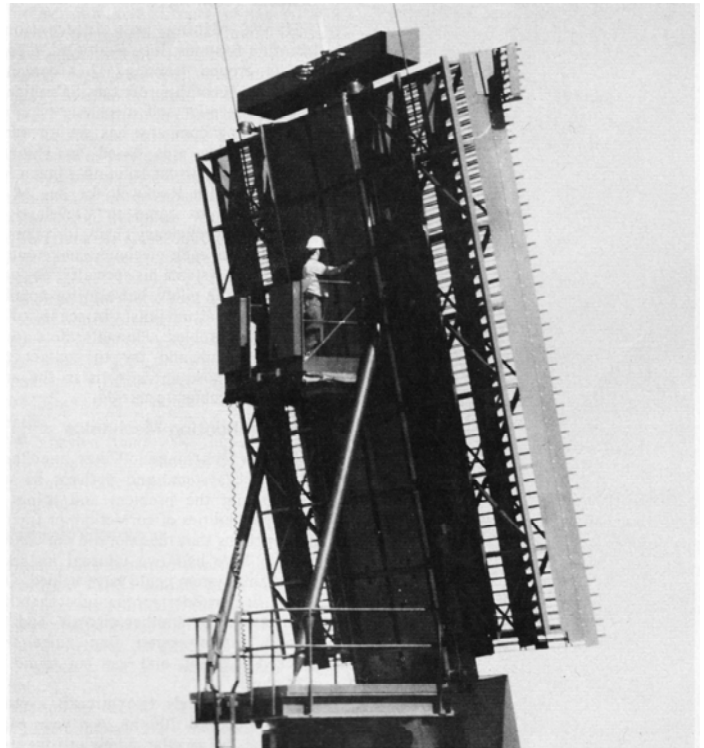
“Solid-State 3-D Radar for NATO Tested

Syracuse, N. Y. – First all-solid-state three-dimensional air-surveillance radar for the North Atlantic Treaty Organization air defense ground environment (NADGE) is under test here by General Electric and is scheduled for delivery to the Belgian air force this summer.

The versatile L-band radar is one of a modular family, called the GE-592, which has emerged from the AN/TPS-59 solid-state mobile 3-D radar developed by GE's Electronic Systems Div. for the U. S. Marine Corps (AW&ST Dec. 6, 1976, p. 57). The antenna rotates in azimuth and scans electronically in elevation.

A similar solid-state 3-D radar is expected to be GE's entry in the upcoming USAF competition to modernize its Alaskan air defense radar network, known as Seek Igloo, and in another program to replace older radars in the U. S./Canadian Distant Early Warning (DEW) Line, known as Seek Frost.

The Marine Corps has obtained approval for a first-production TPS-59, following successful tests of an experimental system at Camp Pendleton, Calif., and it



General Electric 3-D solid-state phased-array radar, soon to be delivered to the Belgian air force, will be first of the new design to become operational. All of the avionic subassemblies are installed in waterproof cabinets along the back spine of the antenna and are readily accessible from an electric elevator, shown in use, which can be enclosed in plastic curtains during inclement weather.

hopes to buy an additional 10 of the mobile radars. The initial radar is to be delivered in late 1981.

*One important advantage of a modular, solid-state radar is its ability to continue to operate despite a sizable number of component failures—was demonstrated unintentionally during the Marine Corps tests, according to **John Dreith**, program manager.*

*Initial problems with the TPS-59 power supplies during early tests resulted in a brief period when approximately one-half of the transmitting modules were inoperative. Despite this, **Dreith** said, “We were able to track several McDonnell Douglas A-4s out to nearly 100 mi. with very good accuracy.”*

This 100-mi. figure is not the radar's maximum range, but it is a crucial crossover point because the TPS-59

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switches waveforms at 100 mi. and with the new waveform, target detection capability is greatly enhanced. "At 101 miles, a target comes in 'loud and clear' again," **Dreith** said.

Even in this "degraded" mode of operation, the TPS-59 was able to track targets of opportunity out to approximately 200 mi., according to **Dreith**.

Unlike the TPS-59, which is designed for air transportability and surface mobility, the new Belgian air force radar will be installed at a fixed site. Its 24 x 24 ft. phased-array antenna incorporates 44 rows of radiating elements rather than the 54 in the Marine Corps version. This gives the Belgian radar a slightly wider beam width in elevation, reducing slightly its height-finding accuracy. But the radiating elements extend approximately 50% farther than those of the TPS-59, providing a corresponding improvement in azimuth resolution. Beam width in each direction is approximately 2 deg.

The antenna is designed to be operated at either 6 rpm. or 12 rpm., at the option of the user.

The new radar, to be installed in western Belgium this fall, is designed to serve both as an air defense and an air traffic control sensor. When used for air defense, it probably would operate at the lower scan rate so as to extend its effective detection range and height-finding altitude.

Although the Belgian radar is designed so it can operate automatically, without human intervention, a console is provided so that a human operator can intervene when needed to cope with enemy jamming or with severe weather

conditions, according to **William Gouldthorpe**, manager of System Test and Integration.

For example, in event of severe precipitation, the human operator can instruct the radar to map and log the location of the storm precisely and to select an optimal moving-target indicator (MTI) weighting to minimize the clutter due to rainfall.

When operating in this mode, **Gouldthorpe** said, "This MTI notch will be changed automatically as a function of antenna look angle relative to the prevailing wind." Further, the radar automatically updates its log of precipitation every 5 min.

The Belgian radar, like the TPS-59, is designed to operate in a pulse-to-pulse "frequency agility" (hopping) mode, with the choice of frequency being made by a computer on a completely random basis from those selected by the operator.

The operator's console shows the presence of enemy jamming or other electromagnetic interference to enable the operator to change one or more of the frequencies in use.

Although the Belgian radar reflects its genesis from the TPS-59, it incorporates a number of improvements, some of which in turn will be incorporated in the production version of the TPS-59.

For example, as a result of advances in microwave power transistors, each of the individual modules that form the power chain will be capable of radiating 100W. compared to the 50W. modules used in the experimental TPS-59. The 100W. modules also will be used in the production TPS-59 systems.

Whereas the TPS-59 antenna incorporates a manually hoisted elevator on the backside of the antenna array to allow maintenance personnel to gain access to the upper reaches of the array, the Belgian radar uses an electrically powered elevator.

While the TPS-59 uses the standard Navy/Univac UYK-7 computer to process radar data and extract targets, the Belgian version uses two Digital Equipment Corp. PDP-11/55 minicomputers for this function. Normally both share the workload, but one machine can provide this function, with slightly reduced capability, if one computer fails.

Another significant difference between the Belgian radar and the TPS-59 is that the former is designed to use considerably larger plug-in boards that measure approximately 12 X 16 in. This allows each plug-in board to contain a more complete function, which in turn makes it easier to isolate faults down to a single board that can be replaced quickly.

General Electric also is supplying the Belgian air force with another console that can be used to fault-isolate within an individual plug-in board. Individual microcircuits are mounted to the board by using sockets, rather than being soldered in place, to ease their replacement in event of malfunction.

Confirmation of the original TPS-59's clutter-rejection capabilities, compared to conventional radars, is provided by Sgt. Robert Leming, who followed field tests at Camp Pendleton and now is assigned here to follow GE's efforts to incorporate improvements suggested by those tests.

Leming told AVIATION WEEK & SPACE TECHNOLOGY that the area east of Camp Pendleton offers "one of the worst ground clutter situations I've seen." When the TPS-59 was scanning eastward, "ground clutter was almost totally eliminated, whereas our existing radars had severe clutter," he added.

One measure of the intrinsic robustness of the TPS-59 solid-state phased-array design is the number of subassembly failures that can be sustained without dropping overall radar performance below the Marine Corps specifications, according to **Paul J. Teich**, general manager of Surface-Based Electronics Programs.

For example, in the 54-row array used in the TPS-59, there can be a failure of eight different row transmitters, plus receiver malfunctions in two other rows plus another malfunction in each of two other rows that affects both transmit/receive functions as well as a loss of 13 power modules without degrading performance below specifications, according to GE calculations.

Based on projected component reliability, GE calculations indicate that the TPS-59 might experience the foregoing failures after approximately 4,000 hr. of continuous operation, corresponding to a six-month period. But even at that point the radar "should be operating up to spec," according to **Thomas I. Paganelli**, General Manager of the Electronic Systems Division.

Because GE expects that the solid-state phased-array technology developed for the TPS-59 will find use in a variety of military and civil applications, which may tax the computational capabilities of the Navy/Univac UYK-7 used in the TPS-59 and the ruggedness of the commercial

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Digital Equipment Corp. machines used in the Belgian radar, it has developed a new very-high-speed, militarized replacement that it calls a "federation of functional processors/digital data processor, or FFP/DDP for short."

Compared to the PDP-11/55 used in the Belgian radar, which is a 16-bit (word length) machine capable of approximately 1.5 million operations per second (Mips), the new GE design will operate as either a 16-bit or 32-bit machine at about four times the PDP-11/55 rate, or around 6 Mips.

The processor's physical layout is such that each function is mounted on a single plug-in board, to facilitate automatic fault isolation and speedy repair. For ease of programming, the processor is designed to use Fortran higher-order language. The system is constructed using high-reliability components.

With this new rugged, high-speed processor, the company is confident that it now has both the radar and computer technology to tailor a solid-state radar to the needs of a variety of customers.

***Paganelli** acknowledges that the company invested "a considerable amount of GE funds in the original TPS-59 development," and that the investment turned out to be larger than expected. But at this point **Paganelli** is optimistic that GE made a sound investment in new radar technology."*

Footnotes: Pag's 1970's investment paid off big time – winning many US and foreign contracts for TPS-59 systems and it's variants, giving Syracuse a product line that continues to win contracts and provide jobs today!

But while the solid-state radar was a success, the FFP/DDP mentioned in the article never did achieve significant applications or sales.

GE hiring 200 for new \$50 million turbine line in Schenectady

(this article appeared in the May 23, 2023 edition of the Albany NY Times-Union)



SCHENECTADY — In a turnaround boosted by state and federal incentives for green energy, General Electric on Tuesday said they planned to hire 200 people to work at a new \$50 million onshore wind turbine assembly line at the company's downtown plant.

The union jobs will include operators and engineers who will work on GE Vernova's 6.1-megawatt turbine.

The massive conglomerate is breaking itself up into three separate companies focusing on aviation, health care and power generation. GE Vernova is one of the company's three spinoffs.

Tuesday's news is the latest indication that what had been a long decline in jobs in Schenectady, which for decades was

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GE's historic home base, is reversing as the company looks to solidify its leadership in the emerging green energy business.

GE Vernova is also looking to build turbine blades and nacelles, or turbine units, for offshore wind, near the Port of Coeymans along the Hudson River south of Albany.

Schenectady's new onshore assembly line will go into GE's existing building where other turbines are built. It should be up and running by the fall.

Sign Up For Lockheed Martin Newsletter



Lockheed Martin publishes "**VECTOR STAR**", a periodic newsletter of what's happening in the corporation.

A recent issue was titled "**6 Ways Lockheed Martin's Radar CoE Shaped History**" and included the following topics:

1. The world's first radar with GaN transmitter technology was fielded with the TPS-77 in 2015, years before anyone in the industry had even scratched the surface (a Syracuse product)
2. The world's first solid state radar – Lockheed Martin's TPS-59 – delivered a new ability to see smaller objects at longer ranges with greater reliability. (another Syracuse product)

3. The world's largest phased array radar, Space Fence, was built in the middle of the Pacific Ocean on Kwajalein Atoll.

4. The world's first four fully digital radars – Space Fence, the Long Range Discrimination Radar, Sentinel A4 and TPY-4 – were all developed and, in some cases, fielded in the last three years. (several Syracuse products)

5. Lockheed Martin developed the world's most advanced and versatile radar technology – it's an international fan favorite with allies lining up to add it to their land and sea defense networks. Say hello to the solid-state subarray suite – or SAS! Now try saying that 10 times fast!

6. The APY-9, coined the "eyes of the fleet," is in the air anytime a carrier has aircraft airborne. (the latest version of the Airborne Early Warning radars previously developed and produced at Utica)

If you'd like to read any of these articles, they're still available on the internet at:

www.lockheedmartin.com/en-us/news/features/2023/6-ways-lockheed-martins-radar-center-of-excellence-shaped-history.html

And, if you'd like to receive notification whenever a new edition of **VECTOR STAR** is published, this link will allow you to register to be informed whenever a new issue comes out:

www.lockheedmartin.com/en-us/news/features/vector-star.html

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A Lady Of Letters

“Seated amidst a jumble of giant letters, a secretary at General Electric’s Electronics Park, Syracuse, N. Y. appears to be a Lilliputian in a king-sized bowl of alphabet soup. The picture was taken during erection of a giant sign overlooking the New York State Thruway which parallels the Company’s 200-acre electronics research and manufacturing center.

Letters to be used in the new sign range in height from 6 to 12 feet and have an average weight of 750 pounds. The GE monogram will be 24 feet in diameter. Over 1100 fluorescent lamps will provide illumination equivalent to that used in 200 average American homes.”



(June 18, 1956 GE Press Release)

Syracuse Elfun Society Board of Directors

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Secretary	open		
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