The latest from PEPM GROUP

ASSEMBLY REQUIRED

September 2024

THE WATER COOLER

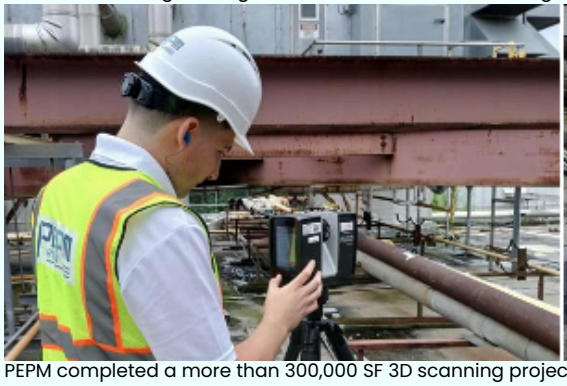
The PEPM Group announces the open house event for the new Fayetteville office on Friday, November 8th, 2024 from 11:00 to 3:00. We are honored to be joined by Fayetteville Mayor Lioneld Jordan and his team for our ribbon-cutting ceremony at noon.

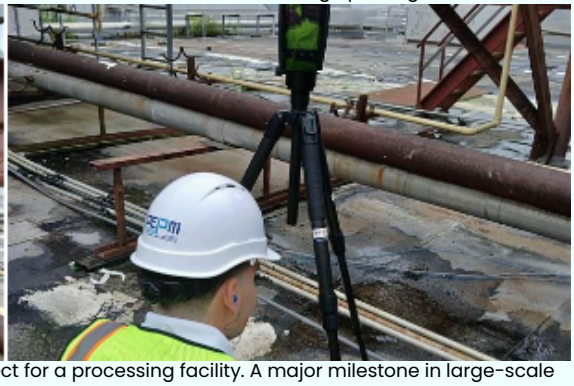
We will celebrate the open house with many PEPM customers from across the country; a GREAT opportunity for networking and collaboration! Join us for good food, beers, drinks, and amazing door prizes including Maui vacation stay. Be on the lookout for our RSVP invitation, we hope to see you!

The PEPM Group begins a thermal oxidizer system project this month. PEPM is providing structural design, mechanical engineering, pipe stress analysis, electrical engineering and instrumentation/control design. In addition, PEPM will provide 3D modeling in CadWorx, isometrics, general arrangement and detail drawings and BOMs. The project is expected to be completed with four months. The PEPM Group is highly specialized in engineering and design of thermal oxidizers, flares, modular plants and on shore and off shore cooling towers.

PEPM's structural team is performing dynamic analysis and structural engineering for a prepared food processing plant in Dallas, Texas. The similarity of the natural frequencies between the structure and shakers has resulted stress cracks of structural members and welds. PEPM's structural team will analyze the natural frequency and perform dynamic analysis using STAAD Pro. A new design will be provided to minimize the stress cracks.

The PEPM Group is providing full engineering and drafting services for a new chiller and system project in a poultry processing facility in Texas. PEPM is providing structural engineering design, mechanical and refrigeration engineering, and electrical engineering. 3D Revit model will be used to generate issue for construction design package.





PEPM completed a more than 300,000 SF 3D scanning project for a processing facility. A major milestone in large-scale 3D scanning projects, with multiple engineers and scanners, was all completed within one week. PEPM Group will also provide stitching and 3D modeling for the project. PEPM Group is continuing the effort to support customer's needs regardless of large or small projects, on time with quality.

For your structural, mechanical, electrical engineering, 3D modeling, and drafting needs, contact jpascual@pepmgroup.com, yzhang@pepmgroup.com, and admin@pepmgroup.com. The PEPM Group is a full engineering service company specialized in food process and energy industries and a leading engineering company for plantwide ventilation and air studies and has provided more than 30 ventilation and air study evaluation projects for multiple customers throughout the country.

ENGINEERING INSIGHT

Hot Water Pumping Systems 1:

Major Problems with pump systems:

- **Low/inconsistent pressures**
- **Low/inconsistent flows**
- **Frequent pump repairs**

Hot Water Pumping Systems Low or Inconsistent Pressures

Cause #1:

- **In many plants, this is caused by piping that is too small for the required flow, causing excessive pressure drop.**
- **Seen at several plants: trying to force 200 gpm through a 2" pipe.**
- **Resulting pressure losses were 300 psi from the pump to the hose drop!**

Cause #2:

- **Forcing the pumps to produce more flow than their rating.**
- **This will greatly lower the discharge pressure.**
- **Also, over-running the pumps will reduce their life between repairs.**
- **Flow will become unstable, and the pumps will 'hunt'.**
- **Improper pump sizing and selection.**
- **Same basic causes as low pressure.**
- **Pumps are being over-run.**
- **Pumps are damaged.**
- **Too much pressure loss in the piping.**
- **Improper pump selection.**

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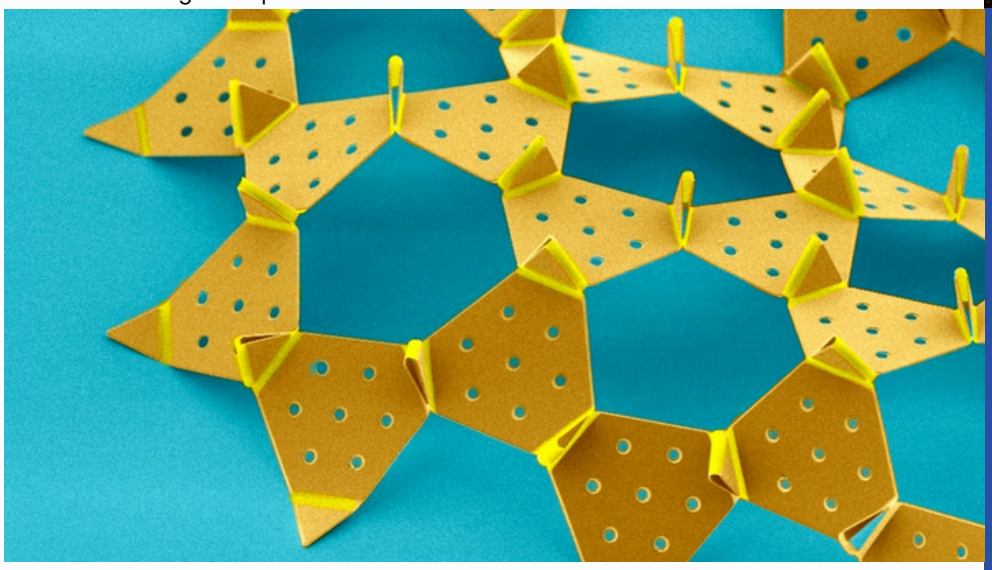
WE ARE HIRING!

For a long-term fulfilling career, a caring, encouraging, and respectful working place, contact PEPM. Apply today at *www.pepmgroup.com/careers*

- Lead or Senior Structural Engineer (Tulsa, OK) - 5+ years of experience. PE required.
- Project Engineer (Tulsa, OK & Fayetteville, AR) - 5+ years experience, PE preferred
- Drafting Designer (Fayetteville, AR) - 4+ years experience, Associate's Degree in Drafting required
- Business Development Manager (Tulsa, OK) - 5+ years experience, Associate's or Bachelor's Degree preferred
- Accounting Administrative Assistant (Fayetteville, AR) - 2+ years experience, Associate's or Bachelor's Degree required



MICROSCALE ROBOT FOLDS INTO SHAPES AND CRAWLS

Cornell University researchers have created microscale robots less than 1 millimeter in size that are printed as a 2D hexagonal "metasheet" but, with a jolt of electricity, morph into preprogrammed 3D shapes and crawl.

The robot's versatility is due to a novel design based on kirigami, a cousin of origami, in which slices in the material enable it to fold, expand and locomote.

The team's paper, "Electronically Configurable Microscopic Metasheet Robots," was published Sept.11 in Nature Materials. The paper's co-lead authors are postdoctoral researchers Qingkun Liu and Wei Wang.

The project was led by Itai Cohen, a professor of physics. His lab has previously produced micro-robotic systems that can actuate their limbs, pump water via artificial cilia, and walk autonomously.
The robot is a hexagonal tiling composed of approximately 100 silicon dioxide panels that are connected through more than 200 actuating hinges, each about 10 nanometers thin.

When electrochemically activated via external wires, the hinges form mountain and valley folds and act to splay open and rotate the panels, allowing the robot to change its coverage area and locally expand and contract by up to 40%. Depending on which hinges are activated, the robot can adopt various shapes, potentially wrap itself around other objects, and then unfold itself back into a flat sheet.

Applications could range from reconfigurable micromachines to miniaturized biomedical devices and materials that can respond to impact at nearly the speed of light, rather than the speed of sound.

Original Article: Microscale kirigami robot folds into 3D shapes and crawls by David Nutt for Cornell University: Cornell Chronicle & Science Daily

IN THE KNOW...

September, which is Latin for seven, was originally the seventh month in the oldest known Roman calendar, the 10-month calendar of Romulus.

2008 The Large Hadron Collider at CERN, the biggest scientific experiment in the history of mankind, is powered up in Geneva, Switzerland.

1959 Luna 2 launched by the USSR; 1st spacecraft to impact on the Moon.

1939 World's 1st practical helicopter, the VS-300 designed by Igor Sikorsky, takes tethered flight in Stratford, CT.

1909 World's first patent for synthetic rubber granted to German chemist Fritz Hofmann.

1846 Elias Howe takes out a US patent for a lockstitch sewing machine.

1776 Congress officially renamed the country the United States of America.

1522 Ferdinand Magellan's Spanish expedition becomes the first to circumnavigate the globe.

1504 Michelangelo's Statue of David is unveiled in Florence.

Original Article: *OnThisDay*: www.OnThisDay.com

The HOT SPOT

The 9 Largest Commercial Construction Starts of August 2024

Total construction starts jumped 6% in August to a seasonally adjusted annual rate of $1.2 trillion...

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Air chilling predicted to increase in US processing by 2035

While the U.S. poultry processing sector continues to be focused on improving its efficiency and quality of its products, water consumption has also become...

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USDA raises broiler production forecasts

The United States Department of Agriculture (USDA) raised its projections for U.S. broiler production for the remainder of 2024 and for 2025...

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Poultry microbiome insights could boost health, performance

Learning more about how feed ingredients influence the microbial makeup of the poultry gut microbiome could help producers optimize growth, health and performance.

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How to Maintain a Steady Backlog

If you want to grow your construction firm, getting your backlog right couldn't be more important...

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WE WANT YOUR FEEDBACK!

ಪ್ರತಿಕ್ರಿಯೆ *(Kannada for feedback)*

To ensure a great newsletter, let us know what you think! Your ideas and stories can make this newsletter a truly engaging experience. Send your suggestions to yzhang@pepmgroup.com. *Your feedback is greatly appreciated and valued!*

GET PROPOSAL

Have questions about MEP, CSA, industrial refrigeration, process design, architectural, or project management? Contact PEPM Group at yzhang@pepmgroup.com, admin@pepmgroup.com, call (918) 895-6766, or visit www.pepmgroup.com.

SEPTEMBER AWARENESS DAYS

SEP 1	Ginger Cat Appreciation Day
SEP 2	Labor Day
SEP 3	Skyscraper Day
SEP 4	Wildlife Day
SEP 5	Samosa Day
SEP 6	Great Egg Toss Day
SEP 7	Hummingbird Day
SEP 8	Grandparents Day
SEP 9	Teddy Bear Day
SEP 10	Swap Ideas Day
SEP 11	Patriot Day
SEP 12	Chocolate Milkshake Day
SEP 13	Fortune Cookie Day
SEP 14	German Language Day
SEP 15	Wife Appreciation Day
SEP 16	Guacamole Day
SEP 17	Constitution & Citizenship Day
SEP 18	Bamboo Day
SEP 19	Talk Like a Pirate Day
SEP 20	Pepperoni Pizza Day
SEP 21	Batman Day
SEP 22	Business Women's Day
SEP 23	Family Day
SEP 24	Horchata Day
SEP 25	Comic Book Day
SEP 26	Johnny Appleseed Day
SEP 27	Native American Day
SEP 28	Museum Day
SEP 29	Broadway Musical Day
SEP 30	Podcast Day