

# ASSEMBLY REQUIRED

October 2024



## THE WATER COOLER

**Invitations to attend our Fayetteville open house have been sent! Check your inbox and RSVP to join our celebration!**

**The PEPM Group begins engineering projects for two data centers in Ohio. PEPM's structural and mechanical engineering teams will provide structural engineering analysis and design using STAAD Pro and in-house engineering programs, and pipe stress analysis using CAESAR II programs. The projects are the continuation of the multiple data center engineering projects PEPM has been performing across the US.**

**PEPM is performing air study and condensation evaluation for a poultry plant in Arkansas. PEPM's mechanical engineer will perform the site measurement with a highly accurate anemometer and will provide an evaluation on the air velocities, humidity, and temperature during operation and sanitation. With the field information collected on site, PEPM's mechanical team will identify condensation and air imbalance issues and provide cost-effective solutions.**

**This month, the PEPM Group will start multiple structural engineering projects for a prepared foods plant, a poultry plant in Texas, and a refinery facility in California.**

For your structural, mechanical, electrical engineering, 3D modeling, and drafting needs, contact [jpascual@pepmgroup.com](mailto:jpascual@pepmgroup.com), [y Zhang@pepmgroup.com](mailto:y Zhang@pepmgroup.com), and [admin@pepmgroup.com](mailto: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

#### Frequent Pump Repairs

#### Cavitation chewing up casing and impellers

- Pressure is less than the vapor pressure of the water, causing vapor to flash.
- Bubbles form, then collapse, causing high localized pressures that create pits.

#### 3 Biggest Causes:

- Poor suction and discharge piping arrangement.
- Over-running the pump (too much flow).
- Deadheading the pump (flow less than required minimum).

#### Seal Failure Causes:

- Thermal shock—running hot water then switching over to cold water with same pump.
- Dynamic imbalance—running for extended periods at deadhead OR over-running pump.
- Poor alignment between liquid end and motor.
- Piping misaligned to pump.
- Piping transferring thermal expansion to pump.

#### How to Not Install a Pump

- Avoid long runs of suction and discharge piping that are the same size as the pump nozzles.
- Avoid fittings, strainers, and valves within 5 x pipe diameter or 18" (whichever is greater), of pump nozzles.
- Don't support the piping off the pump nozzles.
- Accommodate thermal expansion with flexible connectors.

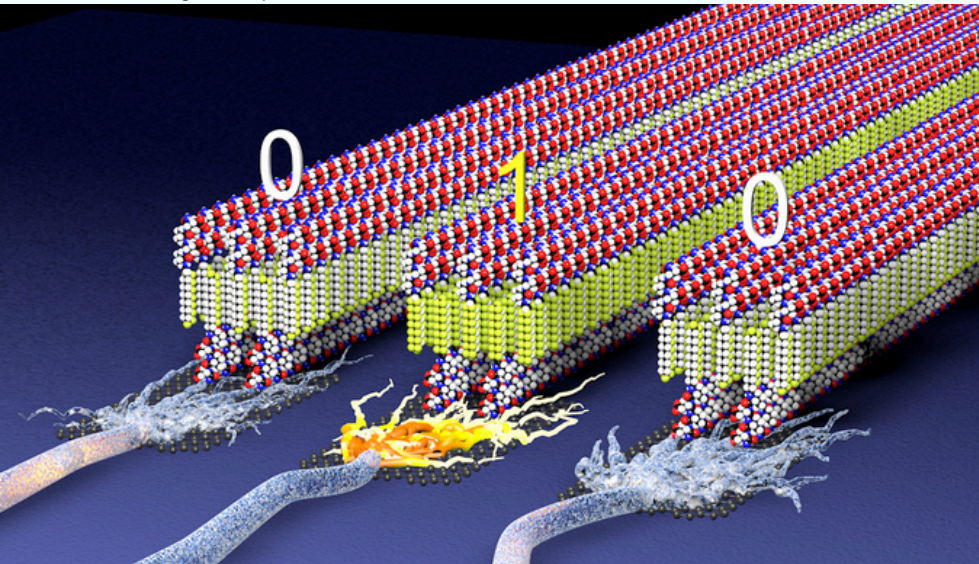


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# WE ARE HIRING!

For a long-term fulfilling career, a caring, encouraging, and respectful working place, contact PEPM. Apply today at [www.pepmgroup.com/careers](http://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 (Tulsa, OK) - 2+ years experience, Associate's or Bachelor's Degree required



## NATURE AND PLASTICS INSPIRE BREAKTHROUGH IN SOFT SUSTAINABLE MATERIALS

Step aside hard, rigid materials. There is a new soft, sustainable electroactive material in town -- and it's poised to open new possibilities for medical devices, wearable technology and human-computer interfaces.

Using peptides and a snippet of the large molecules in plastics, Northwestern University materials scientists have developed materials made of tiny, flexible nano-sized ribbons that can be charged just like a battery to store energy or record digital information. Highly energy efficient, biocompatible and made from sustainable materials, the systems could give rise to new types of ultralight electronic devices while reducing the environmental impact of electronic manufacturing and disposal.

With further development, the new soft materials could be used in low-power, energy-efficient microscopic memory chips, sensors and energy storage units. Researchers also could integrate them into woven fibers to create smart fabrics or sticker-like medical implants. In today's wearable devices, electronics are clunkily strapped to the body with a wristband. But, with the new materials, the wristband itself could have electronic activity.

"This is a wholly new concept in materials science and soft materials research," said Northwestern's Samuel I. Stupp, who led the study. "We imagine a future where you could wear a shirt with air conditioning built into it or rely on soft bioactive implants that feel like tissues and are activated wirelessly to improve heart or brain function.

"Those uses require electrical and biological signals, but we cannot build those applications with classic electroactive materials. It's not practical to put hard materials into our organs or in shirts that people can wear. We need to bring electrical signals into the world of soft materials. That is exactly what we have done in this study."

Original Article: Nature and Plastics Inspire Breakthrough in Soft Sustainable Materials: [ScienceDaily](http://ScienceDaily.com)



# OCTOBER

## IN THE KNOW...

October, which is Latin for eight, was originally the eighth month in the oldest known Roman calendar, the 10-month calendar of Romulus.

**1977** Paleontologist Elso Barghoorn announces discovery of a 3.4-billion-year-old one-celled fossil, one of the earliest life forms on Earth.

**1973** The Bosphorus Bridge in Istanbul is completed, connecting the continents of Europe and Asia for the first time.

**1945** Microwave oven patented by US inventor Percy Spencer.

**1908** Henry Ford introduces the Model T car, priced at \$825.

**1900** The first modern submarine is commissioned by the US Navy as the USS Holland.

**1884** International Meridian Conference in Washington, DC adopts Greenwich Mean Time worldwide, creating 24 time zones.

**1879** Thomas Edison perfects the carbonized cotton filament light bulb.

**1446** The Hangeul (Korean) alphabet is first published in Korea by King Sejong the Great.

Original Article: *OnThisDay*: [www.OnThisDay.com](http://www.OnThisDay.com)

# The HOT SPOT

## Women in Ag Award 2024 winners announced

The Women in Ag Award 2024 winners have been announced by the DLG (German Agricultural Society) and Women in Ag Magazine, recognizing outstanding women in the agricultural sector....

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## DOE opens applications for up to \$900M to support small modular reactor deployment

Interest in nuclear energy is resurgent, and DOE said it wants to establish "a credible and sustainable pathway" to deploying Gen III+ SMRs across the country....

[READ MORE](#)

## Registration open for 2025 IPPE

The event, which is the world's largest annual display of technology, equipment, supplies and services for the egg, meat, poultry and animal food industries, already boasts over 574,000 square feet of exhibit space and 1,190-plus exhibitors...

[READ MORE](#)

## EPA requires lead pipes to be replaced nationwide within 10 years

The landmark rule imposes the strictest limits on lead in drinking water since federal standards were set 30 years ago....

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## Turning the US hydrogen field of dreams into reality

Increasing manufacturing and energy production in the U.S. is obviously good economic policy, but also strong climate policy...

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## WE WANT YOUR FEEDBACK!

رائے (Urdu 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](mailto: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](mailto:yzhang@pepmgroup.com), [admin@pepmgroup.com](mailto:admin@pepmgroup.com), call (918) 895-6766, or visit [www.pepmgroup.com](http://www.pepmgroup.com).

OCTOBER

# AWARENESS DAYS



- OCT 1 International Coffee Day
- OCT 2 National Kale Day
- OCT 3 National Boyfriend Day
- OCT 4 World Smile Day
- OCT 5 World Teachers Day
- OCT 6 National Badger Day
- OCT 7 World Architecture Day
- OCT 8 Dyslexia Day
- OCT 9 Emergency Nurses Day
- OCT 10 Inclusion Day
- OCT 11 National Sausage Pizza Day
- OCT 12 Farmers Day
- OCT 13 Breast Cancer Awareness Day
- OCT 14 Indigenous Peoples' Day
- OCT 15 I Love Lucy Day
- OCT 16 Dictionary Day
- OCT 17 National Pasta Day
- OCT 18 Chocolate Cupcake Day
- OCT 19 International Sloth Day
- OCT 20 World Statistics Day
- OCT 21 Back to the Future Day
- OCT 22 National Nut Day
- OCT 23 National Croc Day
- OCT 24 National Bologna Day
- OCT 25 National Breadstick Day
- OCT 26 National Pumpkin Day
- OCT 27 National Black Cat Day
- OCT 28 National Immigrants Day
- OCT 29 National Internet Day
- OCT 30 National Checklist Day
- OCT 31 Halloween



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