

ASSEMBLY REQUIRED

November 2024



THE WATER COOLER

PEPM Group is excited to share that we have been nominated for Best Engineering Firm in The Best of Northwest Arkansas! Voting is open now through 12/13, and you can vote once a day!

We are honored to be nominated and would appreciate your support.

Please visit: <https://www.votebestnwa.com/pepmgroup>, then click on "Engineering Firm" and "Submit Ballot" to cast your vote!



The PEPM Group starts the phase III Gigabay cooling tower engineering project this month. The analyzed structures (3 bays) are ~ 100 ft * 100 ft * 60 ft. PEPM is providing load calculations including wind, seismic, snow, and ice loads; structural engineering utilizing STAAD model, MathCAD, IEDA StatiCa, and in-house engineering programs and tools. In addition, PEPM will also provide detail and shop drawings.

PEPM's mechanical team completed two air study and ventilation evaluation projects for food poultry and prepared food plants in Arkansas and Mississippi. PEPM engineers provided effective solutions to remediate condensation and PAA issues in the plants. Different from the others, PEPM uses calibrated and certified air measurement equipment providing highly accurate field results.

The PEPM Group has completed a total 500,000 SF 3D scanning, stitching, XREF, and Revit modeling project for a food process plant and is continuing to support the customer's needs on the 3D scanning and Revit for multiple projects.

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 2

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.

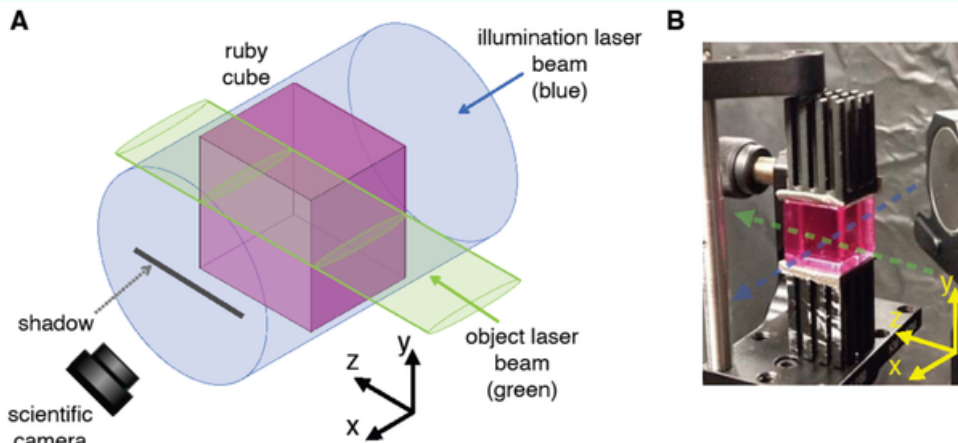
How to Not Install a Pump

- 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.

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.
- 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 Assistant (Tulsa, OK) - 2+ years experience, Associate's or Bachelor's Degree required



SCIENTIST DISCOVER LASER LIGHT CAN CAST A SHADOW

Can light itself cast a shadow? It may sound like a philosophical riddle, but researchers have found that under certain conditions, a laser beam can act like an opaque object and cast a shadow. The discovery challenges the traditional understanding of shadows and opens new possibilities for technologies that could use a laser beam to control another laser beam.

"Laser light casting a shadow was previously thought impossible since light usually passes through other light without interacting," said research team leader Raphael A. Abrahao from Brookhaven National Laboratory, previously at the University of Ottawa. "Our demonstration of a very counter-intuitive optical effect invites us to reconsider our notion of shadow."

In *Optica*, Optica Publishing Group's journal for high-impact research, the researchers describe how they used a ruby crystal and specific laser wavelengths to show that a laser beam could block light and create a visible shadow due to a nonlinear optical process. This effect occurs when light interacts with a material in an intensity-dependent way and can influence another optical field.

"Our understanding of shadows has developed hand-in-hand with our understanding of light and optics," said Abrahao. "This new finding could prove useful in various applications such as optical switching, devices in which light controls the presence of another light, or technologies that require precise control of light transmission, like high-power lasers."

To do this, the researchers directed a high-power green laser through a cube made of standard ruby crystal and illuminated it with a blue laser from the side. When the green laser enters the ruby, it locally changes the material response to the blue wavelength. The green laser acts like an ordinary object while the blue laser acts like illumination.

The interaction between the two light sources created a shadow on a screen that was visible as a dark area where the green laser blocked the blue light. It met all the criteria for a shadow because it was visible to the naked eye, followed the contours of the surface it fell on and followed the position and shape of the laser beam, which acted as an object.

Original Article: Scientist Discover Laser Light Can Cast a Shadow: [Science Daily](http://www.sciencedaily.com)



IN THE KNOW...

November, which is Latin for nine, was originally the ninth month in the oldest known Roman calendar, the 10-month calendar of Romulus.

1980 US spacecraft Voyager 1 sends back the first close-up pictures of Saturn during its fly-by.

1970 Douglas Englebart receives the patent for the first computer mouse.

1969 Isolation of a single gene announced by scientists at Harvard University.

1885 German engineer Gottlieb Daimler unveils the world's first motorcycle.

1877 US inventor Thomas Edison demonstrates his hand-cranked phonograph for the first time.

1675 German mathematician Gottfried Wilhelm Leibniz demonstrates integral calculus for the first time to find the area under the graph of the function $y=f(x)$.

1620 The Mayflower reaches Cape Cod and explores the coast.

1520 Portuguese navigator Ferdinand Magellan begins crossing the Pacific Ocean.

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

The HOT SPOT

The 9 largest commercial construction starts of October 2024

Construction activity regained momentum in October after a brief dip to start the fall, according to Dodge Construction Network's Nov. 21 report...

[READ MORE](#)

Building better: How AI is helping project managers get more done

While the construction industry as a whole has historically been cautious in adopting new technologies, many realize when it comes to AI, avoidance is not an option...

[READ MORE](#)

3 big opportunities for chicken

With inflation, labor shortages and feed costs above the historical norm challenging the chicken industry, it's important to think about the opportunities that could increase demand...

[READ MORE](#)

Challenges the poultry industry of 2035 should prepare for

Global meat consumption, especially poultry, is predicted to increase at least through 2050. However, growth in consumption will bring challenges that the poultry industry will need to navigate...

[READ MORE](#)

Data center boom fuels demand for nuclear projects

A shift in how tech companies like Google and Amazon meet their energy needs is creating opportunities for construction firms equipped to handle atomic power work...

[READ MORE](#)

Chicken must bridge the trust gap with Gen Z consumers

The chicken industry faces challenges and opportunities when it comes to winning over Generation Z consumers due to the demographic's distrust of the food industry...

[READ MORE](#)

WE WANT YOUR FEEDBACK!

Duoko (*Luo 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, (918) 895-6766, or visit www.pepmgroup.com.

NOVEMBER

AWARENESS DAYS



- NOV 1 National Brush Day
- NOV 2 National Bison Day
- NOV 3 Daylight Savings Day
- NOV 4 National Candy Day
- NOV 5 Election Day
- NOV 6 National Basketball Day
- NOV 7 Project Management Day
- NOV 8 National STEM Day
- NOV 9 British Pudding Day
- NOV 10 World Science Day
- NOV 11 Veterans Day
- NOV 12 National Happy Hour Day
- NOV 13 World Kindness Day
- NOV 14 National Pickle Day
- NOV 15 National Drummer Day
- NOV 16 Guinness World Records Day
- NOV 17 Homemade Bread Day
- NOV 18 Mickey Mouse Day
- NOV 19 National Entrepreneur's Day
- NOV 20 Universal Children's Day
- NOV 21 National Stuffing Day
- NOV 22 Flossing Day
- NOV 23 National Adoption Day
- NOV 24 Dev Diwali
- NOV 25 National Brand Day
- NOV 26 National Cake Day
- NOV 27 National Jukebox Day
- NOV 28 Thanksgiving Day
- NOV 29 Native American Heritage Day
- NOV 30 Small Business Saturday



Follow us
[@pepmgroup](https://www.linkedin.com/company/pepmgroup)

Visit us
www.pepmgroup.com