



**American Institute of Chemical Engineers,
Cleveland Section**

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Monday, March 14, 2021, 2 PM,

Students Welcome! All on Zoom.

Pi Day (3.14), AIChE Celebrates How Chemical Engineers Use Pi

By Joseph Yurko, PE, President & CEO of JAY of Northeast Ohio, LLC, Strongsville, OH

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Abstract: We celebrate Pi Day every March 14th since that date has the notation of 03.14, and on that day we recognize how the many engineering disciplines use Pi in their work. For Chemical Engineering we will see how Pi is used to calculate vertical and horizontal cylindrical tank volumes as well as fluid dynamics of liquid flow in pipes. Given a fluid flow rate in gallons per minute (GPM) we can calculate the fluid velocity in a given pipe size that in turn will generate a frictional flow loss in the pipe and yield how much energy is needed to pump a fluid through a pipe for a given flow rate. After this energy is obtained, we can convert it into a horsepower to size a pump motor with an electrical power load. From this electrical power load, we can then convert it into a carbon footprint to evaluate the sustainability of a pumping process, and generate the optimum pump size, flow rate and pipe size that a given process can accept. This is all in appreciation to the work of a Greek mathematician, Archimedes, who first created an accurate algorithm in 250 BC to approximate $\pi = C/D$ as $22/7$.

Bio: Mr Yurko was a Project Lead at Xellia Pharmaceuticals (Novo Nordisk a/s) manufacturing facility in Bedford, Ohio, and has since retired in 2020. He was with Xellia for four years overseeing the process design, construction, and commissioning of critical and non-critical utility systems in two factories as well as Finished Dosage Form production operations with lyophilized presentations of Vancomycin. This facility is cGMP compliant as well as licensed and regulated by the Food and Drug Administration (FDA) and the European Medicines Agency (EMA). Mr Yurko is presently the Cleveland AIChE Section Newsletter Editor and Webmaster. Mr Yurko's previous work as a senior project engineer was with Ben Venue Laboratories (Boehringer Ingelheim GmbH) for 12 years. Prior to this Mr Yurko was with Morrison Knudsen Corporation (became URS then AECOM) as a senior process engineer for 22 years. Mr Yurko is a professional engineer licensed in the state of Texas. He is also an Emeritus member and Fellow of AIChE, and an active member of NSPE, ISPE, and ACS.

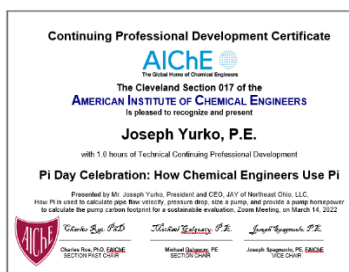
Mr. Yurko's presentation will be from a Zoom virtual meeting format, and those interested in attending will make their arrangements through the AIChE attached link below. AIChE will Email the Zoom link the Sunday before the Monday meeting. Professionals will receive a PDH certificate and students will receive a National Engineers Week certificate.

Meeting Location: **Zoom link to be Emailed the Sunday before the Monday meeting**

2:00 - 2:30 pm: Zoom Meeting
2:30 - 2:40 pm: Questions & Answers

Cost: (no cost)

Menu: (Zoom Virtual Meeting, no meal)



RSVP by March 11th with Joseph Yurko and AICHe: j.yurko@sbcglobal.net

**Cleveland Section 017 of
THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS
Steering Committee 2021 - 2022**

