

WELCOME


Enhancing Operations With Virtual Pump Stations

INTRODUCTION TO COLLECTION SYSTEMS INNOVATION
AND THE FUTURE OF PUMP STATION ASSESSMENT





INFORMATION IS
KING



But only when
you leverage it
effectively.

LIKE IT OR NOT

Digital and automation innovations are leveling the barriers to entry for all industries.

IT BEARS ASKING

If e-commerce companies can provide packages to my home in days, what must utility providers do to keep pace?



A close-up photograph of two hands, one from the left and one from the right, gently cupping a small, glowing yellow and white orb. The hands are silhouetted against a warm, orange and yellow sunset sky. The orb has a bright white center and a yellow outer glow. The overall mood is hopeful and visionary.

I envision a future
where public utilities face new
competition from larger, for-profit
agencies with the resources to
offer customers significant
savings and broader services.

A PUMP

MOVES WASTEWATER FROM

a lower to a higher elevation

– by adding –

ENERGY

2 PERCENT

US electric consumption used to
move and treat water and wastewater.

SOURCE: Hydraulic Institute



As a critical component of a wastewater collection system, the pump station is potentially **a single point of failure.**

Hey, it's
pumping
water, so it
must be fine.





**DON'T BE
FOOLED BY
OBSTACLE
ILLUSIONS**



The most common regular maintenance plan is to wait until something significant breaks and then commence emergency measures.

The running-your-
infrastructure-into-the-
ground approach is no
longer sustainable.

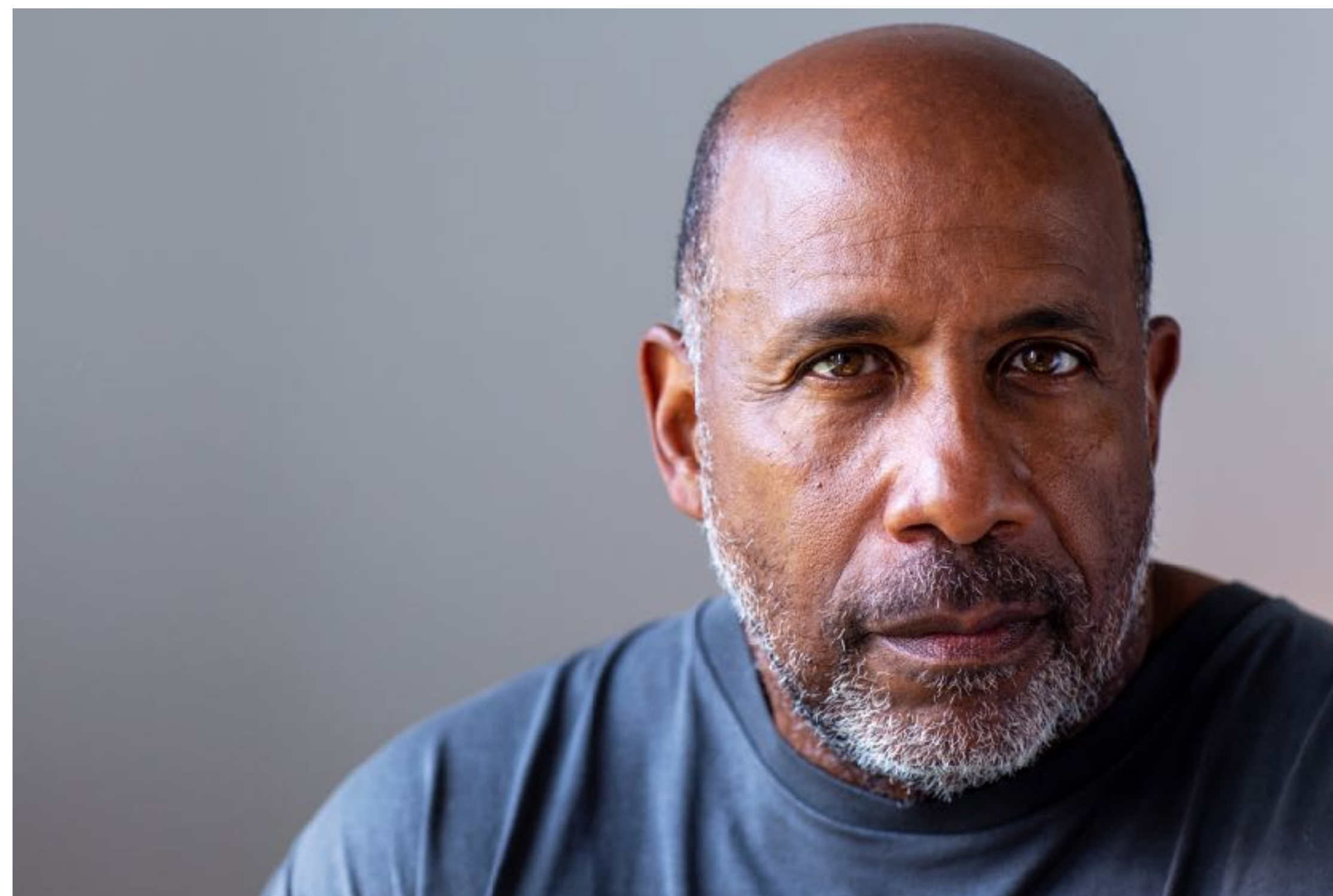


MOST PUMP SYSTEMS OPERATE AT

40%

EFFICIENCY

SOURCE: Hydraulic Institute

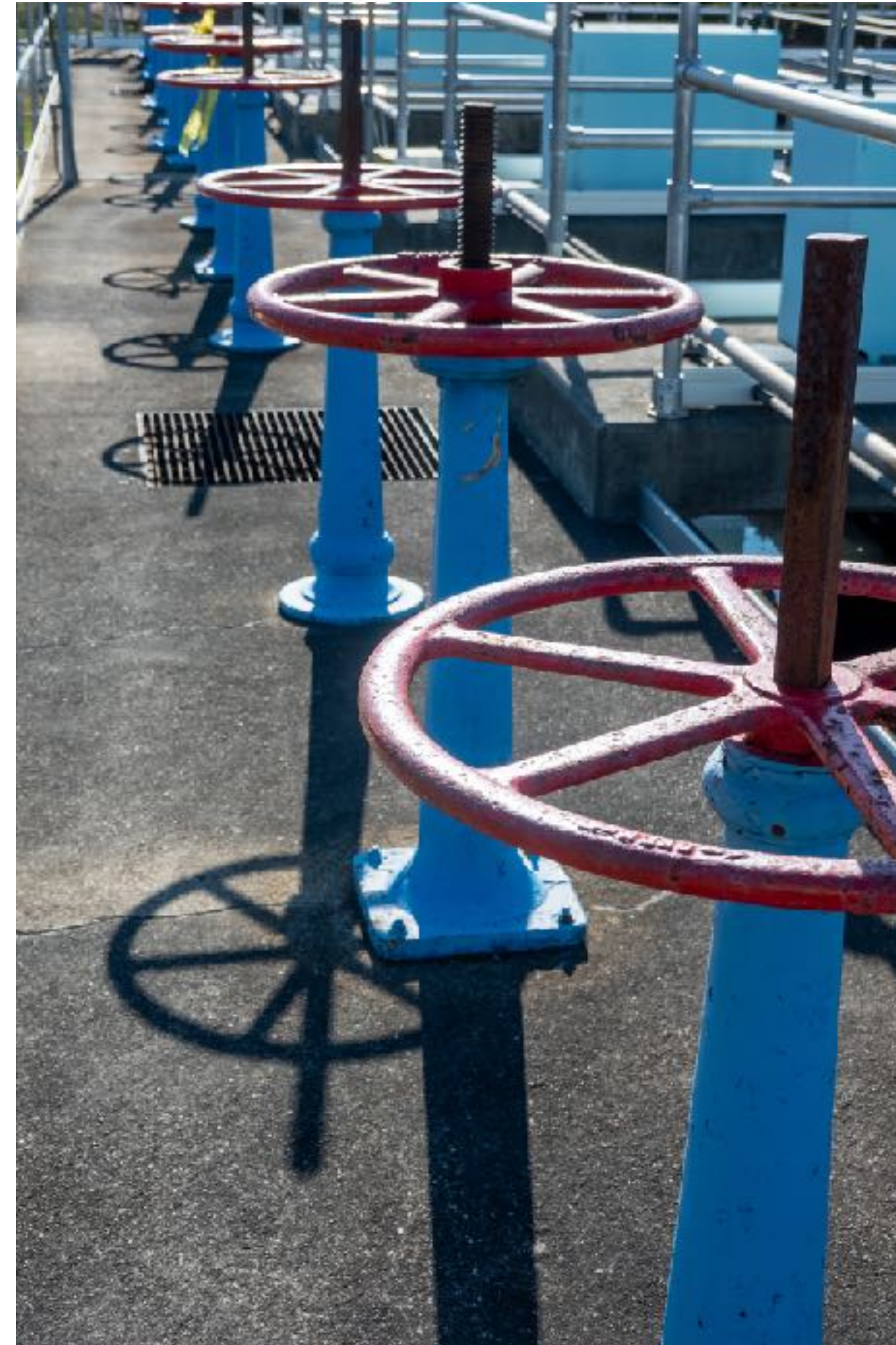


“When you’re on the forefront, you can see what the next innovation needs to be. When you’re behind, you have to spend your energy catching up.”

—Robert Noyce, Intel Co-founder

Opportunities Await

- ✓ Save energy
- ✓ Boost reliability and up-time
- ✓ Reduce wear
- ✓ Lower maintenance costs
- ✓ Minimize environmental impacts
- ✓ Improve MTBF and MTTR metrics



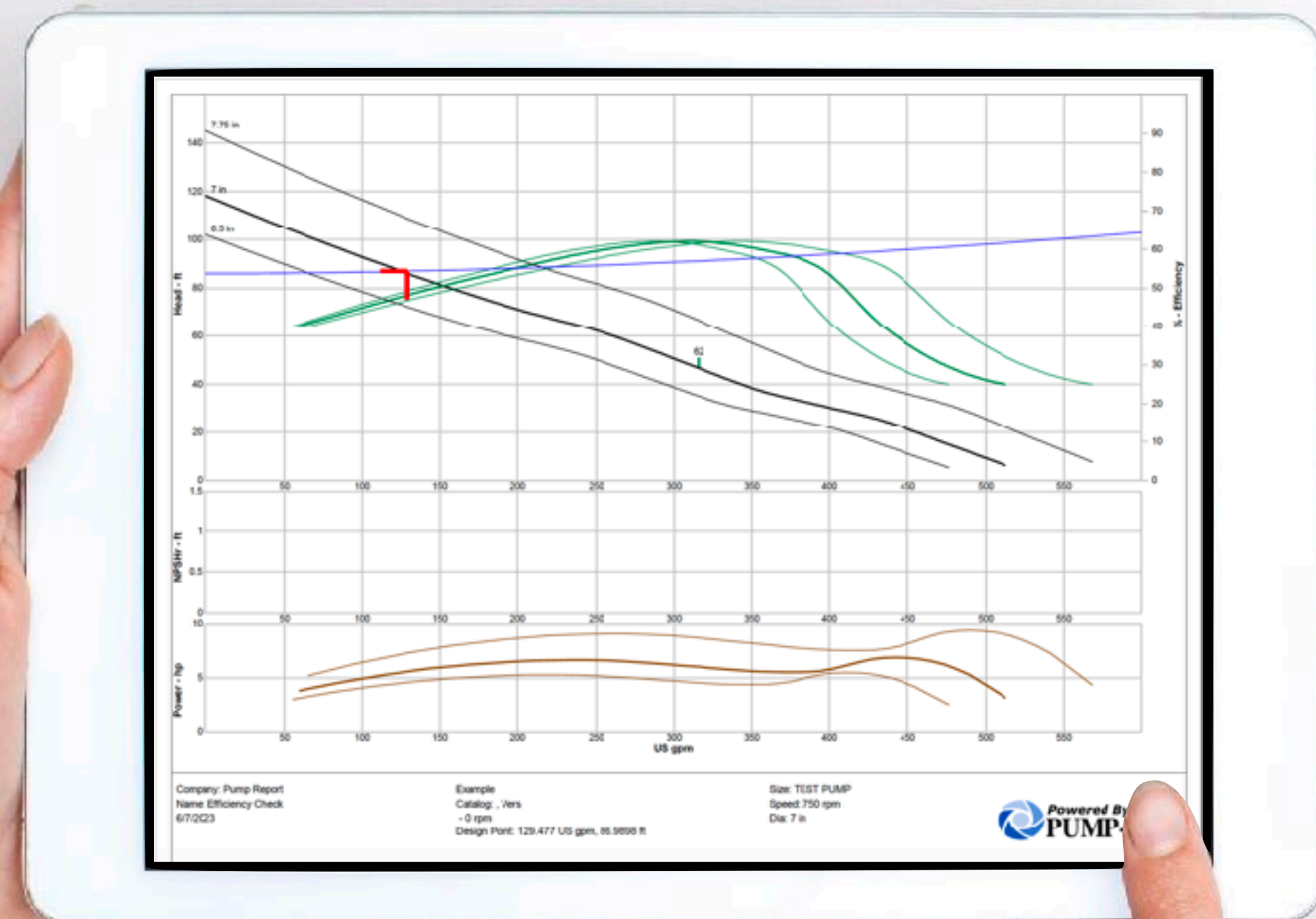


“

The best time to
plant a tree was
20 years ago.

The second best
time is now.

–Chinese Proverb



A pump system assessment aims to identify energy or capital savings with prioritized operational, equipment, or project-level improvements.



PUMP STATION ASSESSMENT

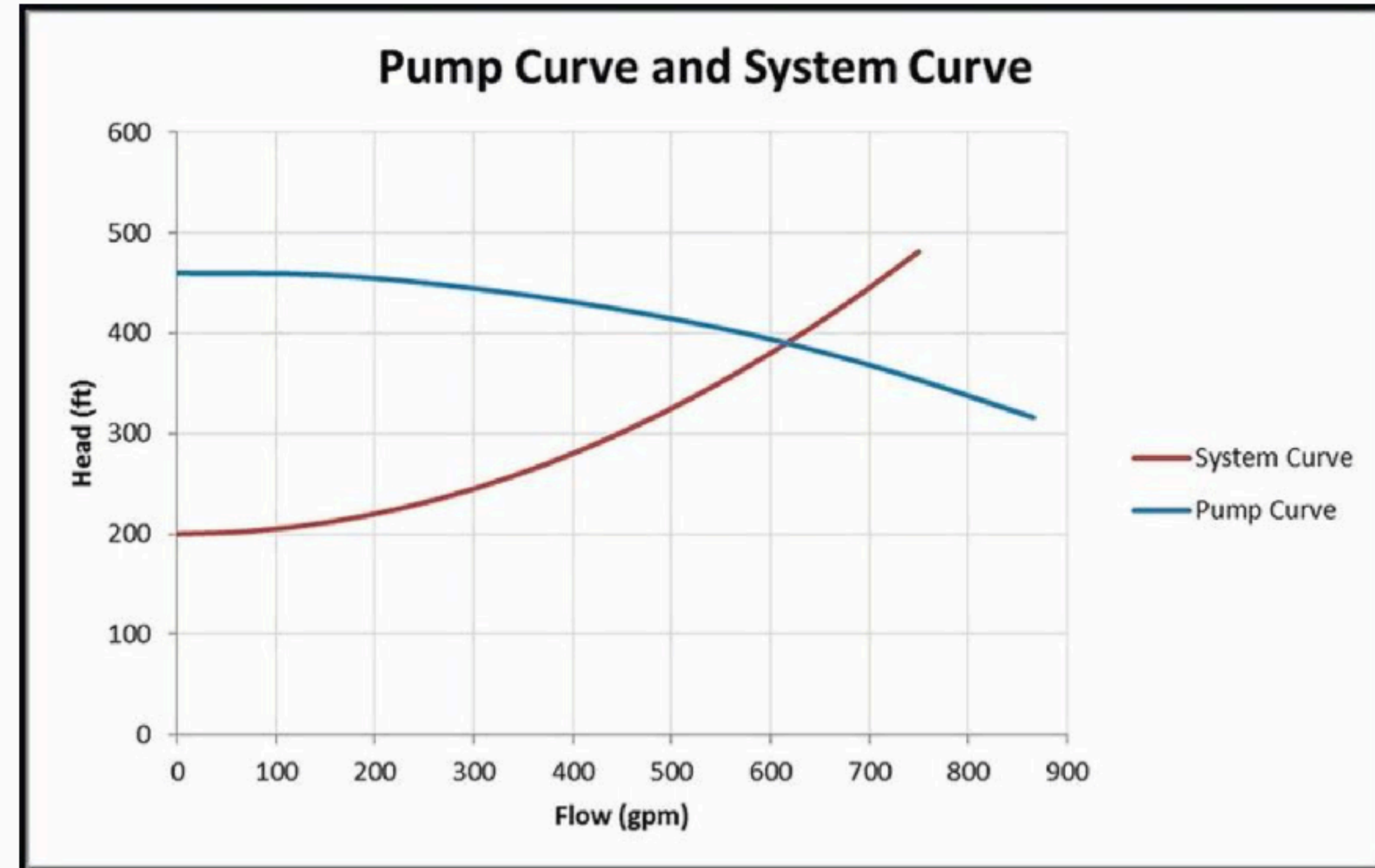
The pump doctor
will see you now.

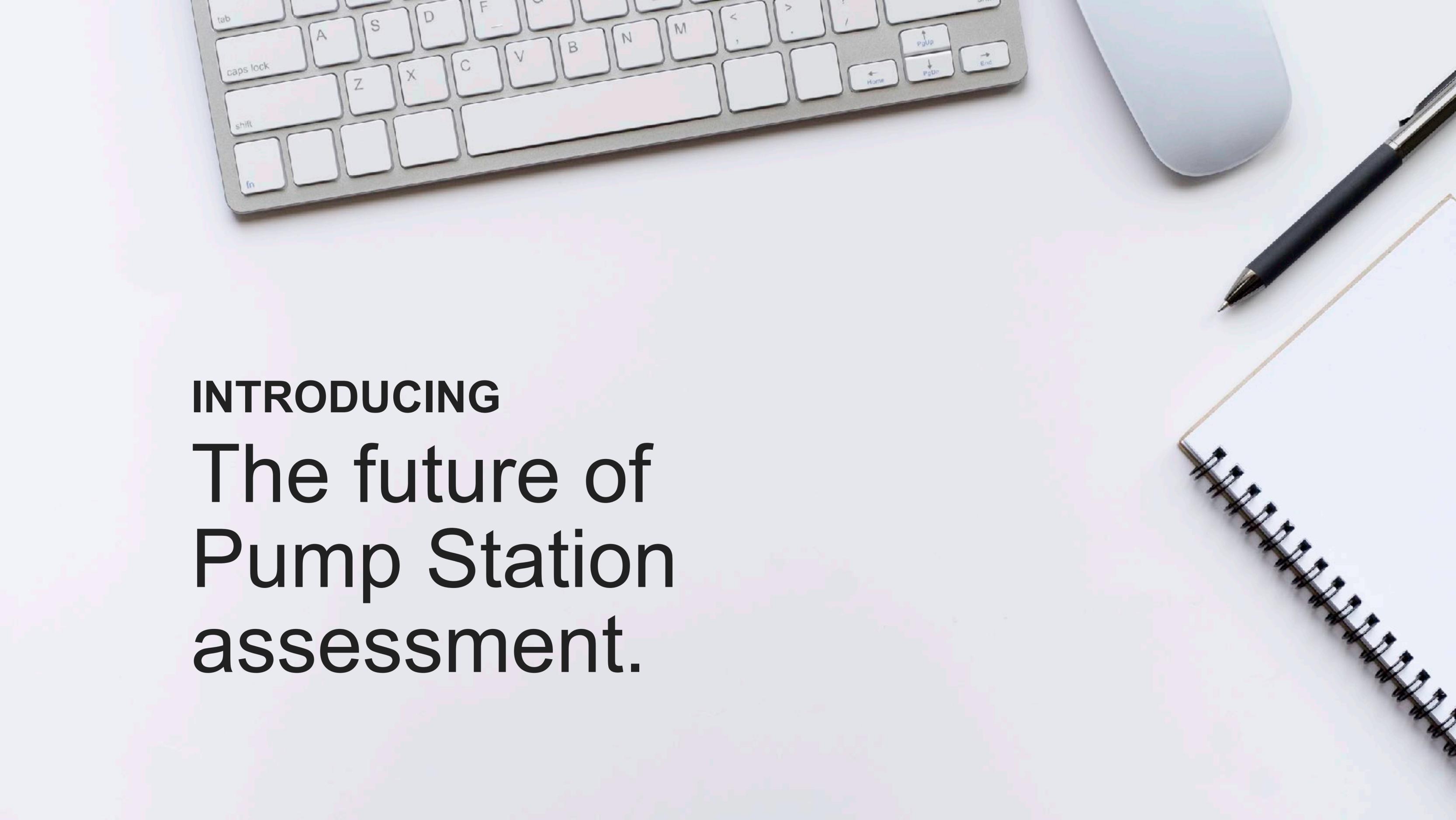




Outside eyes can often provide perspectives we are unable to give ourselves.

A good assessment will consider the entire station, including its components and their performance.





INTRODUCING
**The future of
Pump Station
assessment.**

OptimizerPS

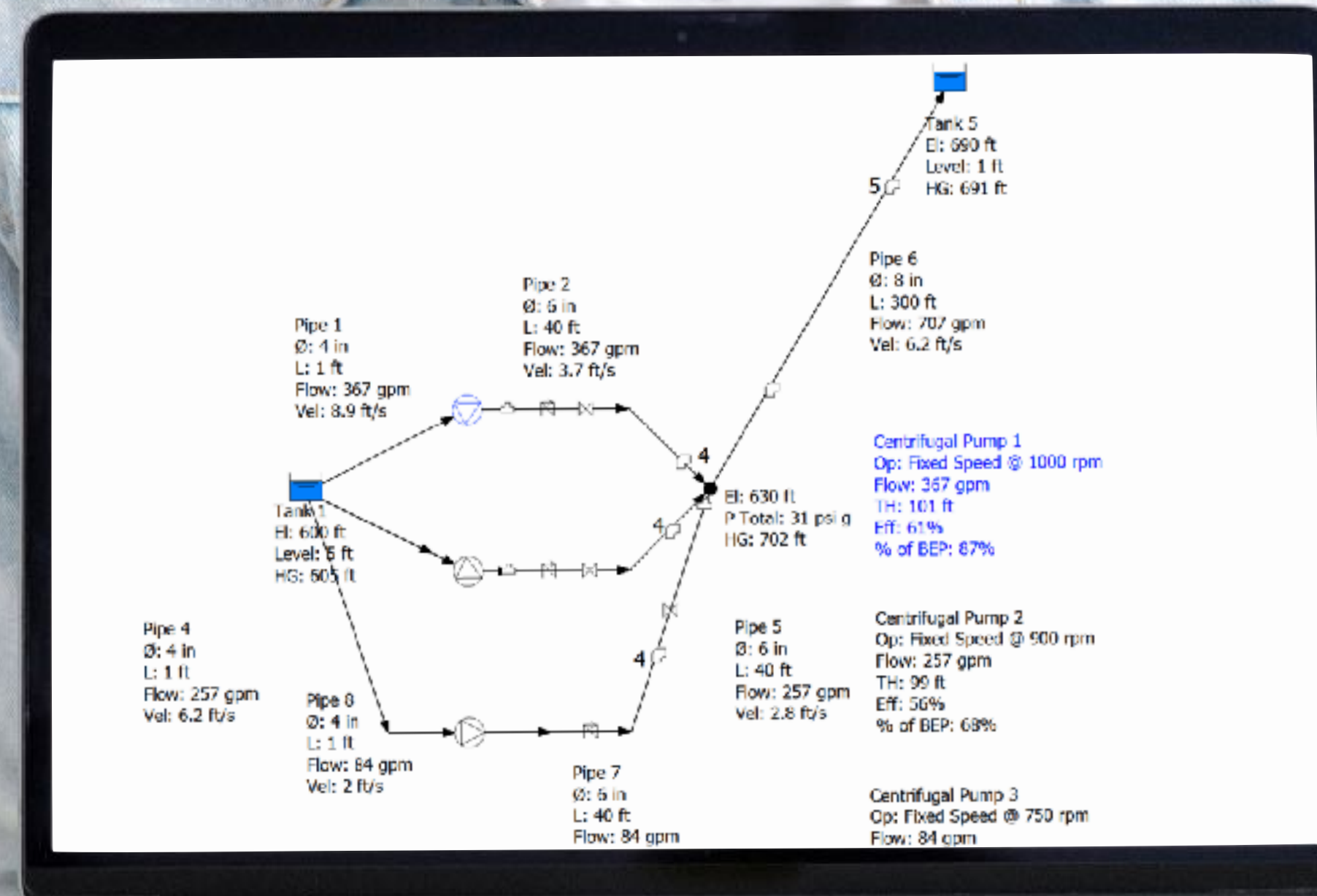
VIRTUAL PUMP STATION

A Virtual Pump Station is a data-driven model representing the pumping system and its key components—programmed to operate like the actual pump station.

RATHER THAN SIMPLY DOCUMENTING PERFORMANCE
AND CATALOGING THE OBSERVATIONS, OPTIMIZER**PS**
TAKES PUMP STATION ASSESSMENT TOOLS TO THE

NEXTLEVEL

Using robust modeling software, **OptimizerPS** possesses more horsepower and functionality than most spreadsheet-style digital twins.





a current
snapshot



**CHECK AGAINST
ORIGINAL DESIGN**

145
92



WILLIAM, heart attack survivor.

THIS IS WHAT
HIGH BLOOD PRESSURE
LOOKS LIKE.

Go to
LowerYourHBP.org
before it's too late.



PUMP SELECTION



“Procurement and selection of the most suitable pumping equipment...is made even more difficult by high pressure [sales tactics] from an overdeveloped industry.”

— **Roger Walker**

Pump Selection: A Consulting Engineer's Manual

Virtually

**TRY BEFORE
YOU BUY**

With the OptimizerPS virtual pump station, you can compare various options and pick a unit with the best performance and lifecycle cost.

MOST IMPORTANTLY

Recapture
operating funds
lost to poor
efficiency.



BEP

Best Efficiency Point



Operating left of the curve will cause:

- High temperature rise
- Low flow cavitation
- Low bearing and seal life
- Reduced impeller life
- Suction recirculation
- Discharge recirculation

Operating right of the curve will cause:

- High flow cavitation
- Low bearing and seal life

UP TO
60%
LESS ENERGY



Energy Efficiency

Energy savings of 20-60 percent are routinely possible in the centrifugal pump systems found in most water and wastewater applications.

“

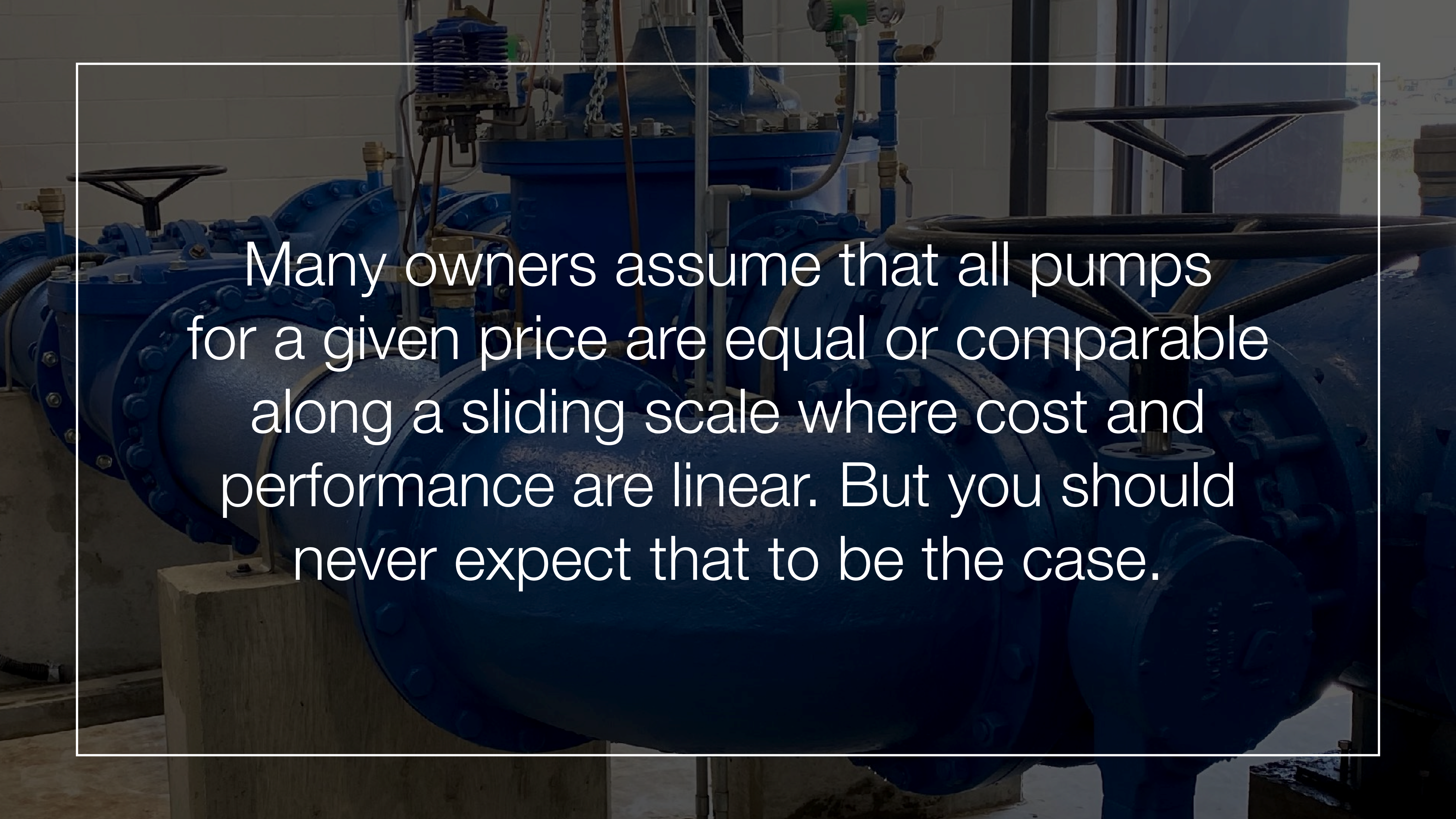
If you don't prioritize your
life someone else will.

—Greg McKeown, *Essentialism: The Disciplined Pursuit of Less*

”



**ASK
YOURSELF:**
Are you viewing
efficiency from the
proper perspective?

A large, blue industrial pump is the central focus of the image. It features a prominent handwheel on top and is connected to various pipes and valves. The pump is situated in an industrial setting, with a concrete base and other equipment visible in the background. The image is overlaid with a semi-transparent dark blue rectangle containing white text.

Many owners assume that all pumps for a given price are equal or comparable along a sliding scale where cost and performance are linear. But you should never expect that to be the case.

WHAT IF

OptimizerPS allows us to try out various real-time solutions—including those that are highly complex without software.



welcome to the Internet of Things (IoT)

Predictive Maintenance and Industry Comparisons

With more data about how pumps are performing, look for SCADA and monitoring to improve.



A pair of black-rimmed glasses and a black pen are resting on a financial chart. The chart features a grid with vertical bars and a line graph. The x-axis is labeled with months: Apr., May., Jun., Jul., Aug., and Oct. The entire image is overlaid with a semi-transparent blue filter. The text "Better capital improvement planning begins with data." is written in white, sans-serif font on the left side of the image.

Better capital
improvement planning
begins with data.

We're only
limited by our
own creativity.



“Don’t try to think outside
the box—get outside the
box, then think!”

—**Adam Hartung**

*Create Marketplace Disruption:
How To Stay Ahead of the Competition*

Learn more about OptimizerPS and

DOWNLOAD THESE SLIDES



OptimizerPS.com

THANK YOU

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