

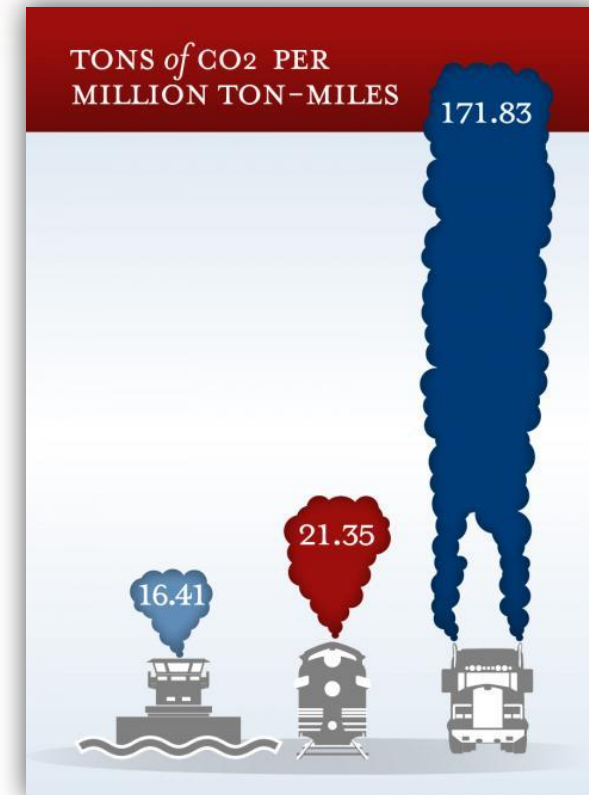
Efficiency Unlocked: Fuel Tracking & Data-Driven Optimization

9 January 2025

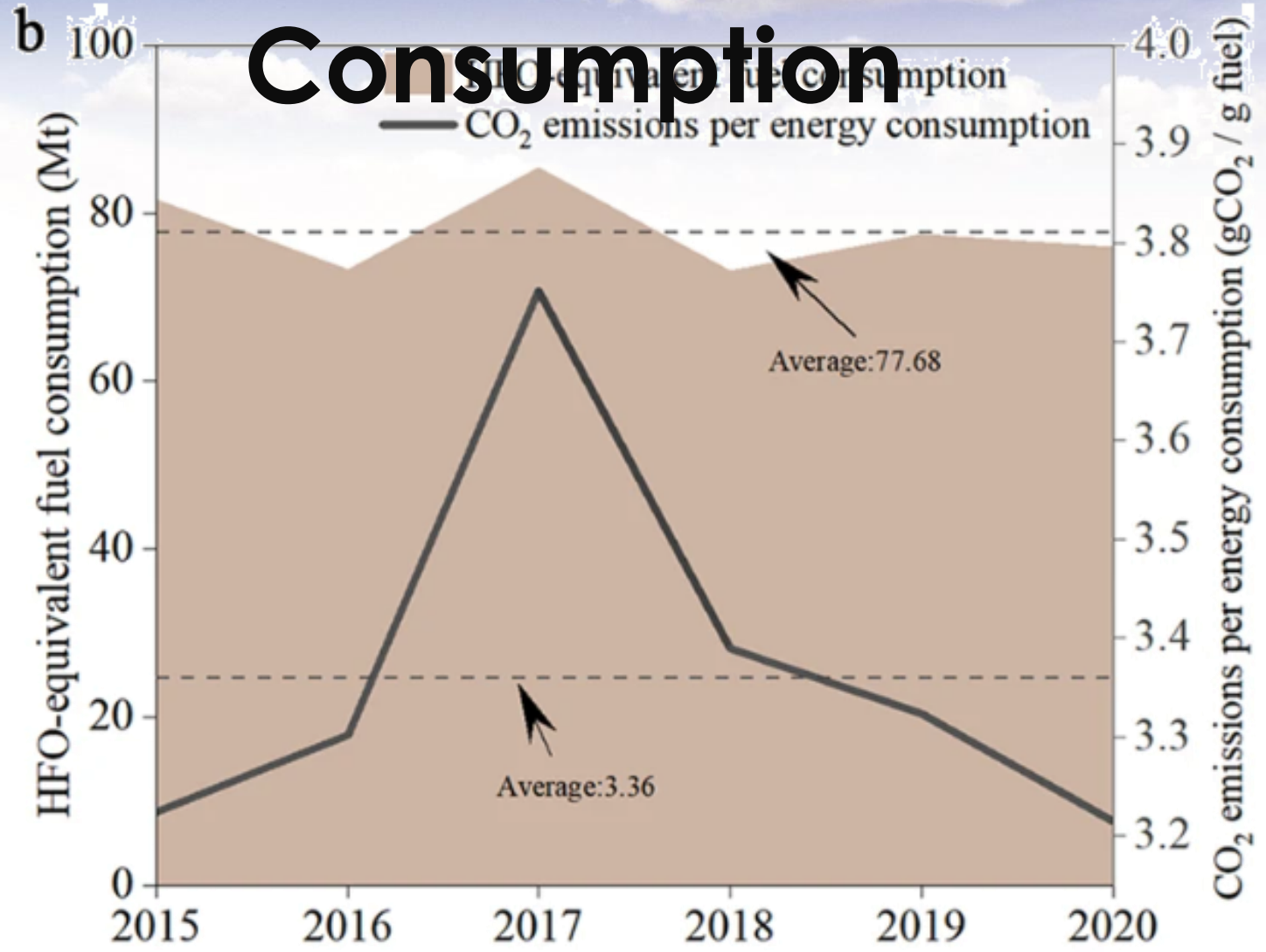


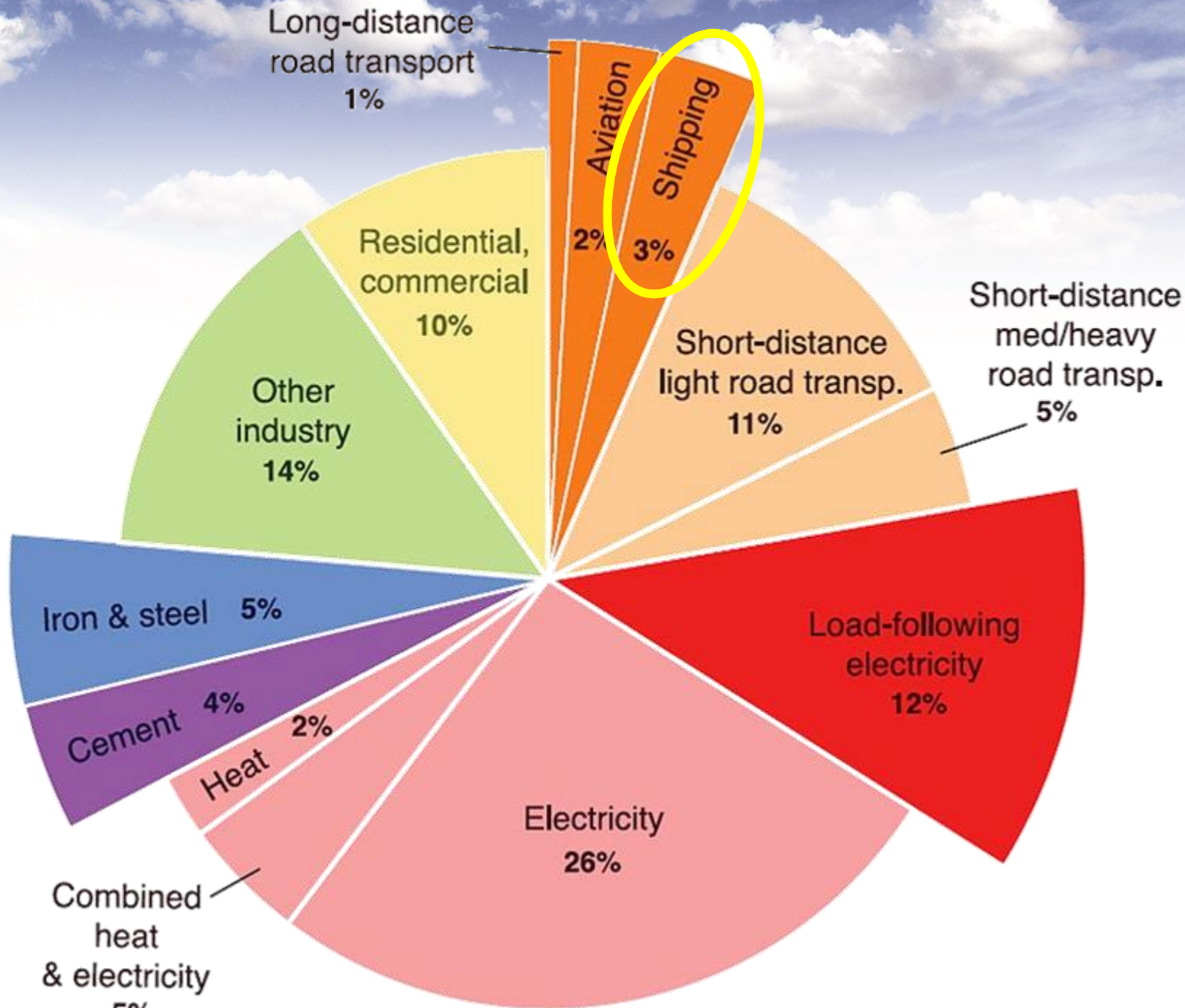
The **Most Sustainable** Mode of Transportation

- AWO is the tugboat, towboat, and barge industry's advocate, resource, and united voice for safe, sustainable, and efficient transportation on America's waterways, oceans, and coasts
- The largest segment of the U.S.-flag domestic fleet
 - 5,000 towing vessels
 - 33,000 barges
 - 665 million tons of cargo annually
 - 90% less CO₂ than trucking



Fuel Consumption

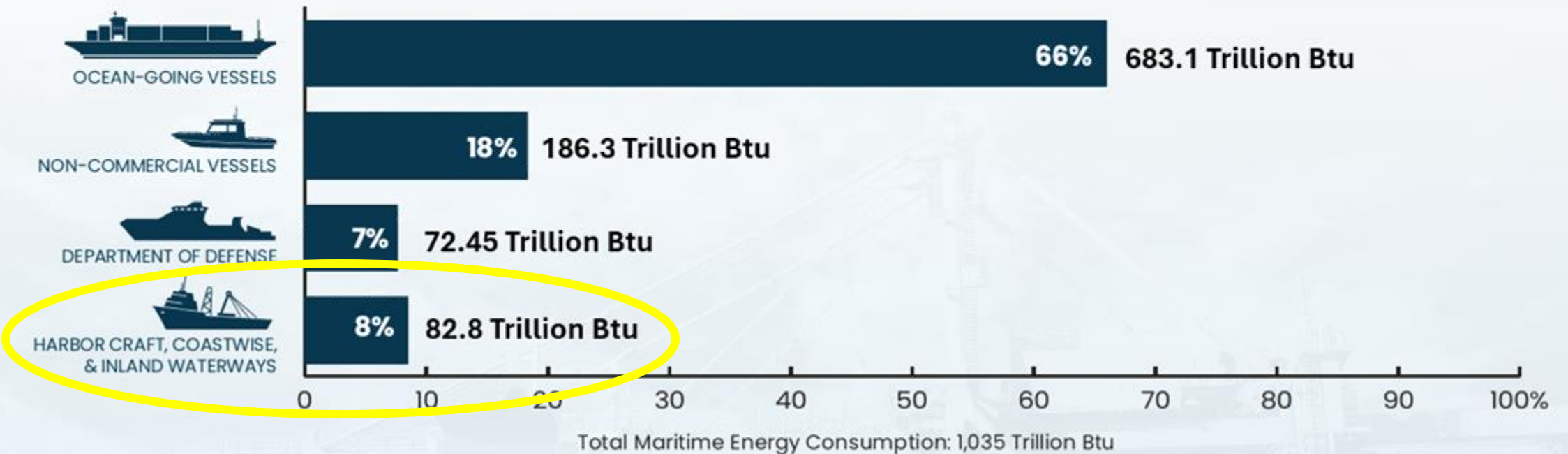




Fuel Consumption

ANNUAL ENERGY CONSUMPTION BY VESSEL CATEGORY

Large ocean-going vessels represent 66% of energy consumption in the U.S. maritime sector from fuels bunkered in the United States. Combustion from heavy fuel oil contributes to emissions and air pollutants that contribute to harmful public health impacts.



Regulation

THE U.S. NATIONAL BLUEPRINT FOR TRANSPORTATION DECARBONIZATION
A Joint Strategy to Transform Transportation

AN ACTION PLAN FOR MARITIME ENERGY AND EMISSIONS INNOVATION

December 2024



Efficiency Unlocked

Today's Discussion Fuel Tracking & Data- Driven Optimization





9 responses submitted

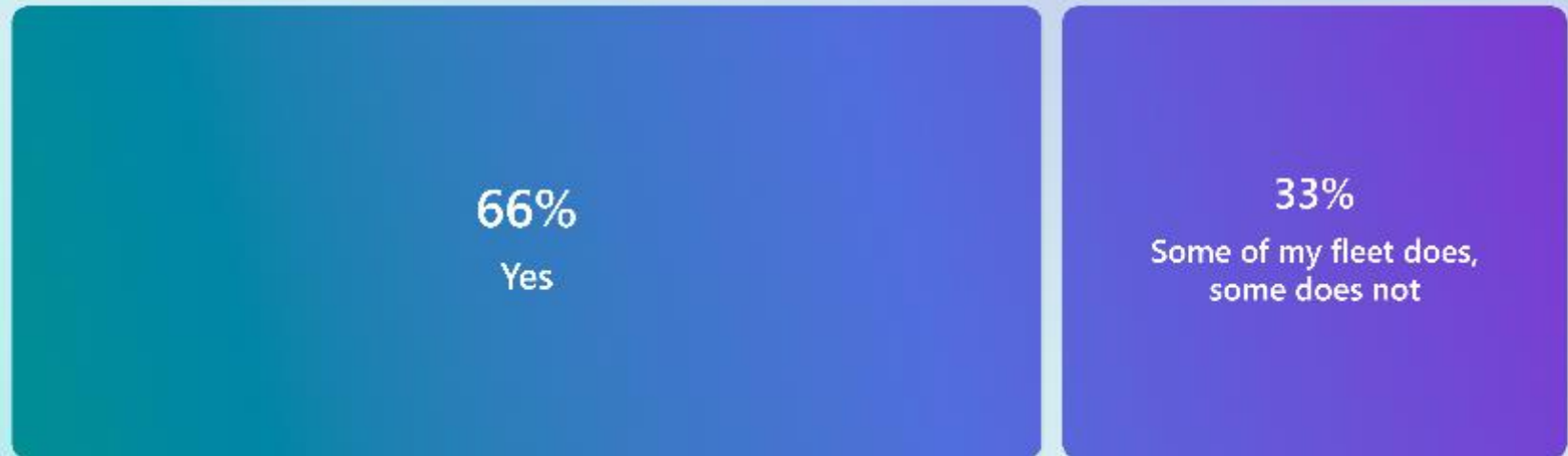
Do you use a fuel optimization strategy?

Scan the QR or use
link to join



<https://forms.office.com/r/shwFa6DDiA>

 Copy link



Treemap

Bar



1 of 1





7 responses submitted

What is your business reason for having a fuel optimization program? - Please rank from most important to least important

Scan the QR or use
link to join



<https://forms.office.com/r/UKvjSXQfNK>

 Copy link

Internal ESG

Customer Requests / Contracts

Profitability

Competitiveness

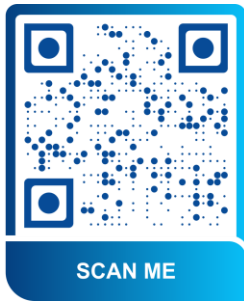
Regulation

Reliability

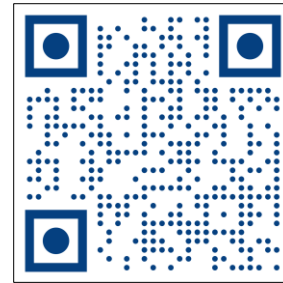
Other

MOBILE OPS

URL



Website





MOBILEOPS

FUEL USAGE MATTERS

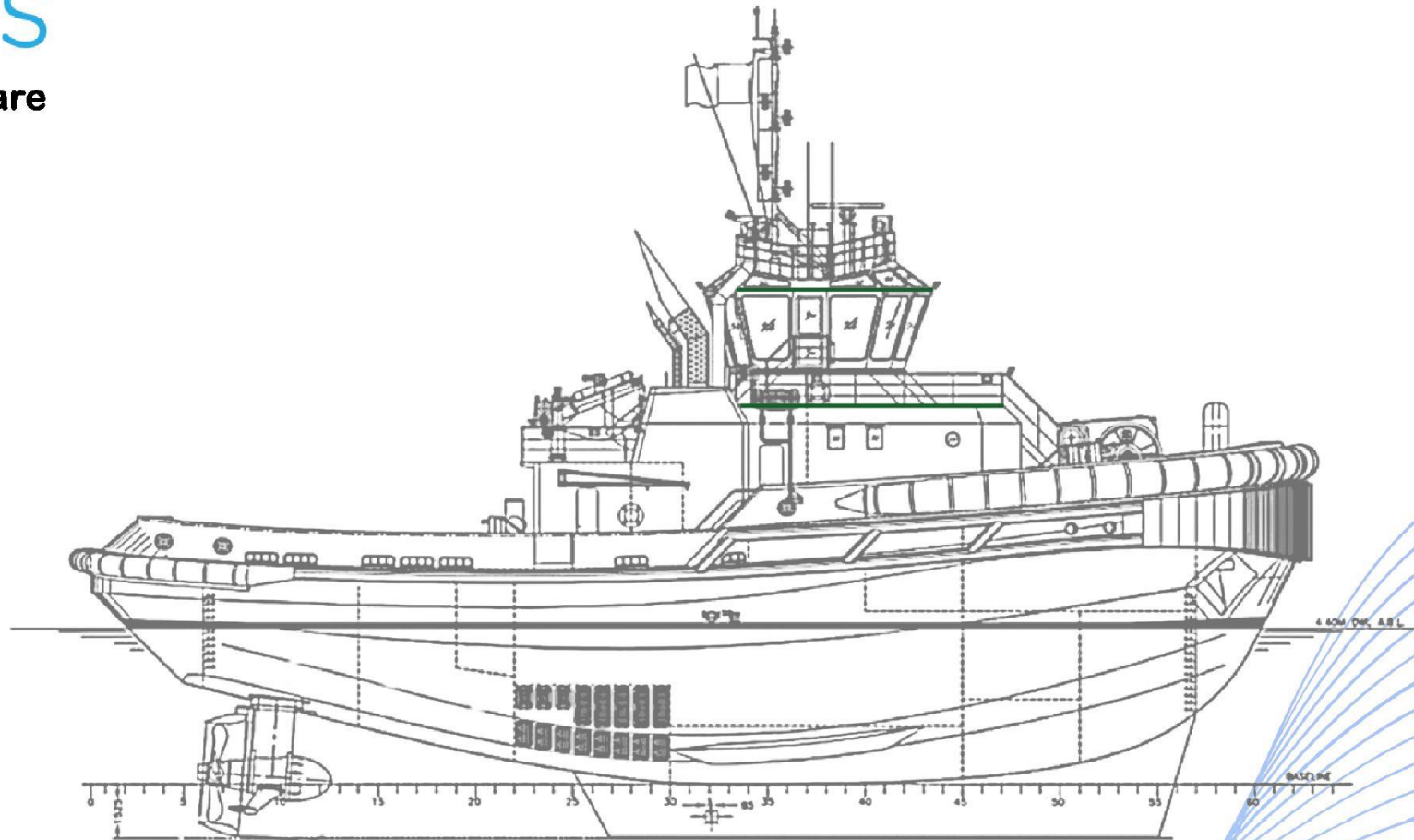
***To effectively manage fuel usage for better results,
data-driven strategies are essential***



MOBILEOPS

Asset Management Software

www.mobileops.com



BEHAVIOR



WEATHER



NAVIGATION



MAINTENANCE
HISTORY

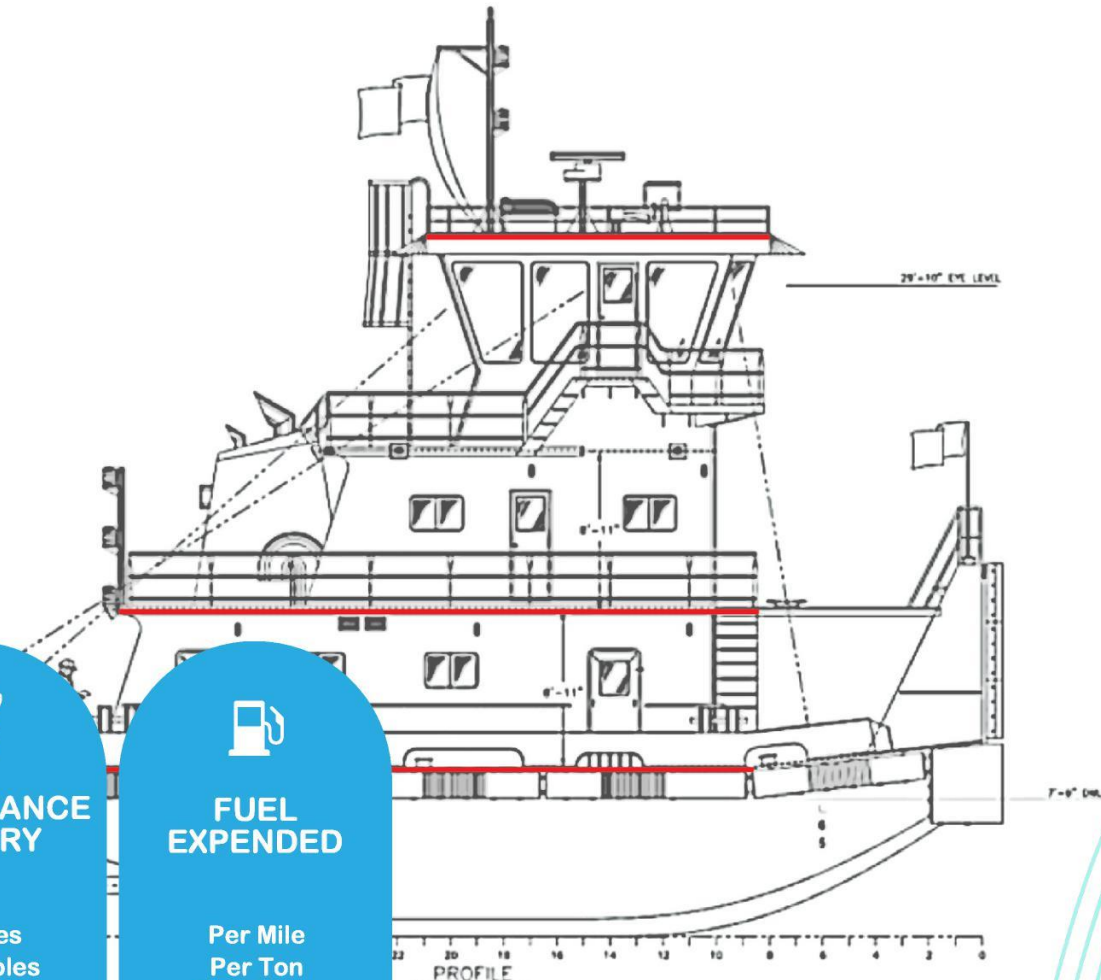


FUEL
EXPENDED

MOBILEOPS

Asset Management Software

www.mobileops.com



BEHAVIOR

Dispatching
Fleet planning
Urgent vs important



WEATHER

Wind / Rain
Temperature
Sea / River State
Tides / Currents



NAVIGATION

Upstream /
Downstream
Cargo / Payload
Tow Configuration
Hydraulics



MAINTENANCE HISTORY

Routines
Oil Samples
Fuel Quality
Worn parts
Carbon build up



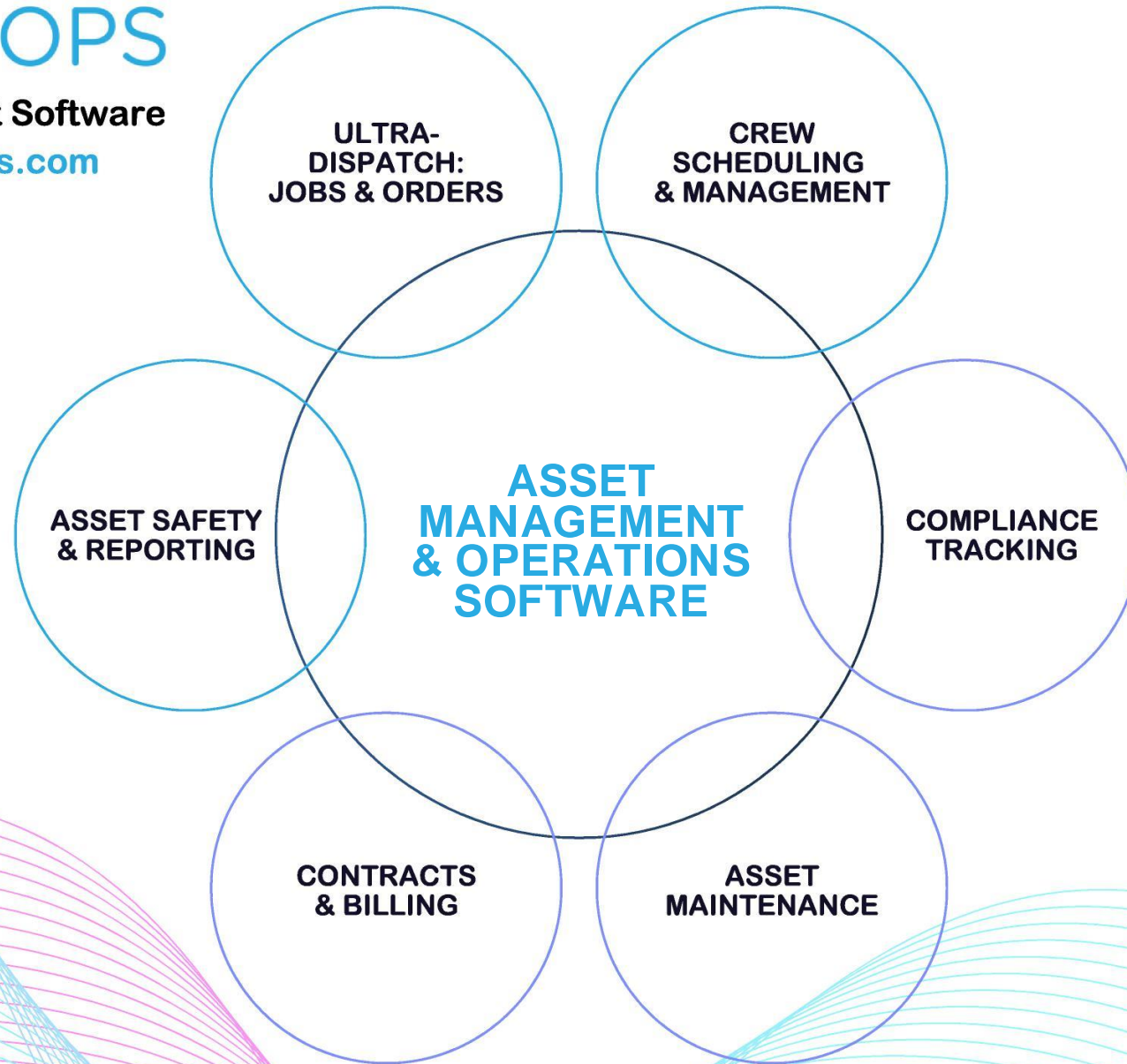
FUEL EXPENDED

Per Mile
Per Ton
Per Gallon
Per Trip

MOBILEOPS

Asset Management Software

www.mobileops.com





7 responses submitted

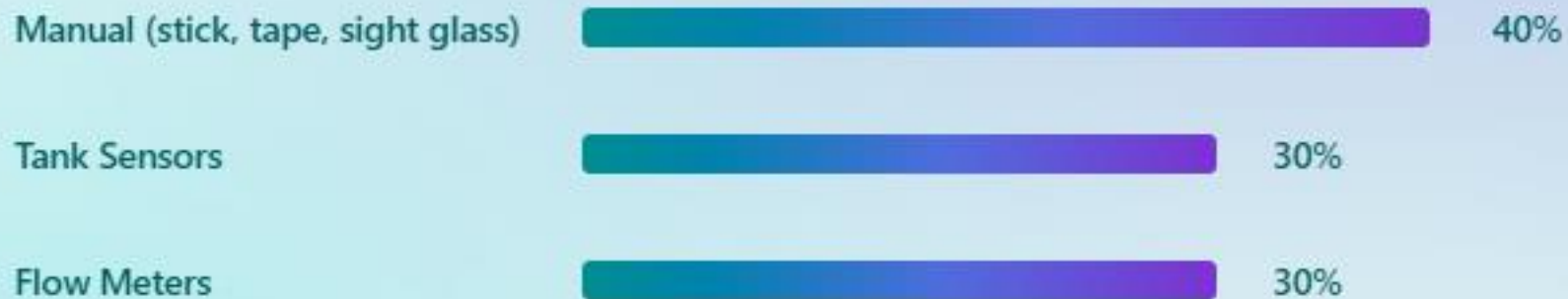
What types of tools do you use for measuring fuel burn?

Scan the QR or use
link to join



<https://forms.office.com/r/LFHnSLeWaC>

 Copy link





5 responses submitted

If you do use sensors, in a few words, why did you choose to use them?

Scan the QR or use
link to join



<https://forms.office.com/r/bXFdmgzmp3>

Copy link

External check **individual levels**
usage and abnormalities **effects**
Savings offered **fuel on board**

Wordcloud All responses

1 of 1





FUELTRAX®





Sustainable fleet performance. Secured

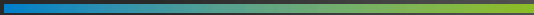
Presented by
John Donovan – Vice president, Energy and Defense Solutions

Secure fuel efficiency

Optimize fuel consumption,
reduce costs, and minimize
carbon emissions



Annual fuel savings of
between 10-15%



SELF-CONTAINED SMART MARITIME SOLUTION

MEASURE

Data quality by design

Strategically positioned Coriolis metering technology tuned for your vessel



OPTIMIZE

Onboard logistics management

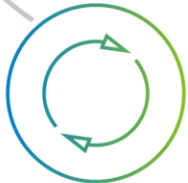
Be able to respond with up-to-date data for best fuel efficiency, fuel security and emissions compliance



MAINTAIN or CHANGE

Actions informed by live data reporting

Maintain or improve fleet/vessel optimization from advanced analytics



CONNECT

Dedicated Iridium® communications

Self-contained and secure: pole-to-pole coverage, bi-directional comms and industry-leading encryption



TRACK

Track every vessel's location

Integral and independent GPS, with geofence function to know where your assets are in real-time



ALERT

24/7, 365 days a year

Accurate real-time information anytime, anyplace, anywhere



ANALYZE and REPORT

Secure dedicated cloud server

A consistent and secure data experience to gain insights and receive tailored logistics reporting from advanced analytics, anywhere in the world



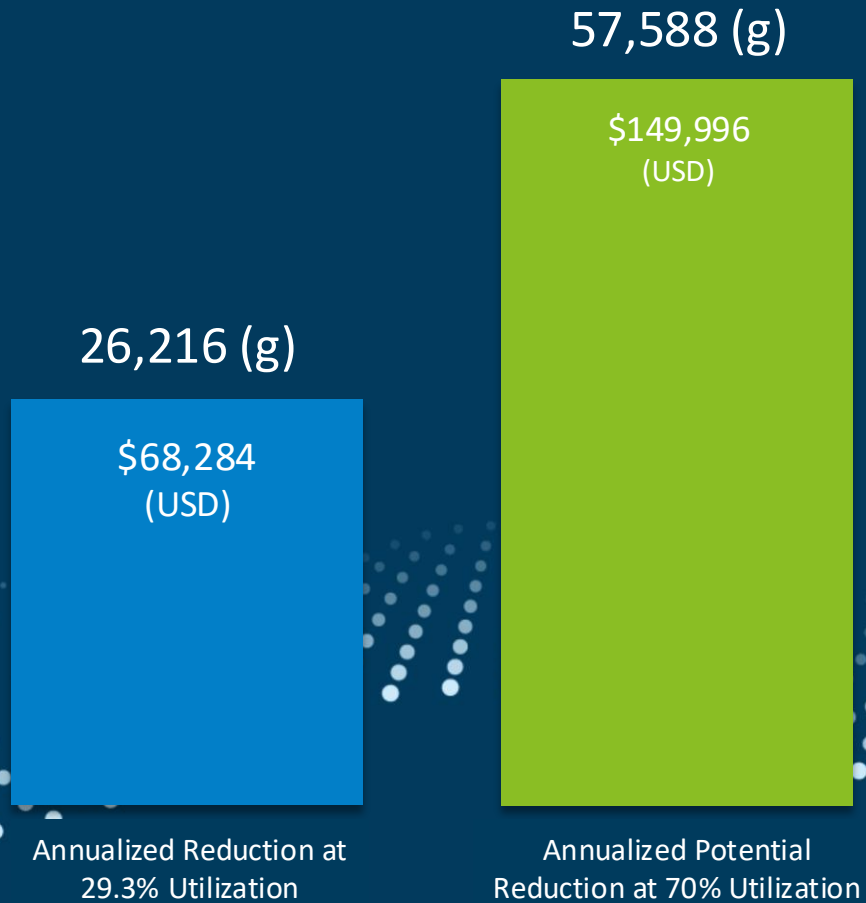


In Focus

U.S. Inland and Near-Coastal Waterways



Fuel savings (gallons)



Total Potential Annual
Cost Savings:

\$149,996

*Percentage reduction equivalent
to 19.4%.*

Pushboat Case Study



Fuel savings (USD)

3 yrs

\$3.5MM

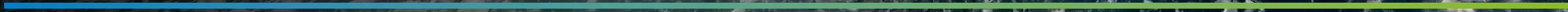
12.5% reduction



Wireboat & ITB Fleet Case Study

*By utilizing
BestEconomy™
57% of the time*

Secure sustainable
fleet performance.
Only with Fueltrax





6 responses submitted

Do you use remote tools for efficiency?

Scan the QR or use
link to join



<https://forms.office.com/r/QH976Y1MNn>

 Copy link



Treemap

Bar



1 of 1





7 responses submitted

In a few words, can you describe any remote tools you use?

Scan the QR or use
link to join



<https://forms.office.com/r/KxAUveAYCz>

Copy link



Wordcloud

All responses



1 of 1





BERGAN
MARINE SYSTEMS



Accurate Data, Positive Impact

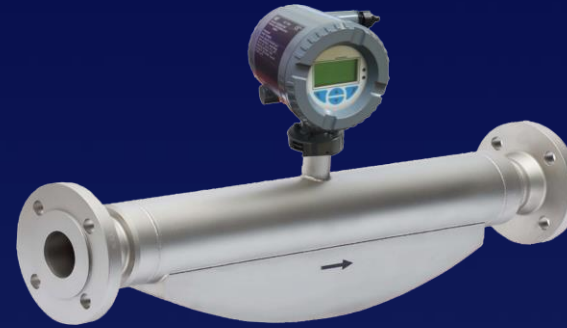
*Creating A Strong Foundation for
Your Fuel Management Program*

Kyle Durden
President & CEO of Bergan Marine Systems

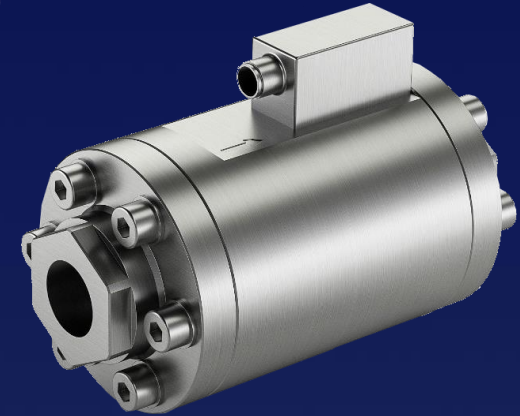


Introduction

- As the industry transitions to a digital age, accurate data becomes more important than ever.
- Accurate data gives you a strong foundation to build analysis of your operations.
- A quality sensor and/or flow meter ensures the quality of your data.
- Choose a sensor or meter that best fits the needs of your vessel, cargo, budget and operations.



Coriolis Flow Meter



Positive Displacement (PD) Flow Meter



Ultrasonic (Clamp on) Flow Meter

Factors To Consider



Accuracy



Measurement



Fuel Viscosity



Maintenance



Installation



Cost



Sensitivity



Requirements

Sensors

Laying a foundation for precise inventory control and fuel management.

Tank Level Sensors

Hydrostatic Level Sensors

- Hydrostatic sensors are rugged sensors that easily and accurately measure pressure readings in any environment.
- Sensors can be installed without tank entry- a major safety advantage.
- Suitable for fuel and lube oil submersion.

Radar Level Sensors

- Non-contact sensors that can provide very accurate readings (as low as +/- 1 mm)
- Versatile- multiple mounting options make it perfect for any tank gauging application.
- It can interface with tank temperature sensors.



Tank Level Sensors

Hydrostatic Sensor

Accuracy

- Moderately accuracy, within $\pm 0.2\%$ - $\pm 0.25\%$.

Fluid

- Can be submerged in fuel and diesel.

Installation

- Sensor can be installed without tank entry.

Maintenance

- Sensor is serviceable without tank entry.

Radar Sensor

Accuracy

- Often within $\pm 1\text{mm}$ to $\pm 3\text{mm}$, depending on radar type.

Fluid

- Ideal for any tank gauging application.

Installation

- Smooth installation without in-tank structure interference.

Maintenance

- Non-contact, low maintenance.

Flow Meters

Which flow meter is best suited for your operations?

50
YEARS
1975-2025



BERGAN
MARINE SYSTEMS

Coriolis Meter

An expensive, yet highly accurate method to measure diesel engine fuel consumption. Preferred for high-precision applications.

Accuracy

- High accuracy, often within $\pm 0.1\%$ to $\pm 0.2\%$.

Measurement

- Measures mass flow directly, especially important if fuel density fluctuates with temperature.
- Bidirectional measurement, providing a net fuel consumption figure.
- Provides fuel density and temperature measurements.

Maintenance

- No moving parts = reduced maintenance.

Cost

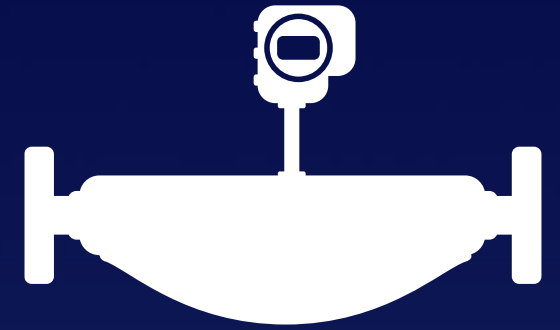
- High - \$\$\$\$\$

Installation

- Installation requires specific conditions.

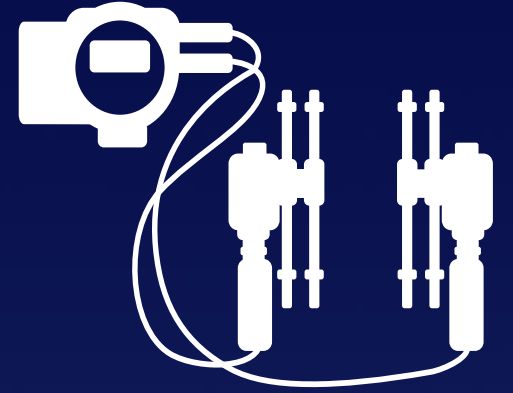
Sensitivity

- External vibrations affect measurement accuracy.



Ultrasonic Flow Meter

A ultrasonic (clamp-on) flow meter utilize sound waves, sending ultrasonic pulses through fluid and measuring the time it takes for the pulse to travel.



Accuracy

- Lower accuracy ($\pm 1\%$ - 2%)

Cost

- Moderate to High - \$\$/\$\$\$

Fluid

- It can measure a wide range of fuels; however calibration is needed for each fuel type.

Maintenance

- With no moving parts, no maintenance is needed.

Installation

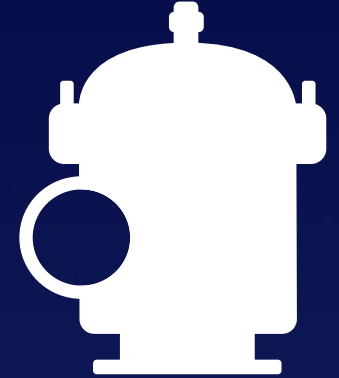
- Non-intrusive options available, easy installation on existing pipes.

Sensitivity

- Sensitive to fluid aeration and turbulence.

Positive Displacement (PD)

A PD flow meter measures the actual volume of fuel consumed by dividing the fuel into fixed increments and counting the number of times the chambers fill and empty.



Accuracy

- Moderately accuracy, often within $\pm 0.1\%$ to $\pm 1.0\%$.

Cost

- Moderate - \$\$

Installation

- Easy to install in tight spaces.

Fluid

- Works well with diesel and other low-viscosity fluids.

Maintenance

- Moving parts may require frequent maintenance, especially with fuel contaminants.
- Generally reliable with a long lifespan.

Sensitivity

- Accuracy can vary with changes in fuel temperature and viscosity.

Other Options

Turbine Flow Meters

- Moderately accuracy, often within $\pm 0.1\%$ to $\pm 1.0\%$.
- Works well with diesel and other low-viscosity fluids.
- Easy to install in tight spaces but requires adequate straight runs of piping before and after the meter for accurate readings.
- Pulsations in the flow or debris in fuel can affect performance.
- Cost is moderate - \$\$

Hybrid System

- A hybrid system combines a less expensive flow meter with tank level sensors.
- Fuel meter provides real time consumption trends, while tank level sensors provide long-term inventory data.
- Cross checking data improves accuracy.
- Moderate cost.
- More complex data integration requires data processing and software support.
- Periodic maintenance may be required.

Differential Pressure (DP) Meters

- Simple and widely available.
- Relatively low cost for basic setups.
- Scalable for various pipe sizes.
- Less accurate (often $>1\%$).
- Sensitive to density and temperature changes.
- Requires frequent calibration and maintenance.
- Cost is moderate - \$\$.

Thank You For Your Time



*Scan the QR code to download a
flow meter reference chart*



spinerergie



Smart Fleet Management



Integrate your data silos to optimize the performance of your vessels and your organization

Vessel Positions →

Daily Reports →

Weather Data →

Geofencing →

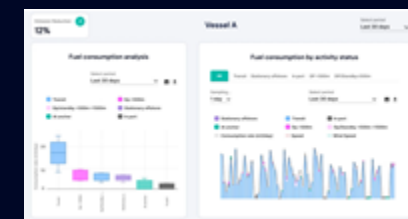
Fuel Sensors →

Engine Data →



DATA SOURCES
(Internal + External)

ANALYTICS ENGINE



AI-DRIVEN ANALYTICS

Moderated Panel

Sustainability in practice

Discussion

Dave Hill
Mobile Ops



CEO
Founding Partner

Falon
Hernandez
Spinorain



Business Development
Manager, Americas

John Donovan
Fueltrax



VP, Energy and
Defense Solutions

Kyle Durden
Bergan



President
CEO



The American
Waterways Operators

The Tugboat, Towboat & Barge Industry Association

Audience Q & A



**The American
Waterways Operators**

The Tugboat, Towboat & Barge Industry Association

HAVE A FOLLOW-UP QUESTION?

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BUILDING TOMORROW'S LEGACY
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Integration of Fuel Cells and Batteries
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EST



Thank you!

