

IMET Corporation

Total Water Reuse

IMET Wastewater Treatment and Reuse Technology

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WATER BODY OF EARTH

70-75% of Earth surface is composed of water in liquid and solid states

Water is finite – has not increased or decreased since the beginning of time

- 97.5% saline (oceans and saline groundwater, etc.)**
- 2.5% fresh water**



Source: http://en.wikipedia.org/wiki/Fresh_water

MOST AVAILABLE WATER ON EARTH – FRESH WATER

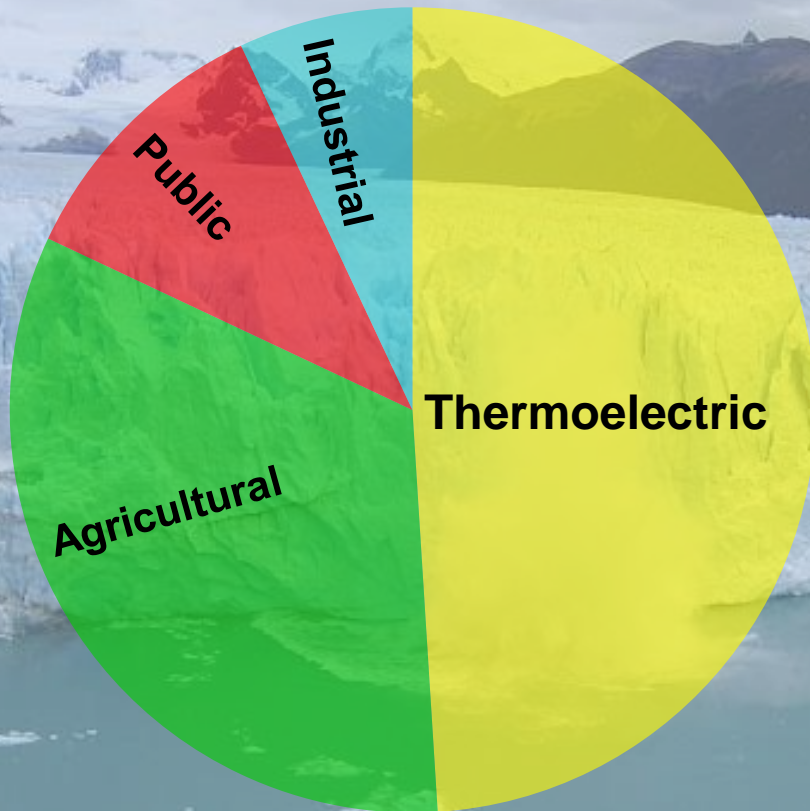
2.5 % OF ALL WATER IS FRESH WATER

- 1.3% surface water
- 30.1% groundwater
- 68.6% icebergs and glaciers

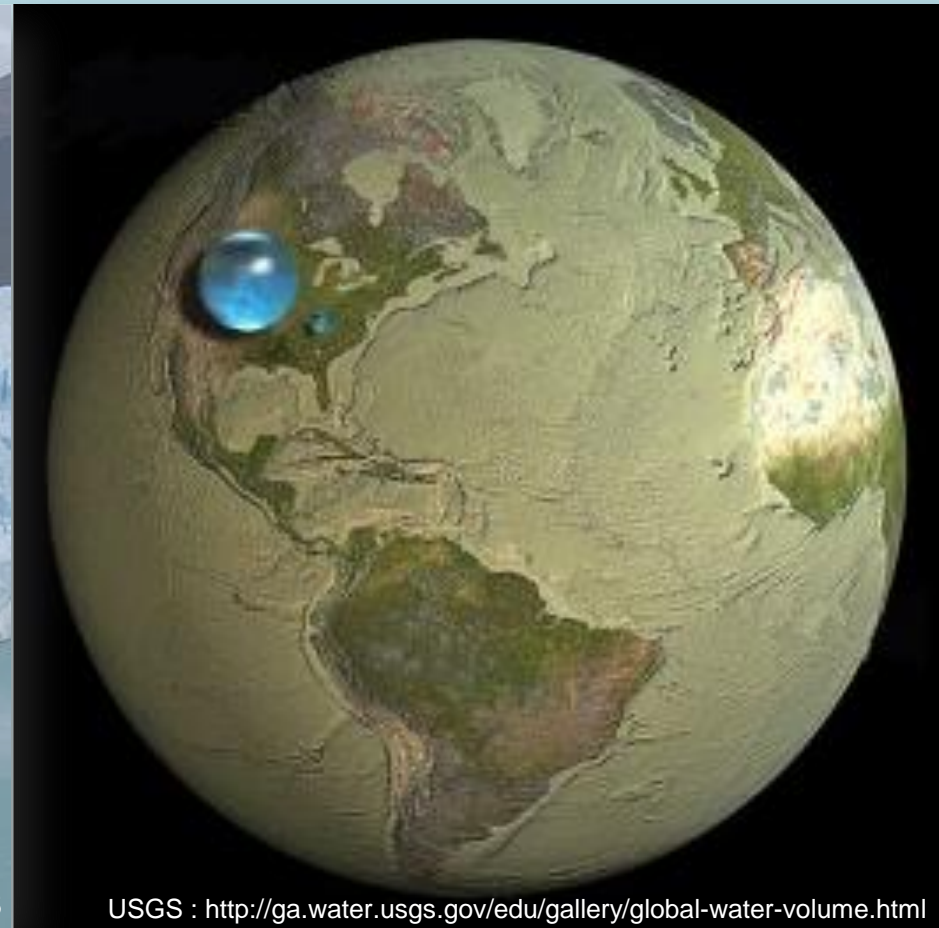
Source: Igor Shiklomonov's chapter "World fresh water resources" in Peter H. Gleick (editor), 1993, *Water in Crisis: A Guide to the World's Fresh Water Resources*

USA WATER/ENERGY FACTS

THERMOELECTRIC POWER USES NEARLY HALF OF ALL WATER USED



USGS 2005



USGS : <http://ga.water.usgs.gov/edu/gallery/global-water-volume.html>

USA WASTEWATER/ENERGY FACTS

WASTEWATER TREATMENT (WWT) IS A MAJOR ELECTRICAL ENERGY USER

- **1.5% of total electrical consumption⁽¹⁾**
- **WWTP uses 1200 kWhr/MG - national average⁽²⁾**

(1) PG&E Company, WWTP Energy Baseline Study 2003

(2) Malcom Pirnie Report, <http://www.nywea.org/clearwaters/08-1-spring/03-Energy.pdf>

MAJOR COST SEGMENTS OF WASTEWATER TREATMENT PLANT

ELECTRICITY CONSTITUTES BETWEEN 25 AND 40 % OF THE BUDGET OF A TYPICAL WASTEWATER TREATMENT PLANT⁽¹⁾

- **Secondary treatment uses 30-60% of total WWTP energy consumption**
- **Nearly half of energy used in secondary treatment is for aeration⁽¹⁾**

SOLIDS HANDLING ACCOUNTS FOR NEARLY 30% OF WWT FACILITY COSTS⁽³⁾

(1) PG&E Company, WWTP Energy Baseline Study 2003

(2) Malcom Pirnie Report, <http://www.nywea.org/clearwaters/08-1-spring/03-Energy.pdf>

(3) Water Environment Research Foundation (WERF) 2008.

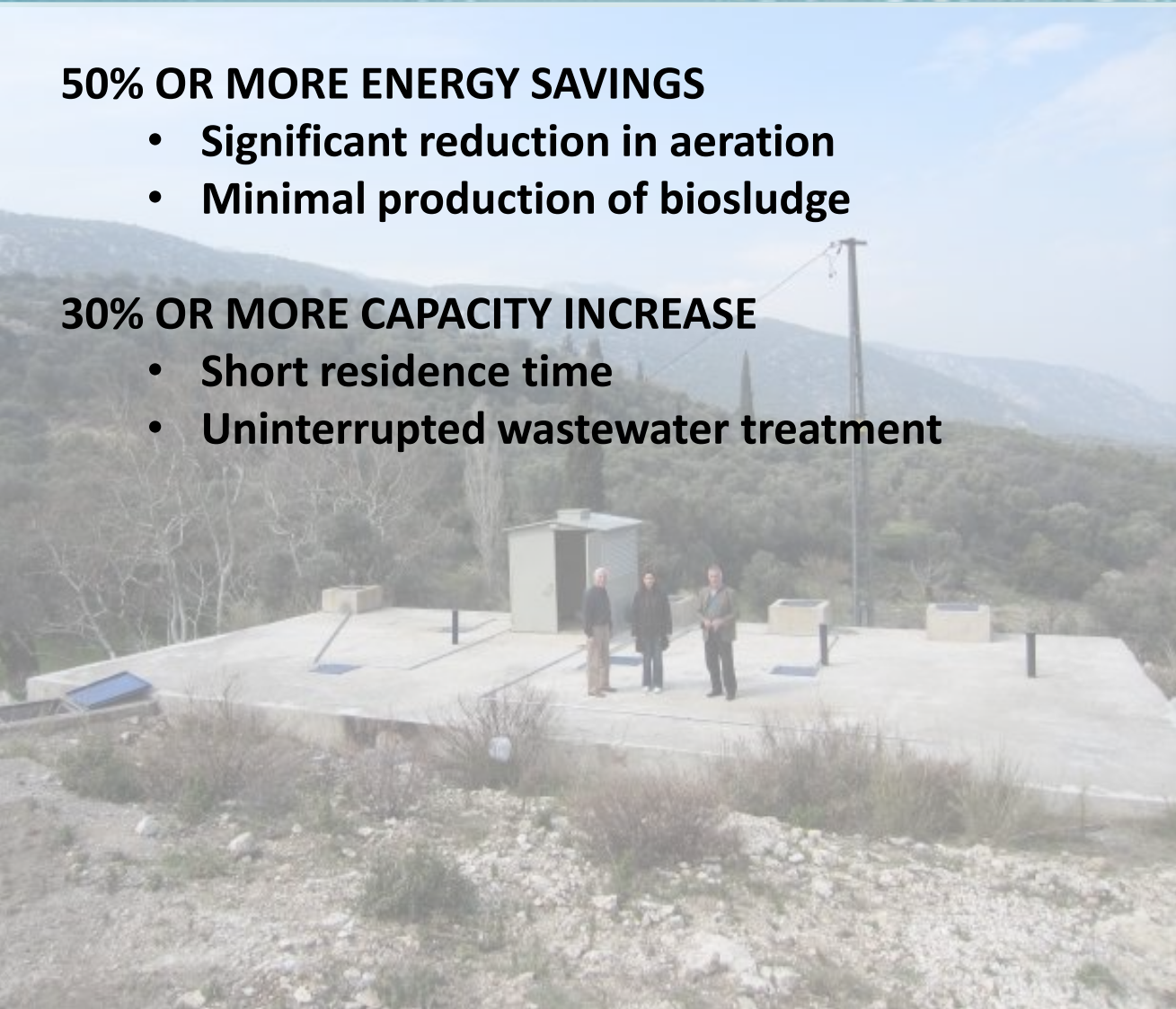
IMET TECHNOLOGY DELIVERS

50% OR MORE ENERGY SAVINGS

- Significant reduction in aeration
- Minimal production of biosludge

30% OR MORE CAPACITY INCREASE

- Short residence time
- Uninterrupted wastewater treatment



IMET TECHNOLOGY

Aerobic biological wastewater treatment and water recovery

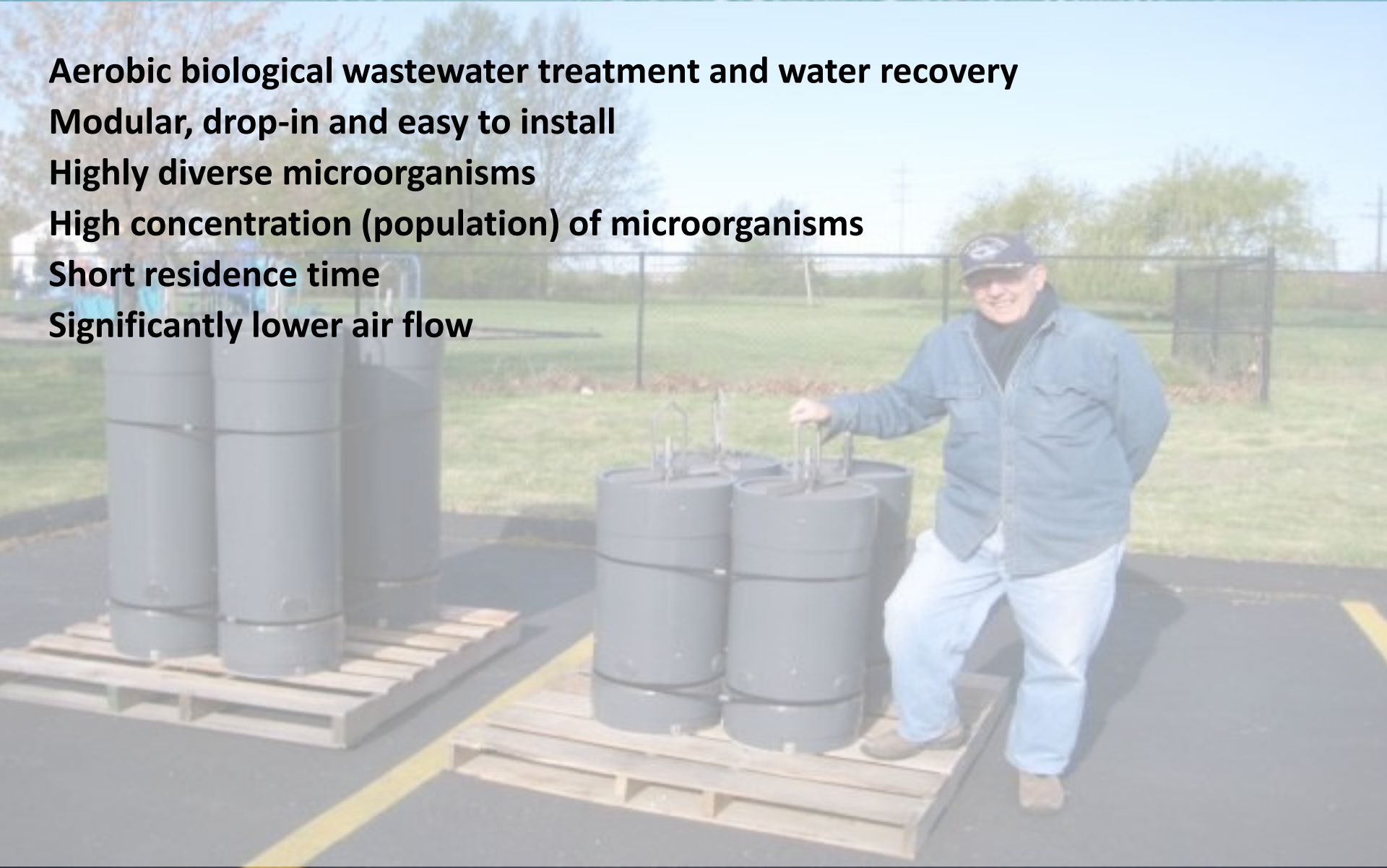
Modular, drop-in and easy to install

Highly diverse microorganisms

High concentration (population) of microorganisms

Short residence time

Significantly lower air flow



IMET TECHNOLOGY ENABLES

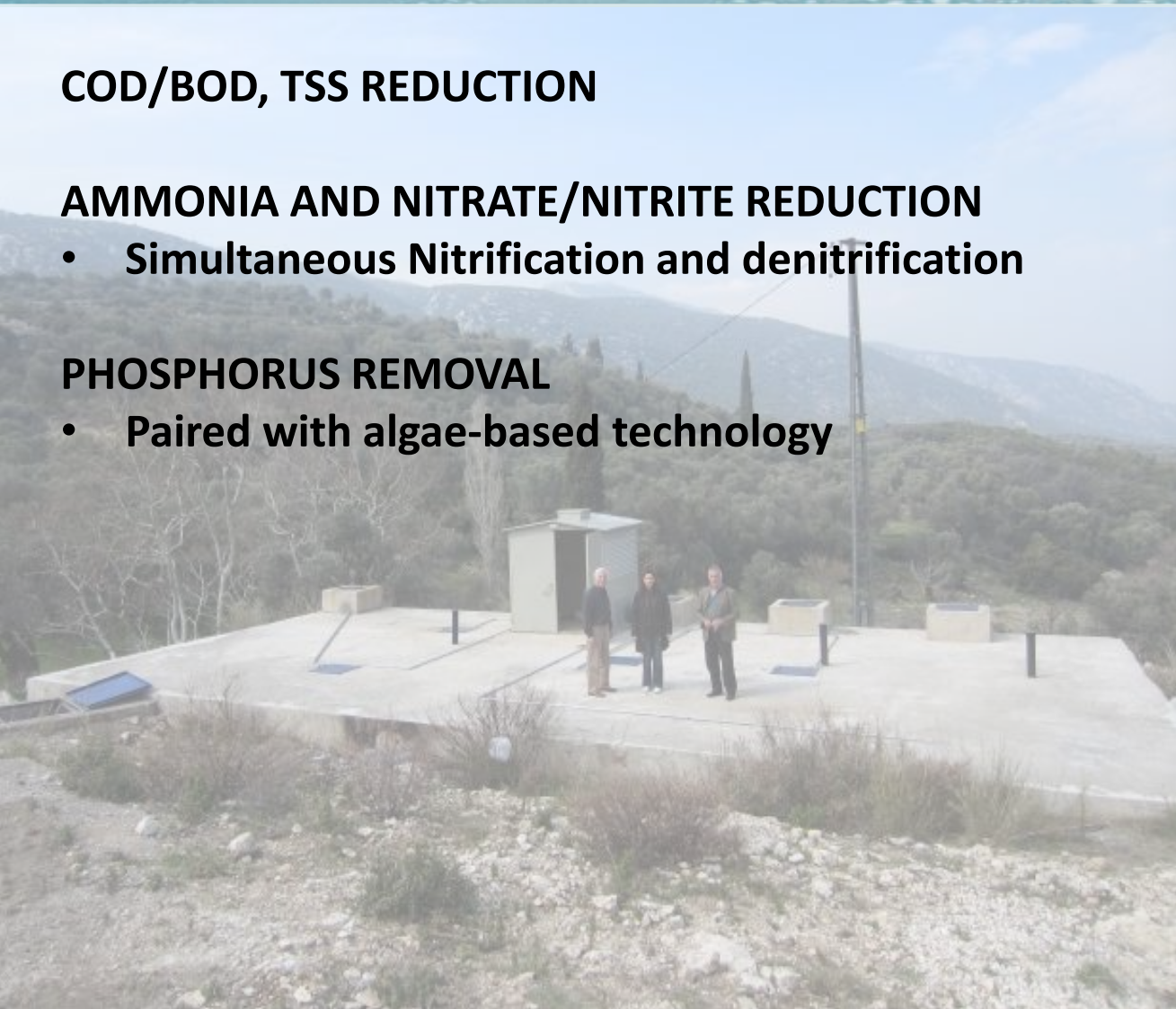
COD/BOD, TSS REDUCTION

AMMONIA AND NITRATE/NITRITE REDUCTION

- Simultaneous Nitrification and denitrification

PHOSPHORUS REMOVAL

- Paired with algae-based technology



KOSEDERE, IZMIR-TURKEY

Wastewater Treatment Plant

In Operation More than Three Years

160-333 ppm

50-190

30-223



67-111

In Out

COD



10-40

In Out

BOD



1-43

In Out

TSS

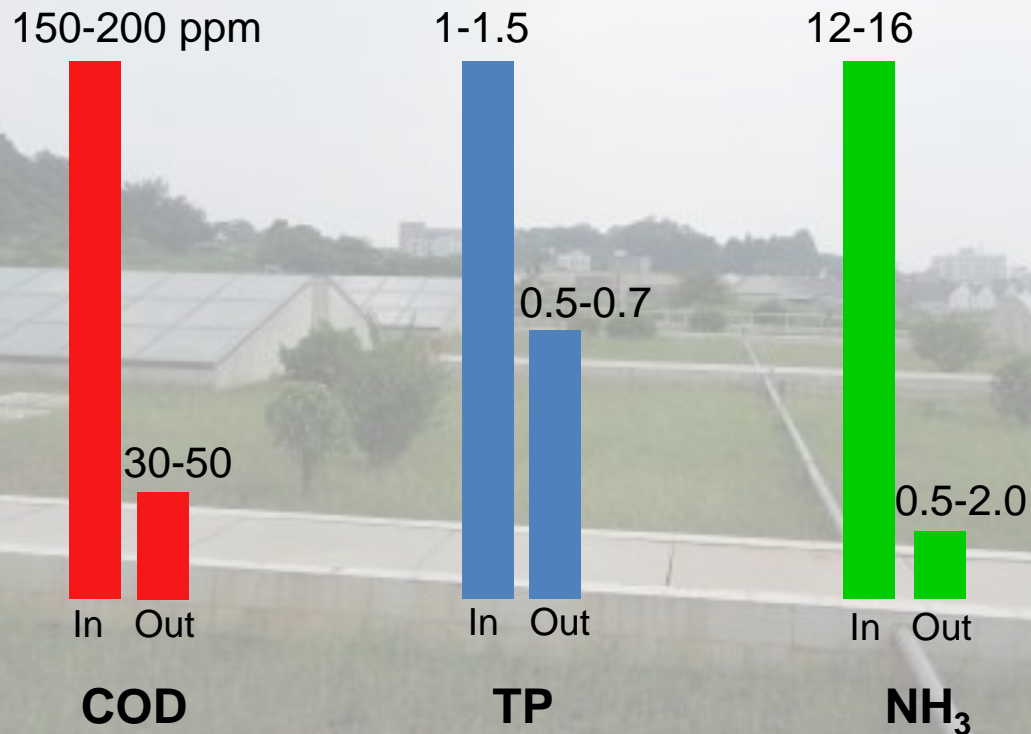
8-24 hours HRT
No biosludge settling tank



Guangzhou, China Pilot Study

Two Months Long, Continuous Flow

SOURCE: Wastewater – 75% municipal, 25% industrial

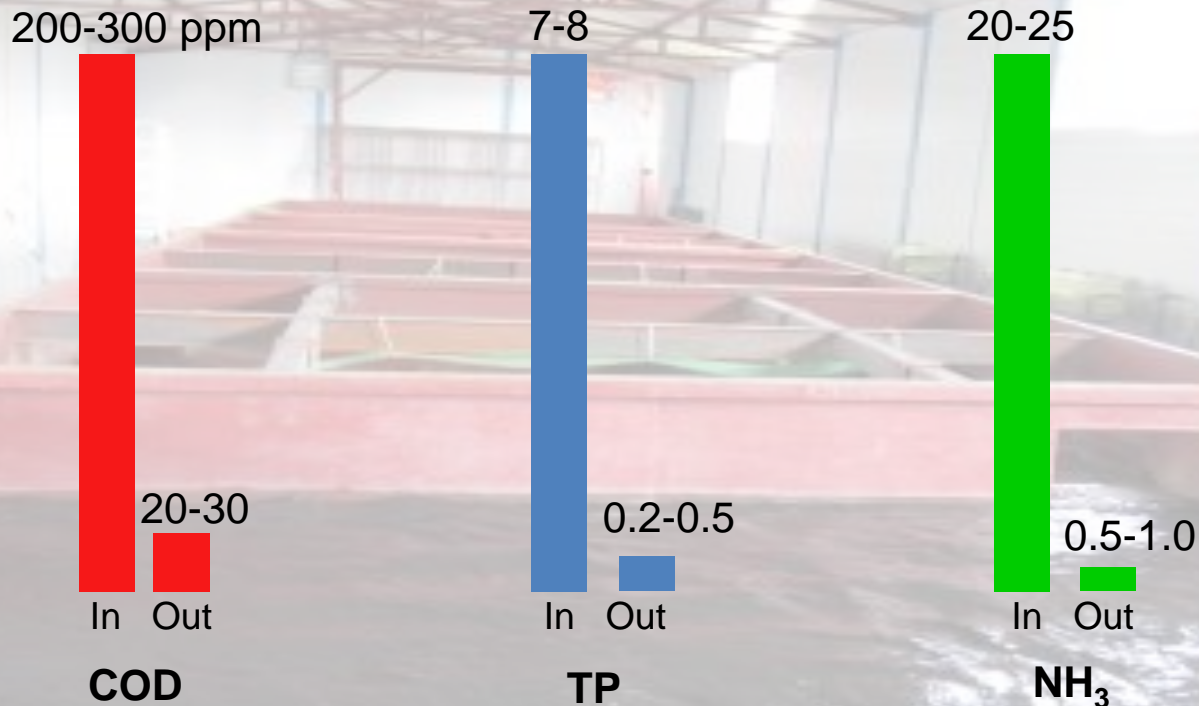


5 hours HRT in each tank – 3 tanks in series - Each tank is 10m³
More than 95% COD reduction in first tank
No reportable TSS in effluent

Guangzhou, China Pilot Study

Three Months Long, Continuous Flow

SOURCE: Wastewater from anaerobically digested biosludge



1.5-3.5% Solubilization

24 hours HRT in each tank – 3 tanks in series - Each tank is 10m³

All of reductions in the first tank

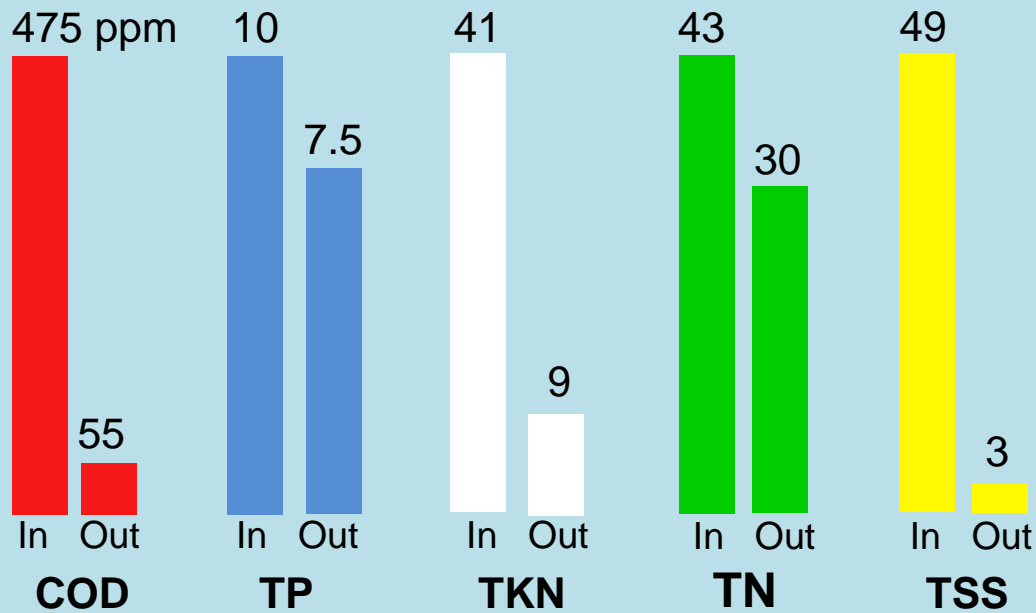
No reportable TSS in effluent

Missoula, Montana Pilot Study

Two Months Long, Continuous Flow

Third Party Conducted

SOURCE: Municipal wastewater from Primary



7 hours total HRT
Each tank is 1m³

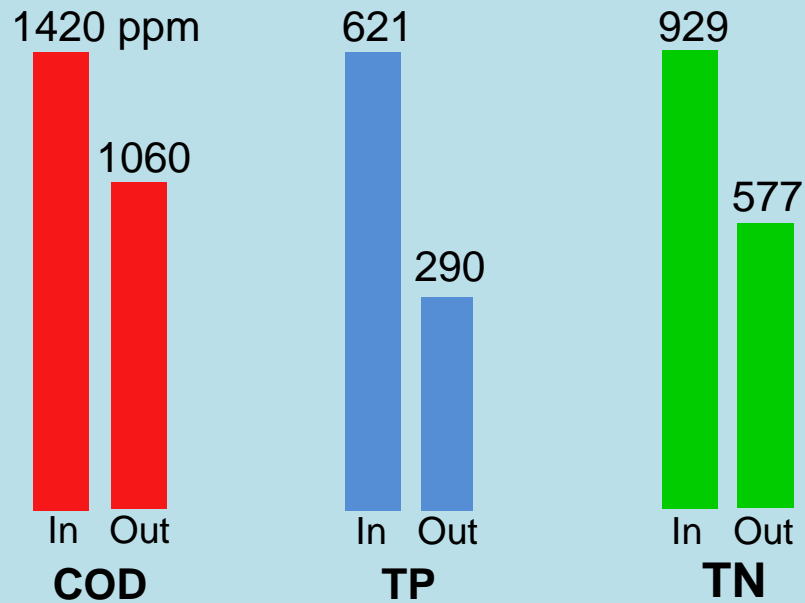


Missoula, Montana Pilot Study

Two Months Long, Continuous Flow

Third Party Conducted

SOURCE: Centrate from Anaerobic Digester

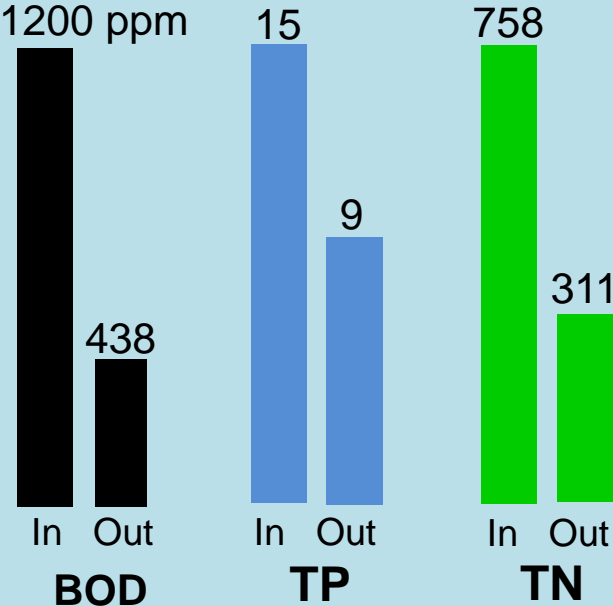


7 hours total HRT
Each tank is 1m³



Cleveland, OH Pilot Study 168 Hours Long, Batch

SOURCE: Centrate from Anaerobic Digester



One tank, 1m³

No reportable change in TSS



IMET TECHNOLOGY



PATENT PROTECTED

- **Highly diverse microorganisms**
- **High concentration (population) of microorganisms**
- **Significantly reduced air requirement**
- **Minimal biosludge production**

IMET APPLICATIONS

RETROFITTING

Small to large wastewater treatment plants

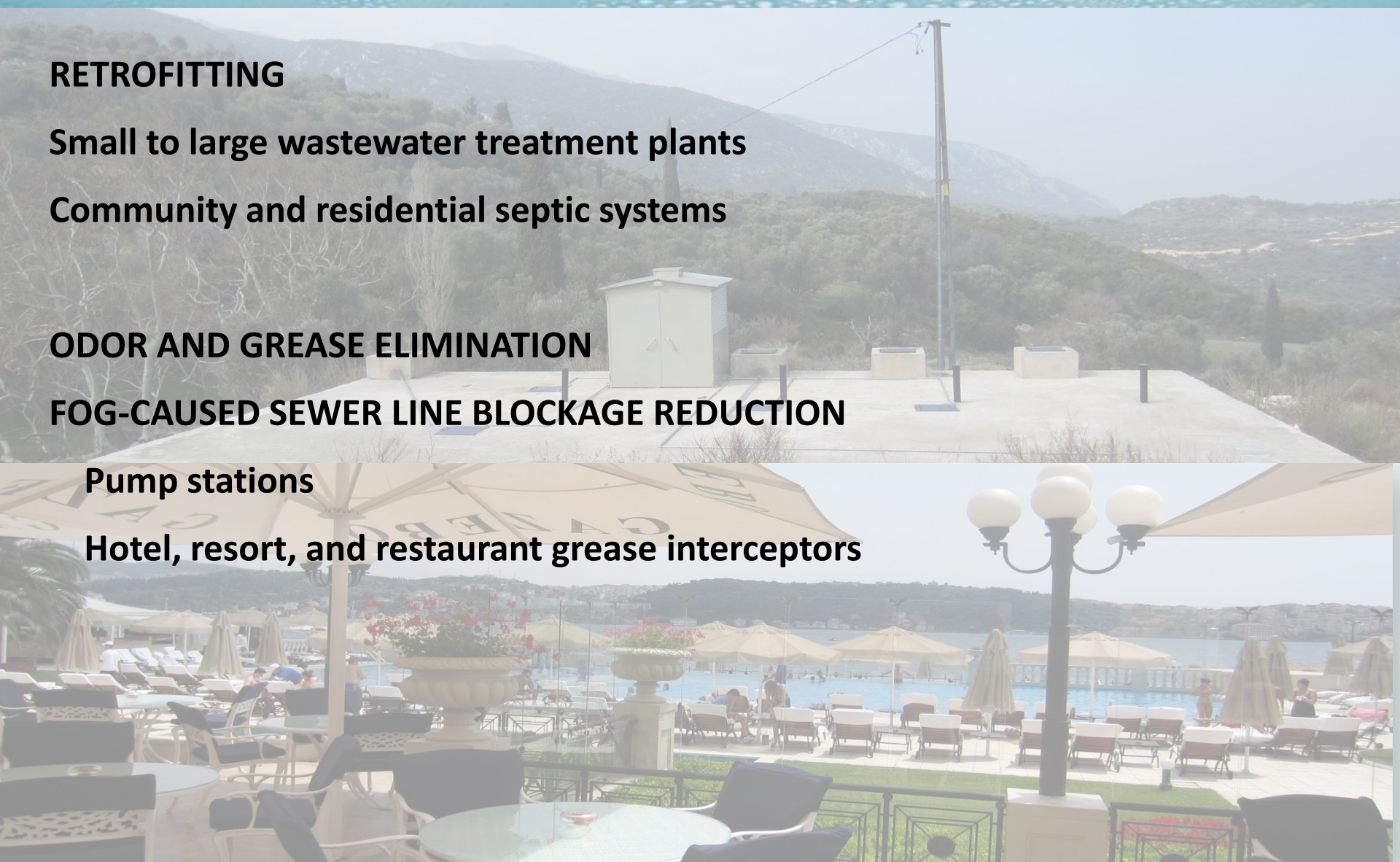
Community and residential septic systems

ODOR AND GREASE ELIMINATION

FOG-CAUSED SEWER LINE BLOCKAGE REDUCTION

Pump stations

Hotel, resort, and restaurant grease interceptors



IMET – COMPANY INFORMATION

IMET CORPORATION

Founded: 1997

Located: Cleveland, Ohio

Employees: 7

MISSION

Reuse, Recycle and Recharge “Clean” Water