



**TOTAL
POWER**

WORLD LEADERS IN SYNTHETIC FUEL ADDITIVES

TOTAL POWER, INC. COMPANY BACKGROUND

Total Power strives to exceed client expectations for successful integration and absolute satisfaction with our products.

Since incorporating Total Power, Inc. in 1997, TPx fuel additives have been sold and used throughout the Americas, Europe, Africa, and Asia. The company is headquartered in San Diego, California, where production, global logistics and technical services are coordinated. Monthly, millions of gallons of fuel are treated with TPx worldwide through a network of strategically positioned Total Power distributors. These innovative and highly skilled technical teams extend the reach of Total Power's solutions and partner with a wide scope of private industries and governmental agencies to improve fuel efficiency and reduce exhaust emissions.

WORLD LEADERS IN SYNTHETIC FUEL ADDITIVES

TPx fuel additives were developed by Marcos Dantus, Ph.D., who in 1992 received the Nobel Laureate Signature Award in Chemistry and, in 1997, developed TPx, the world's first purpose-built 100% synthetic fuel additive. Instead of focusing on short-term gains, Total Power has focused on new additive chemistries, significantly different than what are commonly found. TPx synthetic fuel additives effectively improve long-term system performance and dependability by chemically improving combustion efficiency.



"Total Power, Inc. is committed to driving industrial efficiency and sustainability through technologically advanced engineering."

APPLICATIONS

All engines, turbines, furnaces, and boilers that consume gasoline, diesel, or heavy fuel oil benefit from TPx synthetic fuel additives. Our clients are present in all major industries including, but not limited to: rail, on-road transportation, power generation, open-pit and underground mining, manufacturing, agriculture, and maritime including cargo, fishing fleets, and pleasure-craft.



TPx SYNTHETIC FUEL ADDITIVES

Our 100% synthetic, 100% active, and 100% biodegradable additives are blends of oxygenating and detergent chemicals specifically designed to enhance fuel burn characteristics and fuel system conditions in order to reduce harmful emissions and increase fuel efficiency. Each product is designed to treat challenges specific to each type of fuel.

- TPx for gasoline and kerosene
- TPx HD for diesel and biodiesel blends
- TPx HDNTek for Bunker C, Marine Fuel Oil and HFO

CERTIFIED ECO-FRIENDLY

TPx products **do not** contain carcinogenic or abrasive substances. Total Power carefully formulates its products to ensure they are safe for equipment as well as ecologically friendly. Our mission is to reduce exhaust emissions by fine tuning combustion efficiency.

FMx FUEL MANAGEMENT SYSTEM

Our FMx Fuel Management System is a modular sensor array dedicated to tracking fuel, lubricant, and additive related activities including receipt, storage, transfer, and dispensing. Long-range RFID identification of system users provides additional layers of detail and fleet management functions.

- Paperless data capture of all fuel, lubricant, and additive related transactions
- RFID wireless identification of fuel users for autonomous identification and correlation of dispensing data
- Prevention of unauthorized fueling
- Multi-tank inventory monitoring
- Customizable reports and alerts based on user needs
- Searchable database
- Real-time data

FMx FUEL MANAGEMENT SYSTEM

A COMPLETE FUEL AND LUBRICANTS MANAGEMENT SYSTEM

MONITOR THE UTILIZATION OF HIGH-VALUE CONSUMABLES THROUGHOUT INDUSTRIAL OPERATIONS.

WIRELESS INVENTORY CONTROLS

- FMx provides wireless monitoring of fuel, lubricant, and additive use and storage. No tank or operation is too remote.
- Level, flow, and ISO quality sensors, designed for hazardous environments, capture real-time usage data with high accuracy.
- RFID identification of system users allows for a tight control of pre-authorized users and prevents unauthorized use.
- Paperless data capture removes human error and simplifies reporting, purchasing, and monitoring of critical assets.
- Companies with multiple locations can easily compile data, create customized reports, and monitor fuel levels to avoid running out of fuel.

ACCURATE METERING

FMx includes volumetric or mass flow meters with 99.5% accuracy and repeatability. Level sensors continuously monitor and verify the accuracy of the flow signals for additional precision.



SUPERIOR RFID IDENTIFICATION AND PREVENTION OF UNAUTHORIZED USE

Long-range RFID identification of system users permits detailed accounting of all fuel and lube transactions by wirelessly tying the system user to the transaction. RFID outshines optical or GPS technology especially in dirty or underground environments because it does not depend on satellites or clear line of sight. Unauthorized personnel will be prevented from any unauthorized use.

LEAK DETECTION

Exact monitoring of fuel levels and flow conditions in tanks prevents overfilling accidents or critically low tank levels. Instant detection and alerts of tank leakage improves environmental stewardship and safety.

DAILY, MONTHLY, OR CUSTOMIZED REPORTS FOR OPTIMIZED OPERATIONS

Receive a complete fuel, lubricant, and additive report in your inbox each morning. Customized reports are at the click of a button. Instantaneous reporting will strengthen condition-based decision making to empower purchasing departments to restructure their supply contracts and allow maintenance supervisors to fine tune equipment maintenance based on needs rather than time.

DATA SECURITY

The FMx System is designed with a high level of data security and redundancy. As data is collected at each site, it is stored by each sensor until the local host panel confirms data receipt. Data is transmitted to the local server, then to a cloud server so there are always two mirrored copies of the data.

Data back-fill technology means your data is never lost. If connectivity is disrupted at any time or for any reason, each site acts autonomously in order to keep capturing data, and when able to, will back-fill all the data that was not transmitted.

TPx SYNTHETIC FUEL ADDITIVES

OUR ADDITIVES PROVIDE MULTIPLE BENEFITS

IMPROVED FUEL EFFICIENCY

TPx has been proven in laboratory and field tests to lower fuel consumption by 3% – 8%.

Users of fossil fuels face many different problems storing and consuming their fuel. Not only do high horsepower engines require extremely large amounts of oxygen to burn the fuel, the fuel system itself is sensitive to contamination and build-up.

TPx synthetic fuel additives integrate dissolved oxygen and simultaneously treat a multitude of concerns including fuel stability, microbial growth, water accumulation, and deposit formation. The combination of a clean fuel system and a clean and longer burning fuel strengthens the integrity and sustainability of any fossil fuel-intensive operation.

HEIGHTENED PRODUCTIVITY

Less time fueling, faster accelerations, and fewer breakdowns equals more production.

STRONGER ENGINES

TPx synthetic fuel additives optimize operating conditions to safely extract more power from the same amount of fuel.



CLEAN COMBUSTION MEANS LOWER EMISSIONS

Oxygenated fuel burns significantly cleaner. TPx will prolong maintenance and regeneration of Tier 3 and Tier 4 systems. We have verified reductions of:

PM (Hydrocarbons)	40% – 90%
NOx	10% – 20%
CO	40% – 55%

TPx inhibits the transition of SO_2 into SO_3 which reduces formation of H_2SO_4 .

NANOTECHNOLOGY (TPx HDNTek)

TPx HDNTek for heavy fuel oil is the only additive of its kind which contains Magnesium Oxide nanoparticles tailored to deploy in a highly efficient way. Non-abrasive MgO nanoparticles not only stay perfectly dissolved in the fuel to prevent fuel line clogging, but also, due to their extremely small size (1,000 times smaller than average), are vastly more effective at targeting metallic elements such as vanadium (that cause extremely corrosive scaling). TPx HDNTek is the only additive with MgO that works with furnaces and boilers as well as internal combustion engines burning HFO.

SUGGESTED DOSAGE RATIO (1:1,000 TO 1:2,000)

Maximum: One gallon of additive for 1,000 gallons of fuel.

Minimum: One gallon of additive for 2,000 gallons of fuel.

Increased benefits are achieved with stronger concentrations—helpful in high altitude, underground, emission sensitive operations, or when treating dirty fuel.



A SPECIALIZED PRODUCT FOR ALL FUELS

FEATURES	TPx (Gasoline)	TPx HD (Diesel)	TPx HDNTek (HFO)
100% safe synthetic formula	✓	✓	✓
Integrates dissolved oxygen into fuel	✓	✓	✓
Gradually cleans fuel system	✓	✓	✓
Disperses suspended water in fuel	✓	✓	✓
Stabilizes fuel	✓	✓	✓
Adds lubricity	✓	✓	✓
Lowers pour point	✓	✓	✓
Reduces toxic emissions and particulate matter	✓	✓	✓
Prolongs maintenance intervals	✓	✓	✓
Raises the cetane number		✓	✓
Protects exhaust after-treatment systems including SCR, DPF or scrubbers		✓	✓
Employs MgO to control corrosion			✓
Nanoparticles of MgO 1000 times smaller than standard additives			✓
Reduces excess air requirements of boilers and furnaces			✓
Neutralizes ash acidity			✓
Ash reduction 30% – 90%			✓

PHYSICAL PROPERTIES	TPx	TPx HD	TPx HDNTek
Appearance	Clear	Green	Orange
Density at 20 °C	0.91	0.91	0.91
Flash point	65 °C (149 °F)	65 °C (149 °F)	65 °C (149 °F)
Freezing point	-75 °C (-103 °F)	-75 °C (-103 °F)	-75 °C (-103 °F)
Viscosity	2.9 cP at 25 °C	2.9 cP at 25 °C	2.9 cP at 25 °C

INDEPENDENT LABORATORY & FIELD TESTS

LABORATORY CHEMICAL ANALYSIS: TPx IS 100% FUEL SYSTEM COMPATIBLE

Testing for TPx HD conducted on ULSD

TEST		UNTREATED	TPx HD 1:2000
Cetane Number	ASTM D613	50.4	50.7
Flash Point	ASTM D93	153 °F (67 °C)	156 °F (69 °C)

RESULTS: TPx HD improves Cetane and Flash Point

TEST	UNTREATED	TPx HD 1:2000	TPx HD 1:1000
Wear Scar (mm) ASTM 6079	.47	.464	.445

RESULTS: TPx HD reduces engine wear and improves durability

DYNAMOMETER LAB TEST

HIMESA (Hidráulica y Mecánica Sallentina, S.L.)
Equipment: Detroit Diesel Series 60

MORE FUEL EFFICIENCY: Fuel usage decreased by an average of 10%

MORE POWER: Power has increased by an average of 3.59%

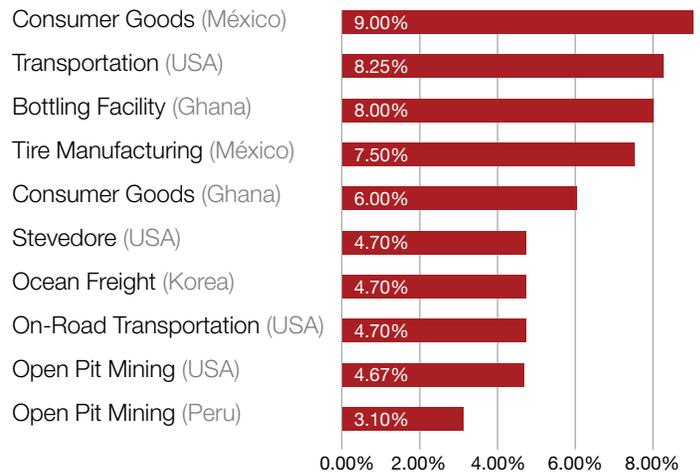
LOWER EMISSIONS: The hydrocarbons (PM) were reduced by an average of 92%, carbon monoxide (CO) has been reduced by an average of 64.7%

VALIDATED FIELD TESTS

Lower emissions are a clear indicator of better engine efficiency.

INDUSTRY	COUNTRY	LOWER CO	LOWER NOx	EQUIPMENT TYPE
Underground Mining	Spain	-35%	-10%	MTU
Open Pit Mining	USA	-56%	-10%	2200HP MTU Detroit Diesel
Open Pit Mining	USA	-33%	-15%	MTU 16V and 20V 4000
Fishing Fleet	Peru	-38%	-20%	Twin Cummins Marine Diesel
Stevedore	USA	-15%	-5.2%	GE 2700HP Locomotive

FUEL SAVINGS WITH USE OF TPx



RESULTS: Average 5.96%





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11199 Sorrento Valley Road, Suite 205
San Diego, California 92121 USA
Ph: 858.677.9211 | Fax: 858.677.9439
www.TPxTech.com