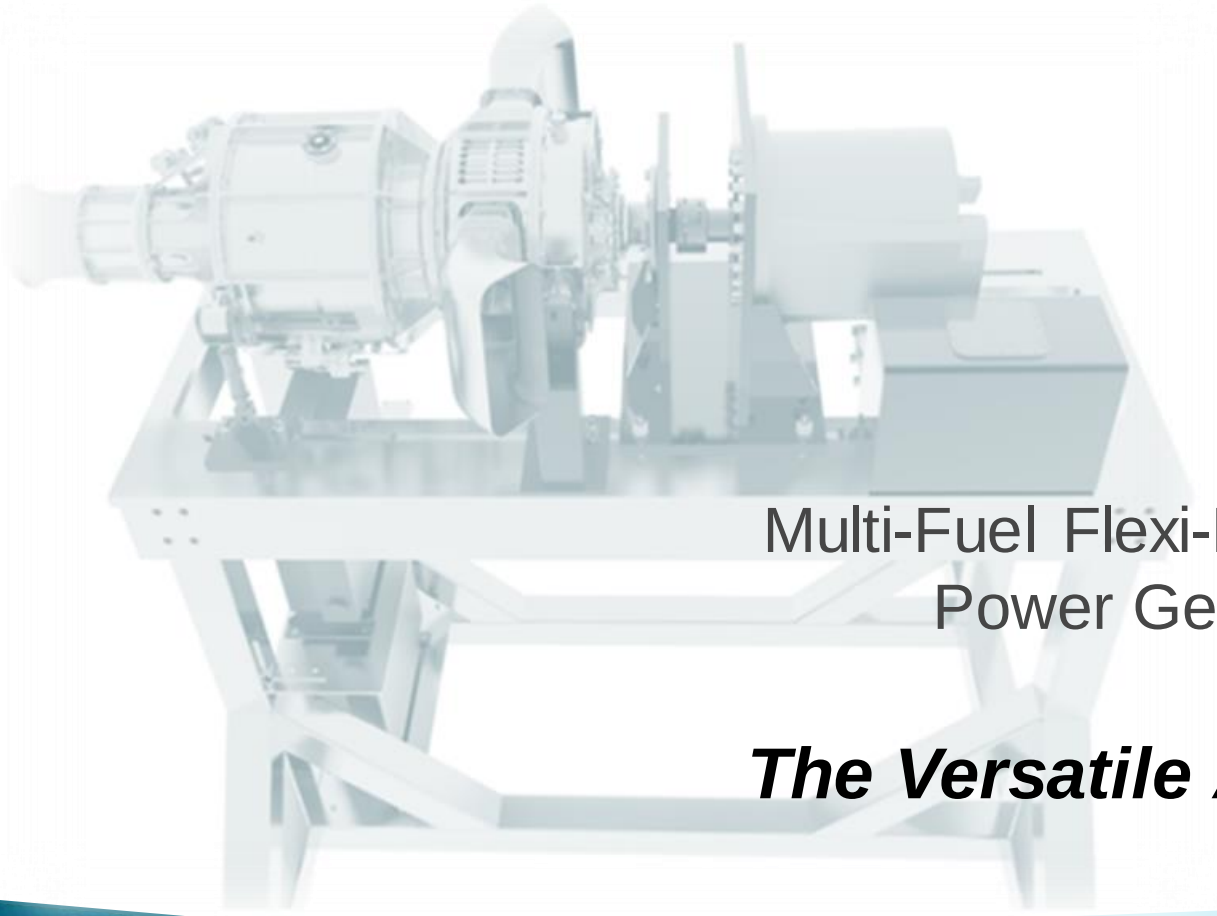


MSE
MULTI SOURCE ENERGY

TM150

Multi-Fuel Flexi-Microturbine
Power Generation Set

The Versatile Allrounder

Electricity
A precious commodity

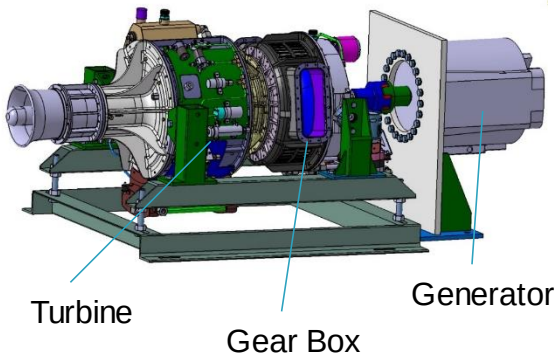
2/3 of generated power is lost in transmission from the producer to the end user!

- Ever-increasing demand for electricity drives the world towards efficient, decentralized, clean and cost-effective power generation
- Mini-grids, small, self-contained generation and distribution systems now serve local communities, hotel resorts, sports and event complexes, companies etc.
- Environmental concerns (e.g. reduction of CO_2 emissions) additionally enhance the diversification of fuel types in use

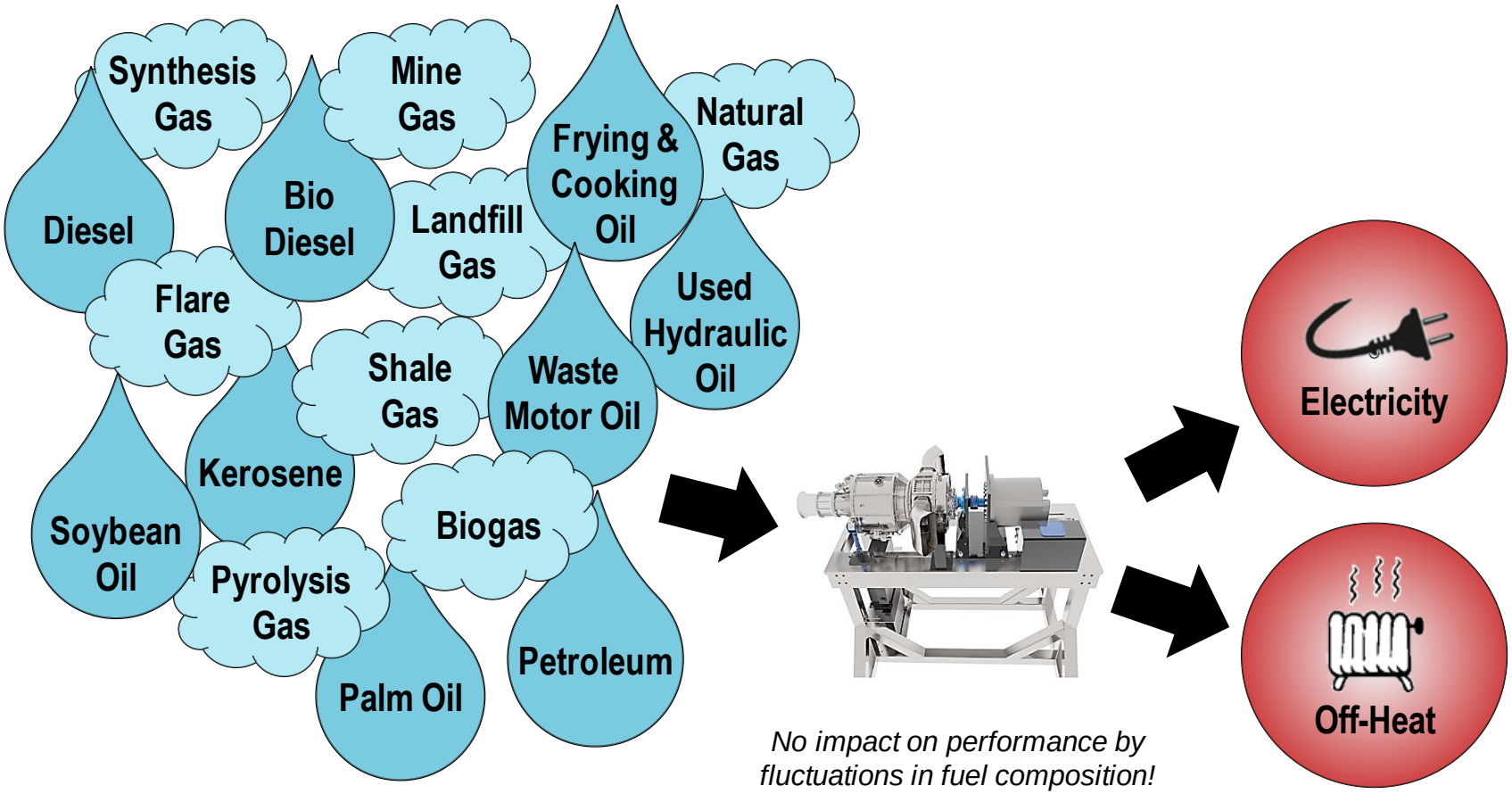
The breakthrough solution

TM150
Multi-fuel flexi-microturbine power generation unit

- Pioneers the new generation of small, light-weight, clean-burning, multi-fuel flexi-microturbine power units
- **Works with virtually all types of gaseous and liquid fuels even waste products e.g. used cooking oil, PCBs, flare gas etc. (toxic waste turns into clean electricity) > an advantage no competing product can offer**
- **Is not affected by fluctuations in various fuel compositions > an advantage no competing product can offer**
- High performance and efficiency design targeting at key growth markets worldwide
- Reliable, efficient, cost-effective and eco-friendly
- Modular setup with small, light and compact layout



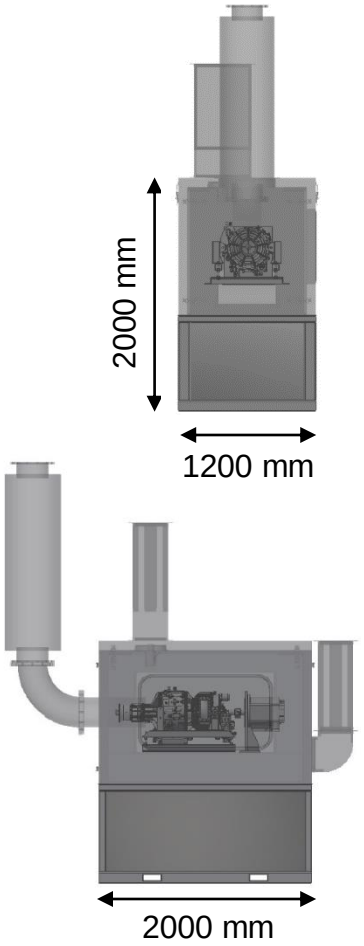
Truly Multi-Fuel



No impact on performance by fluctuations in fuel composition!

Simple and reliable

Continuous power output	kWh	150
Size (LxWxH)	cm	200x120x200
Weight turbine-generator assembly	kg	330
Total weight	kg	2000
Noise level	dB	70
Exhaust temperature (off-heat)	°C	650
Emissions (NO_x, CO_2, CH_4)	Very low due to high burning temperatures	

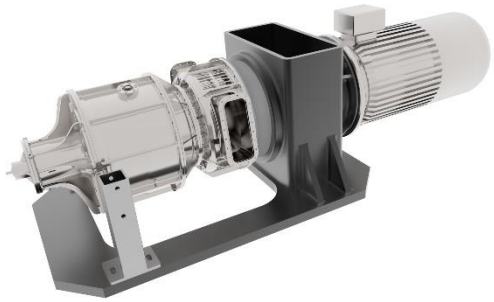


Fuel consumption examples

Fuel Type	Amount	
Diesel, kerosene, gasoline	73 kg/h	95 ltr/h
Natural gas	68 kg/h	88 Nm^3
Flare gas	58 kg/h	115 Nm^3
Syngas	134 kg/h	134 Nm^3

Clean burning

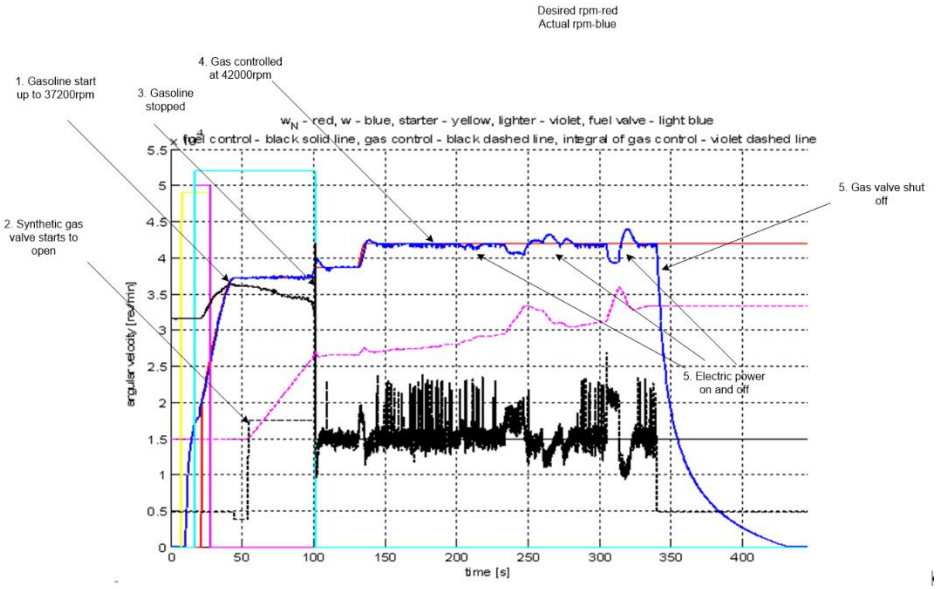
- Due to the high temperatures in the burning chamber, the exhaust gases are extremely low in terms of NOx and other Greenhouse gases



Element	Abbreviation	Amount in %
Nitrogen	N_2	approx. 75 %
Oxygen	O_2	approx. 16.7 %
Water steam	H_2O	approx. 2.2 %
Nitric Oxide	NO	approx. 0.011 %
Nitrogen Dioxide	NO_2	approx. 0.00067 %

Test Data

- Test data of synthetic gas (syngas) - the most challenging fuel due to the fluctuations in the composition and calorific value, as well as high H_2 content



Other test data upon request

Applications
(Excerpt)

Decentralized, individual power supplies

- Factories
- Residential complexes
- Hotels and resorts
- Military bases
- Schools, university campuses
- Government office complexes
- Public pools, sports arenas, ice rings

Emergency backup and standby

- Hospitals
- Food markets
- Hotels, resorts
- Data centers
- Ships
- Military bases
- Air raid shelters

Clean disposal/utilization of waste oils & gases

- Waste oil collectors
- Automobile garages
- Factories
- Landfill sites with methane collection
- Sewage plants
- Airports
- Ship yards and ports

Use of bio and synthetic gases

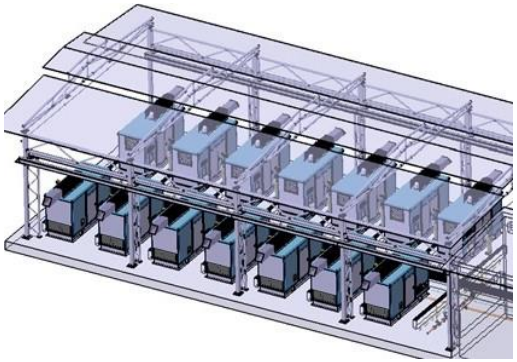
- Agricultural biogas plants
- Operators of UHTH® plants
- Landfills
- Pyrolysis plants

Flare gas industry

- Oil and gas fields
- Oil platforms

Advantages

- Works with almost all known liquid and gaseous fuels, incl. waste products e.g. used oils, flare gas etc.
- Performance not affected by fluctuations in fuel composition
- Transition from liquid to gaseous fuel or vice versa without interruption
- Simple, stable and reliable
- High environmental compatibility (low NOx and other Greenhouse Gas emission)
- Compact, light weight setup, small footprint
- Easy operation with short startup
- Low investment costs
- Low maintenance and long life-cycle



Modular setup example:
Block with 14 units = 2.1 MWh

A note on "Flare Gas"

- **Current global gas flaring:**

  approx. 140 billion m^3/yr.
  = 360 million t/yr. of CO_2

- **Reducing global gas flaring by 1%:**

  = 1.5 billion m^3/yr. of natural gas

- **Total elimination of gas flaring:**

  = would feed 137'000 TM150 units

- **Gas flaring per oil rig head**

  Between 28'000-140'000 m^3/day per head

  = 10-50 pcs. TM150 units

- TM150 multi-fuel flexi-microturbine generator units directly utilize otherwise wasted energy
- Utilizing flare gas has substantial impact on overall, worldwide CO_2 emissions
- Possibility of switching to other fuels in emergency situations

MSE offers the perfect solution to make use of an otherwise wasted energy source and at the same time helps to significantly reduce CO_2 emissions!

MSE
MULTI SOURCE ENERGY

TM150 Multi-Fuel Flexi-Microturbine Power Generation Unit

Optimize your benefits with this versatile allrounder