

# Product Update

# SMT 60

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## 20 years ago, Solar builds and delivers the first Taurus 60 Mobile Power Units

	<u>2000*</u>
Natural Gas Production (bcfd)	55.30
Natural Gas Price (\$/mmbtu)	4.31
Crude Oil Production (mmbo/day)	5.80
Crude Oil Price (\$ per Barrel)	30.38

**Shale Boom begins...**



Taurus 60 MPU (5.7 MW)

\*[Average for the year, US only; source EIA data]

**20 years later, the *Voices of the Market and of our Customers* demand that we meet their new temporary oilfield power requirements**

	<u>2000</u>	<u>2020*</u>
Natural Gas Production (bcfd)	55.30	<b>94.70</b>
Natural Gas Price (\$/mmbtu)	4.31	<b>2.33</b>
Crude Oil Production (mmbo/day)	5.80	<b>13.30</b>
Crude Oil Price (\$ per Barrel)	30.38	<b>59.25</b>

***Permian Shale Boom in full swing...***



2013 - T60 MPUs used to power E-frac fleet operating in West Virginia.

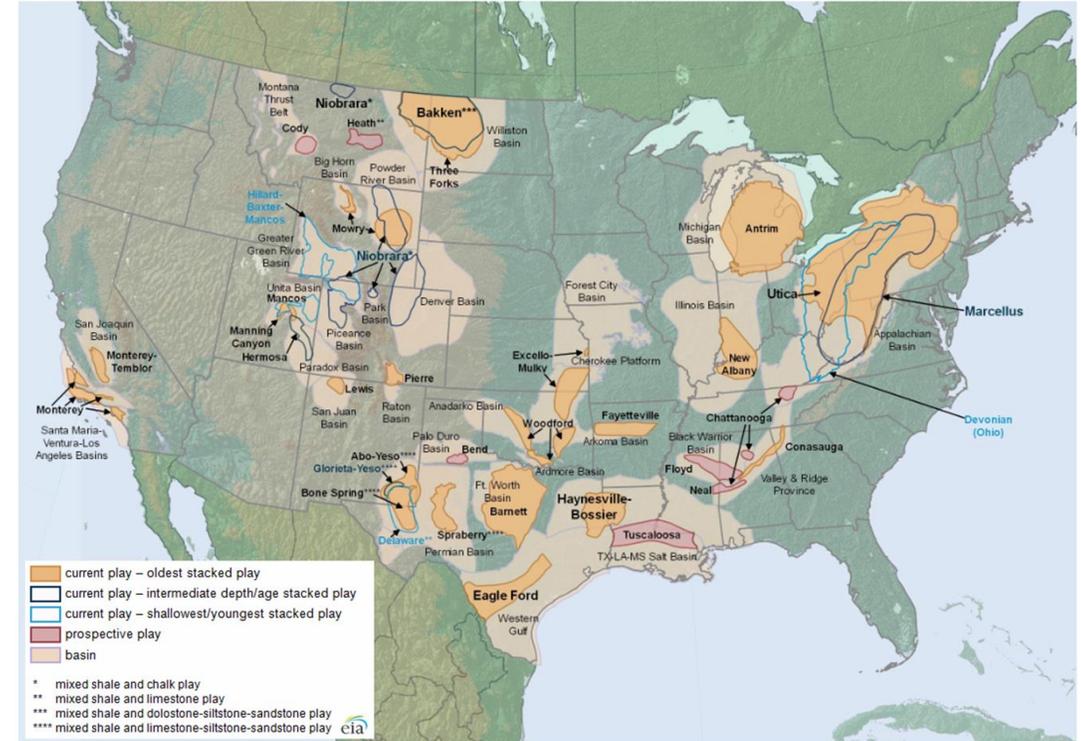
\*[Average for the US only; source EIA forecasts]

# The 2020 *Voice of the Market*

The Unconventional Resources Development (URD) business space – an unprecedented evolution of the energy landscape

- Expensive *hydraulic fracturing* and horizontal drilling
- O&G companies are fixated on reducing well costs
- Strong *CAPEX avoidance*
- *ESG is guiding power decisions* to cleaner power sources and alternatives
- URD is outpacing traditional oilfield power supply
  - Infield power provision (i.e. *lease power*, artificial lift, drilling rigs) is exploding
- *Flaring* is rampant, abundant gas supply and low natural gas prices enabler
- Oilfield microgrids are emerging
  - Power for: Drilling/Completion, Hydraulic Fracturing & Shale Production
  - Temporary power solutions: *Power before the grid, flare to power*, flare to LNG, gas processing
- Lean products and processes, and rapidly evolving technology

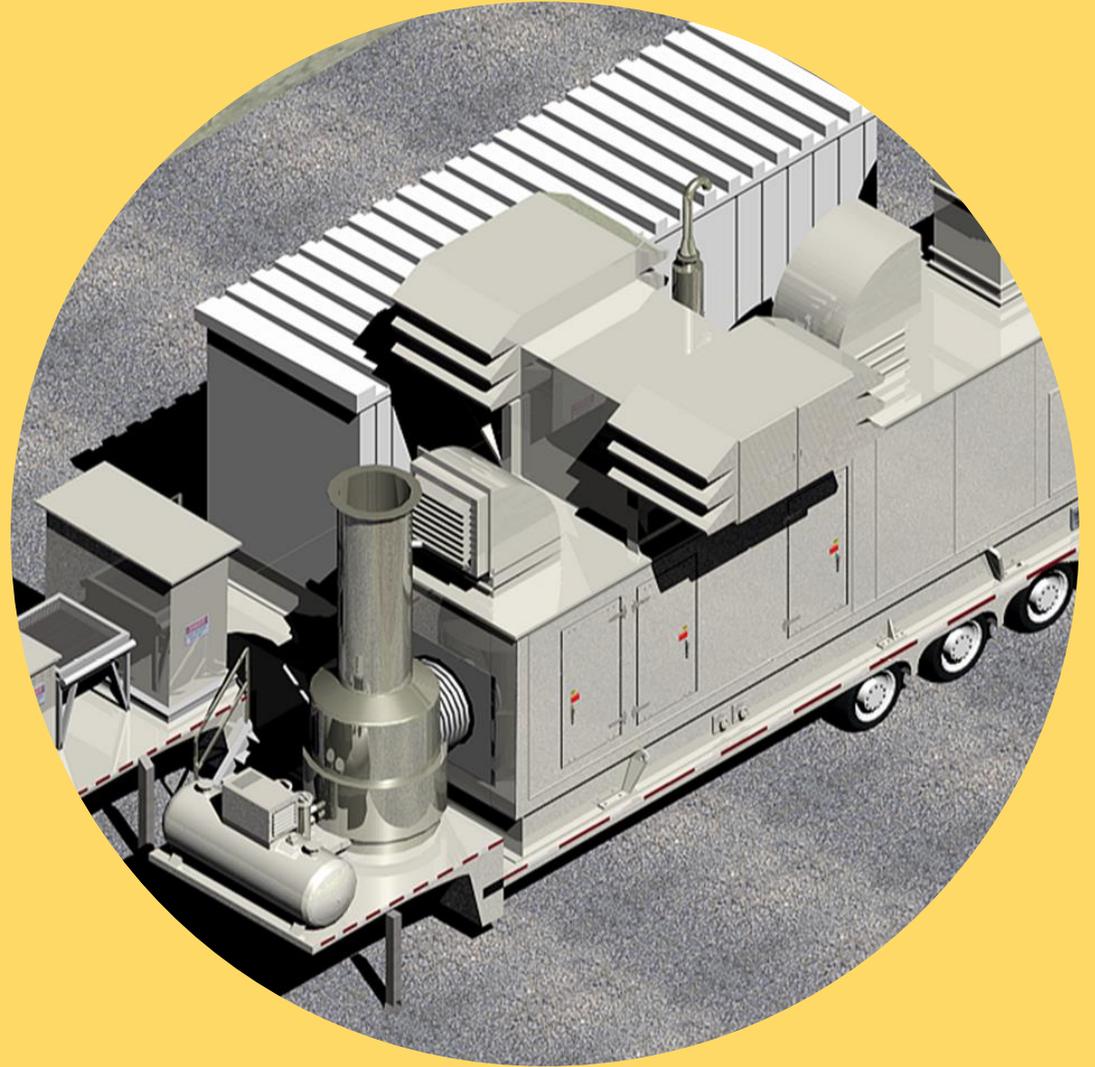
Shale plays in the Lower 48 states



# The 2020 *Voice of the Customer*

- Over-engineering for application
- Need a reduced footprint
- Set up time to be less than 6 hours
- No crane lifts – no feet off the ground
- Reduce the number of connections
- Run on wide range of well-head gas

**November of 2018** - we began designing the next gen mobile power product to meet this VOC



**August of 2019** - we deliver our first SMT60 units destined for the Permian.

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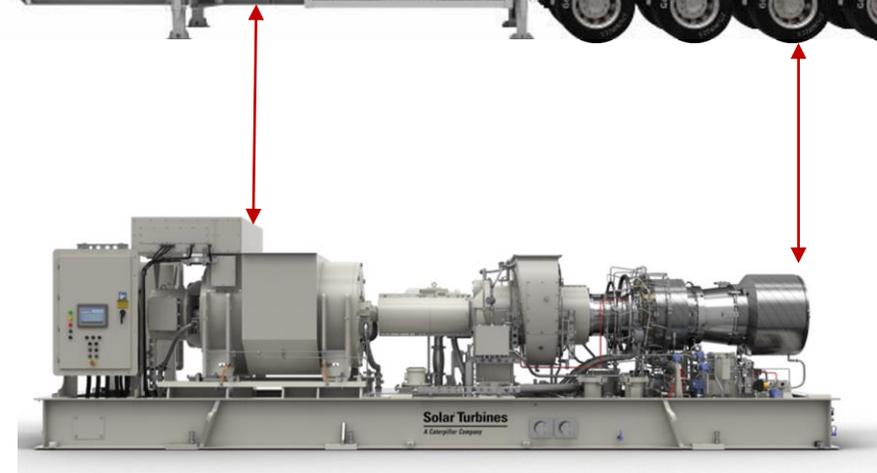
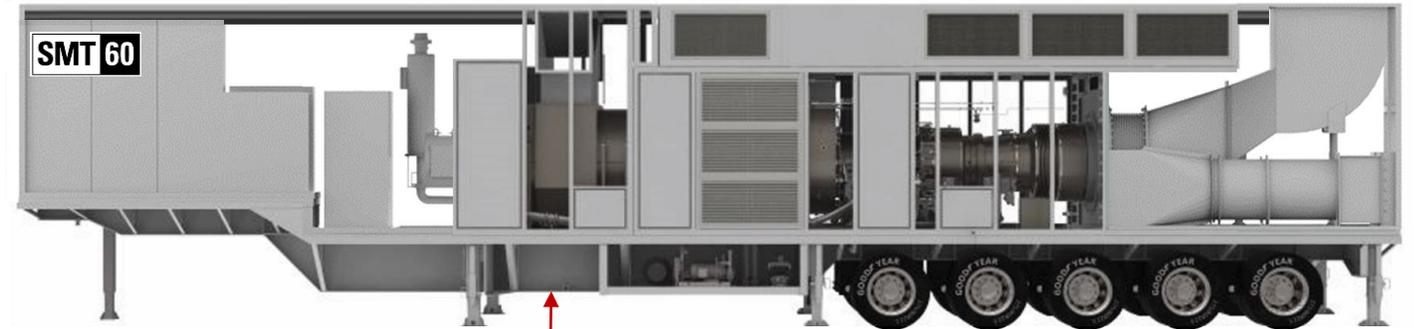


- Single trailer with fully integrated design
- Hydraulic leveling system
- Only 3 main connections
  - Medium voltage,
  - Black start,
  - Gas fuel
- No alignment; no crane lifts; no feet off the ground



# At the heart of the SMT60, the proven and reliable Taurus 60 Generator Set

- Widest well-head gas fuel flexibility in the industry
- World leader in dry low emissions
- Easy to relocate and DOT compliant
- Fully integrated modular power plant
- Robust, proven equipment with a global support network



 Introduced in 1987

Package Type	Units Sold	Estimated Hours
Compressor Sets	455	58 million
Mechanical Drives	218	31 million
Generator Sets	1,484	238 million
Total	2,157	327 million

October 2019 © Solar Turbines Incorporated | Hours reflect new unit sales only

# SMT60 Key Components

- Nitrogen System
- CO2 system
- Turbine Control Panel
- MCC
- Battery Charger & batteries

- Main Circuit Breaker
- Neutral Ground Transformer
- Auto Transfer Switch
- 13.8 KV to 480 V Transformer
- Lightening Arrestors

- Generator (Kato 13.8 KV)
- Oil Demister

- Generator inlet filters
- Generator Vent Fans

- Taurus 60 Single-shaft Turbine
- Low Speed Coupling
- Reduction Gearbox
- Lube Oil System
- Fire Dampers

- Detachable Module
- TAI Hydrophobic Filtration

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- H = 13' 2" (4.02 m)
- L = 56' 2" (17.11 m)
- W = 8' 6" (2.60 m)
- Wt. = 111,000 lbs (50,349 kg)

- VFD controlled fans (Over-sized for hi-ambient)

- 15-20 minutes to level

- MV Connections

- Fuel Gas System (Left Side)
- Lube Oil System (Right Side)

- Pre-filter
- Oil Air Cooler
- Fire Damper
- Left and right sides

- 1| Electrical Equipment Compartment (EEC)
- 2| Medium Voltage Compartment
- 3| Generator Compartment
- 4| Generator Inlet Ventilation

- 5| Turbine Compartment
- 6| Integrated Air Inlet Duct and Filters
- 7| Exhaust
- 8| MV Connections

- 9| SoLoNOx™ Gas Fuel System
- 10| Hydraulic Leveling Jack
- 11| Enclosure Ventilation Fans
- 12| Lube Oil Cooler

# SMT60 & T60 MPU in the Permian

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- Photos taken February 4<sup>th</sup> near Coyanosa, Pecos County, Texas
- These particular units are providing power for oilfield production:
  - Electric Submersible Pumps
  - Salt Water Disposal Wells
  - Tank Farms

[photos courtesy of Life Cycle Power]

**The SMT60 is improving the environment by converting otherwise flared natural gas into reliable, clean and flexible power for shale oil and gas development activities in the Permian now...and the rest of the world tomorrow.**

**Thank you**

