



Mi-Jack Products, Inc.— Tier 4F EcoCrane Hybrid System

This retrofit technology is included on EPA's Verified Technologies List for Clean Diesel.

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Technology specifications

Engine Model/Application

Tier 0, Tier 1, Tier 2 , or Tier 3 nonroad diesel engines on rubber tired gantry cranes

Retrofit Fuel, Max Sulfur

15 parts per million (ppm)

Reduction in particulate matter (PM)

95%

Related Topics

- Verified Technologies List for Clean Diesel
<<https://epa.gov/verified-diesel-tech/verified-technologies-list-clean-diesel>>
- Contact List for Manufacturers and Organizations
<<https://epa.gov/verified-diesel-tech/manufacturer-contact-list-clean-diesel>>

Reduction in nitrogen oxide (NO_x)	95%
Reduction in hydrocarbons (HC)	58%
Reduction in carbon monoxide (CO)	37%
Reduction in carbon monoxide (CO₂)	56%

Criteria to achieve emission reductions

This technology is approved for Mi-Jack Products, Inc. EcoCrane Hybrid System. The EcoCrane Hybrid System replaces generator(s) equipped with Tier 0, Tier 1, Tier 2 or Tier 3 nonroad diesel engines on rubber tired gantry cranes. The following criteria must be met in order for appropriately retrofitted cranes to achieve the aforementioned emission reductions:

1. The original RTG generator(s) must be equipped with Tier 0, Tier 1, Tier 2 or Tier 3 engines.
2. The original RTG should be equipped with a DC bus and AC motors or the EcoCrane package needs to be equipped with a properly sized power inverter to power the DC motors.
3. Prior to installation, Mi-Jack must appropriately size the EcoCrane Hybrid System for the original RTG. In sizing the EcoCrane, a smaller horsepower new Tier 4F diesel engine-equipped generator and battery-equipped energy system must be optimized to satisfy application-specific requirements.
4. The EcoCrane Hybrid System includes the components necessary to replace a conventional RTG diesel engine generator and other original power system components as necessary. The EcoCrane components include a new genset equipped with a new Tier 4F diesel engine, battery energy storage system, rectifier, auxiliary inverter and regenerative brake/energy recovery system integration.

5. Mi-Jack and the RTG owner must evaluate battery technology options for the specific RTG. Different battery technologies may be preferred due to individual preference and performance requirements, so it is the responsibility of Mi-Jack and the RTG owner to select a technology based on these needs.
6. The EcoCrane system must include a battery monitoring system to alarm operators for necessary actions to ensure the proper operation of the batteries.
7. The owner's manual must include maintenance procedures, safety information and battery disposition.
8. The engine must be operated on ultra-low sulfur diesel fuel (ULSD) of 15 ppm or less.
9. The engine used in the EcoCrane Hybrid System must be certified for use in generator sets and meet current model year standards.

Verification Letter from EPA

-  Verification Letter (pdf) <<https://www.epa.gov/sites/default/files/2020-08/documents/verify-tech-ltr-mi-jack-ecocrane-2020-08-12.pdf>> (99.76 KB, August 12, 2020)

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