



# The Autonomous Tugger

## Cyngn Brings Autonomous Tugging to Motrec

Our autonomous tugger enables you to automate hauling work flows like like transferring goods and delivering supplies. By offloading these duties to a robot, you'll minimize safety risks and free your team to focus on other priorities.

Studies have shown that our AVs boost productivity by 33%. That's like gaining an extra team member for every three individuals at your facility – instantly.

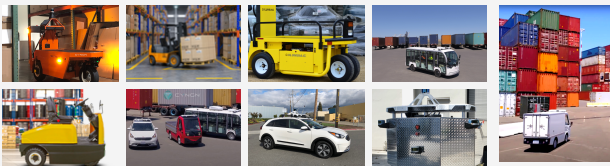
Whether retrofitting your tuggers or investing in new ones, DriveMod is the only solution you need to enable your industrial vehicles to drive themselves. DriveMod gets all of your vehicles humming as a single, unified AV fleet so you can work faster for less cost.

## Cyngn's Enterprise Autonomy Suite includes two key components:



### DriveMod

Full-Stack Autonomous Driving Software System



### Cyngn Insight

Autonomous Vehicle Fleet Management System

- Fleet management system
- Operational analytics
- Web-based software runs on desktop, mobile, and on-vehicle dashboards.
- Teleoperation
- Real-time diagnostics
- Asset tracking

## About DriveMod

DriveMod is Cyngn's full-stack autonomous driving solution. It integrates with off-the-shelf sensing and computing hardware to enable industrial vehicles to perceive the world, make decisions, and take action.

Vehicles running DriveMod can start, stop, take commands, drive to different stations, and adjust to changing conditions on the ground.

Because our technology fits onto the vehicles you already drive, you can bring autonomy to your operation without having to make major changes to how your facility is organized or how you organize the day's work.

<b>Multiple Industries</b>	<b>Intelligent FMS</b>	<b>Clear ROI</b>	<b>Quick Deployment</b>
----------------------------	------------------------	------------------	-------------------------

### With DriveMod, vehicles can:

Transport goods to any on-site location, indoors and outdoors.	Can be switched into manual mode and driven by a human.
Haul and tow thousands of pounds of heavy cargo.	Execute missions based on a variety of flexible, programmable options.
Safely navigate sites without the need for special infrastructure.	Collect data and reveal suggestions for optimization.

# About Cyngn Insight

With Cyngn Insight, you can intuitively manage, monitor, and command your self-driving vehicles. Our Autonomous Fleet Management System has been thoughtfully designed to be simple and straightforward to operate. It adapts well to your existing workflows and will help make your team more efficient.

Our dashboards provide a comprehensive overview of your fleet's performance and utilization – from anywhere. With this valuable data at your fingertips, you can make informed decisions to improve the efficiency of your operation.

Track key metrics, including –



- Location
- Battery
- Current Mission
- Network Status
- KPIs and Productivity Metrics

## Case Study: DriveMod brings immediate efficiency gains to Global Logistics and Fulfillment, a Las Vegas-based 3PL facility

**64%** A **64% reduction in human labor costs** when using Cyngn's DriveMod-enabled vehicle vs. using a forklift.

**33%** A **33% increase in efficiency** when using Cyngn's DriveMod-enabled vehicle vs. using an electric pallet jack.

"The bottom line is DriveMod has made us more productive. Instead of manually moving goods around the warehouse, our team can stay focused on picking, packing, and other high-value assignments."

– Kenn Morris | Vice President GLF

Read the Case Study at [go.cyngn.com/GLF](https://go.cyngn.com/GLF) ▶

### Deployment at Flambeau

"Cyngn's DriveMod really unlocks the potential for us to start the journey of increasing throughput and decreasing the time to market from the manufacturing floor."

– Joseph Peterson | General Manager, Flambeau



# Technical Specifications

## Motrec MT-160 Tugger



**Works Across  
a Variety of  
Vehicle Types**



**Artificially  
Intelligent**



**Over-the-Air  
Updates**



**Automated  
Missions**



**Multiple  
Safety  
Systems**



### Vehicle Information

<b>Dimensions</b>	62" L x 30" W x 55" H
<b>Deck Dimensions</b>	18" L x 30" W x 55" H
<b>Weight</b>	1,250 ± 100 lbs depending on options

### Performance

<b>Autonomous Speed (Max)</b>	4.5 mph
<b>Manual Speed (Max)</b>	6 mph
<b>Towing Capacity (Max)</b>	6,000 lbs.
<b>Load Capacity (Max)</b>	500 lbs.
<b>Turning Radius</b>	54"
<b>Minimum Aisle Width</b>	55"

### Safety Features

**Emergency Stop**  
**Virtual Bumper** (collision avoidance system)  
**LED Visual Communication System**  
**Audio Cues**

### Automation Interface

**Human-Machine Interface**

### Chassis

<b>Body</b>	All-steel unibody construction
<b>Steering</b>	Automotive steering wheel
<b>Brakes</b>	Self-adjusting H.D. drum brake, regenerative braking, electromagnetic parking brake
<b>Wheels</b>	4.8x8 LRC pneumatic tires

### Energy System

<b>Battery Voltage</b>	48V
<b>Battery Runtime (Min)</b>	~ 6 hours
<b>Recommended Runtime*</b>	8 hours
<b>Charge Time</b>	10-12 hrs. from 10%

*\*Runtimes are based on manufacturer recommendations.  
Times may vary based on speed and load weight*

### Sensor Suite

**360° 3D LiDAR**  
**RGB Camera**  
**Infrared Camera**  
**TOF Camera**

### Connectivity

**802.11 Wifi**  
**Ethernet Port for Data Offload**

To learn more about bringing self-driving vehicle technology to your organization, please reach out.

