

## Application Engineering Elevates Upstart OEM to Market Leader

**Ligchine International's machine control delivers performance, efficiency and price**



Ligchine International President Peter Ligman only works with GS Global Resources. Why? Their ability to simplify complex application engineering solutions for mobile and industrial machine markets.

"They are the only systems integrator to take on our challenge—and deliver—a concept everyone else told us was impossible," says Ligman, who invented Ligchine screed machines.

Ligman's line of concrete finishing screed machines delivers tighter tolerances than any other in the industry, runs more efficiently for his customers, and sells at a competitive price point.

"Ligchine's mechanical engineers created the design and performance parameters," GS Global Resources (GSGR) Darrell Kolp says. "They needed electrical, hydraulic and software engineering expertise to achieve their expected outcomes. They chose GSGR because we created a hydraulic and electrical system to meet their machine performance goals."

In large part, Ligman attributes the success of his line of machines to the hydraulic and electronic systems integration expertise brought by GSGR engineers. But, Ligman adds,

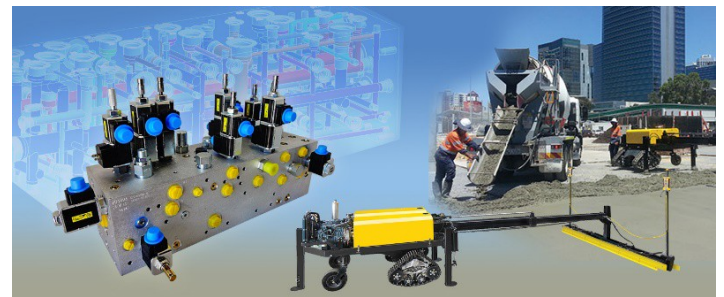
the GS team also understands our entire value chain.

"Because of GSGR innovative application insights, our auto-level, wireless screed is the most accurate machine in the concrete finishing world," Ligman says. "We give GSGR our specifications and price points and they deliver."

GSGR worked with the Ligchine team to go beyond accuracy to creating an efficient operating machine. Ligchine customers enjoy new, money-saving engineering insights without sacrificing performance.

"The support GSGR delivers is superior to other vendors," Ligman says. "They're always making things more efficient and cost-effective for us, which keeps our machine cost-effective in the market place. They've created a robust system that prevented problems in the field, which helps Ligchine maintain a reputation level that is unmatched."

### Market Share Growth Formula



Meeting its customers' needs with new technology at a competitive price point allowed Ligchine to secure significant market share since entering the market. The screed industry once was dominated by a single company for 27 years. Ligchine attributes its 100 percent year-over-year growth to creating the world's most accurate, cost-effective, wireless concrete screed machine.

As acceptance of application outsourcing gains momentum, OEMs seek engineering



expertise in interpreting, adopting and adapting technology to meet design functionality. Ligchine and GSGR have collaborated for the last eight years on a variety of machines. From the first Ligchine screed machine to its latest BOSS 240 model, the relationship has grown.

Ligchine International is the World's No. 1 manufacturer of Laser & 3D GPS guided boom extension screed machines. Boom operated screeds are superior to drive in the concrete machines in terms a production, accuracy, concrete structural integrity and user safety. Technology is the key to Ligchine' s powerful, durable and innovative screeds.

The BOSS 240 is a Zero-Turn Drive System designed to increase maneuverability, with today's latest electronic control technology. Wireless remote-control package and a touch-screen color display with diagnostic review integrated by GSGR makes this possible.

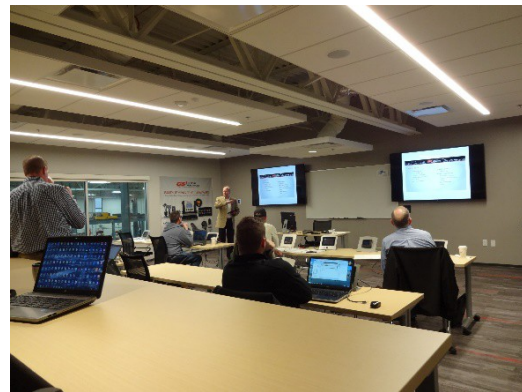
GSGR engineers selected J1939 on all electrical components. This allows the status of each component to be monitored as well as controlled. GSGR also integrated a fuel saving feature on the machine that kicks down the engine RPM from 2800rpms (work mode) to 1000rpms (standby mode) if radio functions are dormant for 20 seconds. Once a radio command is received, the system automatically increases the engine to 2800rpms (work mode).

The BOSS 240 features Parker's IQAN-MD4-7" control system. GSGR engineered and programmed the system specifically to integrate the engine RPM and engine diagnostic information. GSGR Parker IQAN-MD4- 7" color touch-screen display with continuous hydraulic, electronic power and system status provides

a level of accuracy that is superior to the competition. IQAN is a state of-the-art communications system developed by Parker Hannifin to electronically control and monitor hydraulics in mobile machines.

- Diesel engines
- Transmission systems
- Cab control
- Truck systems
- Radio control

### The Role of OEM Training



GSGR offers a two-day training course covering Parker IQANdesign platform, SAE J1939 and CAN-Open communication protocols. The main philosophy behind the IQAN creative studio is that the OEM, with their extensive knowledge of their machines, should be able to program the desired machine functionality directly, without having programming experience.

In the case of Ligchine, old technology prevented existing concrete screeds from delivering the accuracy and durability customers were demanding. By partnering with GSGR, Ligchine receives the latest technology and training to improve speed-to-market and solutions to improve the success and accuracy of Ligchine' s customers.



## Why Ligchine Only Uses GS Global Resources



In the end, Ligman has decided only to work with GS Global Resources for integrated application engineered solutions.

"From day one of our relationship, GSGR always brings us something new to keep Ligchine ahead of the industry," Ligman says. "Electronic controls, Tier 4 insights and engineering support has been over the top."

Ligman won't say just how much market share Ligchine controls now. But he estimates Ligchine soon will account for most screed industry sales.

"I have not shopped another systems integrator for 4 to 5 years," Ligman says. "Many have called on us, but we have a relationship with GSGR. We've worked through significant challenges to advance our products with these guys. The pricing is fair for the level of support we receive throughout the process, which allows us to deliver a superior machine to our customers."



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**Industry:** Construction

**Product Name:** Screensaver | Laser Guided Concrete Screed

**OEM:** Ligchine | Floyds Knobs, IN



### Technical Solutions Overview

The Ligchine Screensaver BOSS 240 features a 13.5' screed head combined with an 18' boom reach capable of screeding 240 sq. ft. per screed pass. Other features include: The first "Zero Turn" mega screed ever offered; Full 360° turret control; Wireless remote-control operation; Automatic sprayer system for applying hardeners and coatings while screeding; and a horizontal side step capability to avoid stickups making it the most navigable mega-sized boom operated screed ever offered.

Objectives for the Boss 240 were achieved through an integrated hydraulic, electronic and software engineered solution ready to plug-and-play using technologically advanced wireless system, directional control valve, and steerable wheel motor.

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### Challenge | Project Objective:

- :: Meeting customer needs at a competitive price point
- :: Rapid response
- :: Speed to market
- :: Easily-integrated hydraulic drive system

### GS Global Resources Solution:

#### Electrical System

- :: Wireless transmitter and receiver with backup cable control
- :: 12Vdc operating system
- :: Electronic control center

#### Hydraulic System

- :: Drive system -
- :: Front wheel drive hydraulic piston motors
- :: Front wheel hydraulic steering
- :: Open loop with master manifold control
- ::

#### Software System

- :: Parker IQAN
- :: Training (collaboration among GS Global Resources, Ligchine, and OEMs)

#### Integrated Controls

- :: Plug-and-play
- :: Electronic integrate with OEMs engine (HP control, fan cooling control, safety locks)

### Results:

- :: Complexity removed
- :: Fast prototype (building during engineering process)
- :: Engineering support from start to finish (engineering, connect, test)
- :: Speed to market (nine months total)
- :: Better machine control
- :: Service support for the life of the machine and those who touch it (training, continual support)

### Products and Software Used:

- :: Poclain KV-6 Selector Valve
- :: Poclain MGE Steerable Wheel Motor