



FULLY INTEGRATED CUSTOM CONTROLS

*Simple Solutions.
Seamless Integration.*

YOUR TRUSTED RESOURCE

GS Global Resources is trusted by OEMs who demand a competitive advantage for every solution. From system and component design to production and market support, we help OEMs interpret, adapt, and adopt technology. Solving OEM challenges at the intersection of fluid power and electronic control, our customers profit from our continuous technology and innovation transfer.

PERFORMANCE

Access to the foremost machine performance resource trusted by OEMs ensuring a competitive advantage from every solution.

PROFITABILITY

Continuous technology and innovation transfer through a single point of accountability provides OEMs unmatched value.

PRAGMATIC

Problem solvers, renowned by our customers, we relentlessly pursue and develop fresh ideas to benefit OEMs.

TALENT

Rare technical talent, scalability, and flexibility, coupled with incomparable ability to understand and overcome OEM challenges.

CONFIDENCE

Support to help OEMs best integrate and utilize technology from system and component design to production and market support.

VALUE

A rare combination of speed to market, improved safety, higher productivity, greater predictability and unbeatable efficiency.

COMMITMENT

A comprehensive resource where the complex simplifies. Where peace of mind and mutual respect grow relationships. Where competitive advantage and machine performance improve—every time.



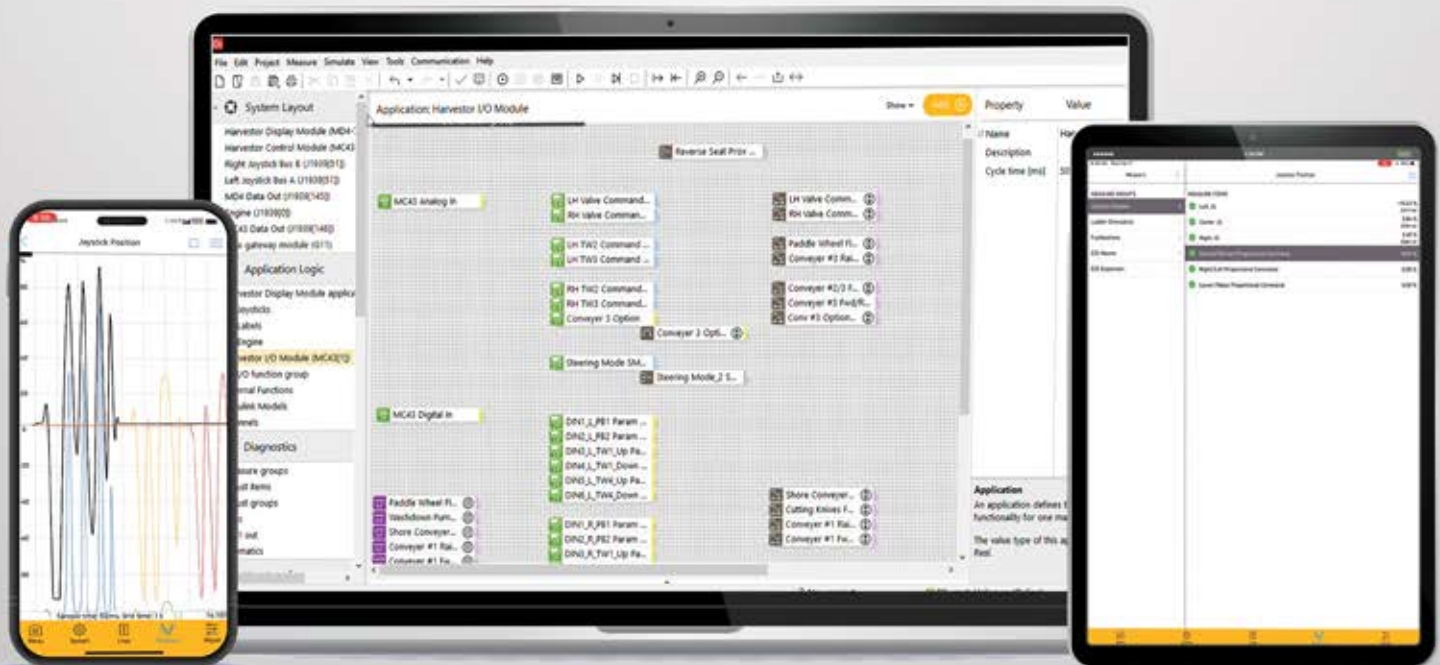
CUSTOM CONTROLS FOR IMPROVED MACHINE PERFORMANCE

Designing a solid hydraulic foundation for your machine is only the first piece of the puzzle for OEMs. You must then decide how an operator will achieve a machine's end goal. How will the top tier of primary controls be best accessed considering the operator's line of sight and those control functions? Will a display be used simply to convey pertinent machine status information, or to access other machine controls or features? How should controls be laid out in order to optimize operator ergonomics and minimize any environmental effects?

At GS Global Resources, we have experience with top-of-the-line electronic components and can help you select the right controls for your application. We also have the ability to customize and custom program countless electronics, including joysticks, displays, switches and even full armrest assemblies. We partner with OEMs, truly listening to your machine needs in order to create, fully test, and integrate the exact component to help your operator reach maximum machine control.

Optimizing Machine Communication With IQAN by Parker Hannifin

Every measure of machine success stems from superior machine communication, whether that is between individual components or from machine to operator. We are experts in all aspects of IQAN by Parker Hannifin and integrate all of your machine components, both hydraulic and electronic, into a single master controller to optimize machine communication. And since no one knows your machine better than you, we offer general and OEM specific IQAN training, as well as on demand targeted skill training, giving your engineers the tools to control and update your machine in accordance with your goals and machine needs.



INDUSTRY LEADING CONTROLS FOR ANY APPLICATION

Displays

Intuitively conveying data and providing machine control to operators.

There are a wide variety of displays available to OEMs, but the ability to customize them to not only maintain consistent hardware and programming, both in terms of experience and branding, as well as optimize the end user's experience is critical to overall machine functionality.

Radio Remote Controls & Pendants

Designed to increase control functionality and decrease operator fatigue.

We help OEMs give customers more control options and flexibility while simultaneously maintaining a consistent branding standard across the board. The most obvious way to customize a remote control is through its combination of push buttons, toggle switches, and safety features. But we can also design similar tethered pendant controls, connecting from the top or bottom depending on your machine needs.

Joysticks

Rugged custom joysticks for OEMs that consistently perform in any condition.

Joysticks may not be the largest or flashiest component on a piece of machinery, but as the primary touchpoint for operators, careful consideration must be given to every factor including machine application, mounting, primary functions, and more. With countless custom joysticks in our portfolio, we have a vast amount of experience designing, and integrating them for OEMs in numerous industries with many different features and functions.

Armrest Assemblies & Consoles

Ergonomically designed to optimize operator experience and improve performance.

As the primary touchpoint for your operators, the comfort, adjustability, and functionality of your armrest and the controls integrated into it, such as joysticks and switches, is critical. Our team has designed countless armrest and consoles for various industries and a wide range of diverse environments. Let us create the perfect solution for your machine.

Control Systems

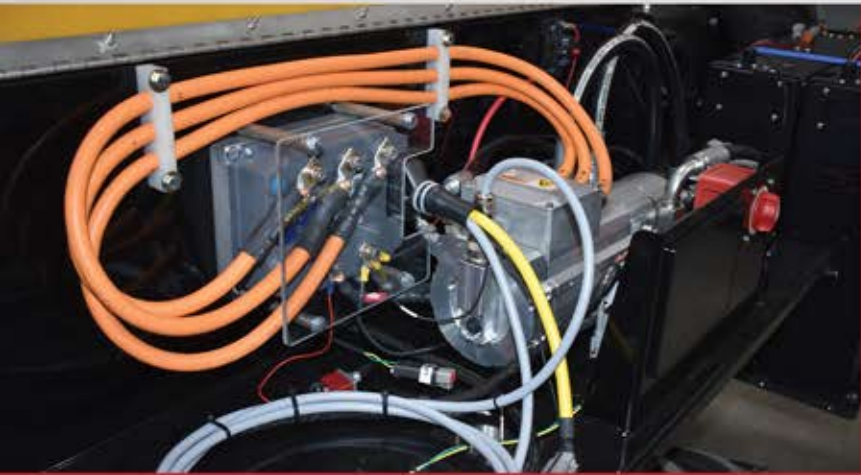
To meet evolving machine needs of any complexity.

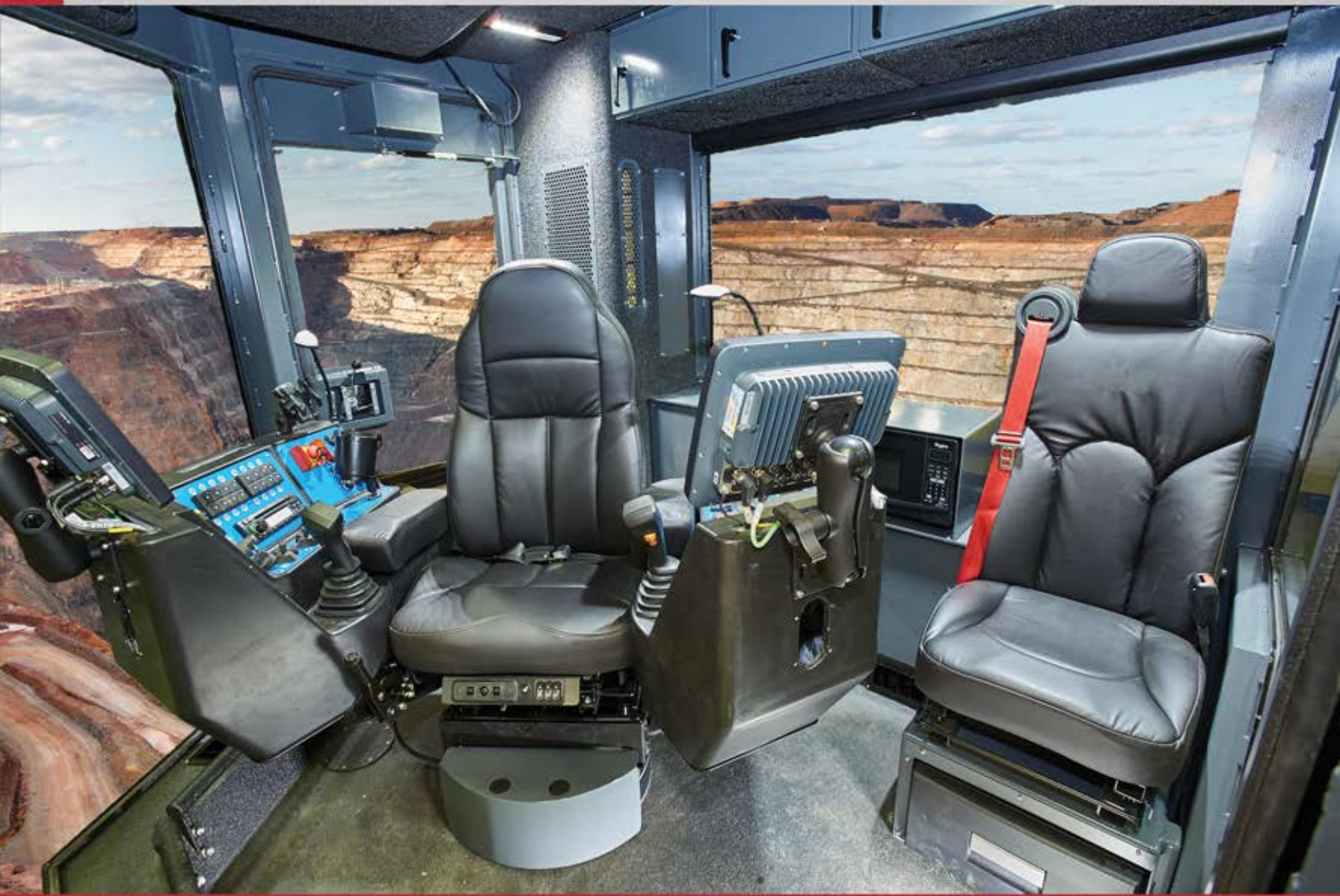
We know your machine needs can vary and develop over time. That's why we offer freely programmable controllers that make it possible for OEMs to incorporate expansions and changes to machine functions without extensive, full machine redesigns. Our experienced engineering team can also integrate IO expansion modules for additional configurations that are reliable, flexible, and fully tested.

Camera Systems

Giving operators a full view of their machine surroundings.

Nothing beats operator safety in terms of design priority. And one of the best ways to decrease operator risk is to give them up to 360 degrees of visibility, easily accessed through a central display in the cab. Not only does this reduce blind spots and injuries, but simultaneously increases machine uptime and improves operator efficiency.





SOLUTIONS THAT INCREASE: FUNCTIONALITY

Integrating Multiple Machine Controls to Create a Cohesive Operator Experience

In order to get the most out of your machine, every individual component must be designed and integrated in a way to best communicate and work with all of the others. Heavy equipment operators need to always have an eye on machine and function status while simultaneously maximizing their productivity. We are able to work with all different industry leading component providers to get you the exact solution desired for your machine.

Multiple Displays

Some may say that receiving a lot of information through multiple displays is a distraction, but often the ability to get real time feedback as an operator performs key machine functions allows them to increase productivity and become more in tune with the machine. Additionally, being in the dark on machine issues like component failure, overheating, or others, they risk unintentionally doing long term damage to the equipment.

Safety Feature Integration

Depending on the types of controls in your machine, there are a variety of different safety features at an OEMs disposal. If your machine has significant blind spots or visibility issues, a safety camera system can be integrated into a display system. Or perhaps you want to set up custom alerts for different hydraulic component issues to avoid machine failure or accidents. By designing your entire control system, we can easily integrate whatever safety features your electronic controls will allow.

Ergonomic Components

A much more complex topic than sometimes thought, ergonomics is the most important consideration when creating custom controls. Done correctly, ergonomic controls can significantly increase operator productivity, but when overlooked, it can lead to operator fatigue, increased human error, accidents, and notably lower output.

OEM Branding and Programming

Consistent branding across multiple product lines is a great way to increase brand awareness and visibility for OEMs. But that can be a challenge while simultaneously trying to provide a diverse product offering for your customers. We can utilize custom control decals, OEM display programming elements, as well as numerous others steps to maintain a consistent look and feel across your machine line, helping to cultivate brand recognition.

SOLUTIONS THAT ARE:

INNOVATIVE

Both in Machine Design & Day-to-Day Operation

IOT and smart machinery are no longer simply buzzwords to show potential equipment innovation. The ability to remotely program, monitor, and troubleshoot a machine has become prevalent enough that if an OEM is not using these tools, they are missing out on significant benefits and real resource optimization. When an OEM dedicates a specific individual within an organization to help develop & monitor IOT tools integrated by GS Global Resources, these tools are able to evolve from organizational investment to a true value stream.

Currently, manpower is one of the most valuable and scarce resources for any industry. OEMs can capitalize on that resource by incorporating IOT-enabled devices, such as the scalable control box pictured here. This box allows the OEM to utilize numerous remote tools, without ever sending a technician or specialist into the field. In the case of a machine malfunction, an engineer will be able to remotely troubleshoot, getting resolution much faster and while optimizing invaluable manpower. That same engineer would have the ability to remotely send program updates to a machine, rather than have actual boots on the ground. By utilizing remote monitoring diagnostics, OEMs can greatly decrease troubleshooting time.

Other IOT-enabled controls can also proactively tell OEMs and operators if a machine component is either malfunctioning in any way or is in need of replacement. For example, for a particularly rugged application like what is pictured to the right, a vibration detector can be installed, which will send an alert if it detects excessive vibration, meaning that its bearing need replacing. These types of predictive maintenance measures are applicable for many machine components. Custom alerts can be programmed for specific machine parts, when they need replacement and creating an easy order process, based on time, duty cycle, etc., hopefully solving issues before they arise. Additionally, preventative measures can be taken to alert the operator to machine issues, including component failure or signs of future failure, and address situations that could lead to total machine failure, avoiding potential downtime and repair costs.

These tools and features have benefits and effects on OEMs in almost every aspect. Not only can it, as previously stated, significantly improve efficiency, particularly for small and mid-sized OEMs, but can positively impact direct sales while simultaneously avoiding major machine issues. Ultimately, OEMs who wish to compete with major industry players cannot afford to overlook the advantages and benefits of utilizing smart machine controls and predictive maintenance, as the overall effect on productivity, efficiency, and ROI will only continue to increase as time goes on.



By utilizing IOT-enabled controls, OEMs can greatly decrease troubleshooting time.



SOLUTIONS THAT SUPPORT: ELECTRIFICATION

Moving to the next phase in industrial power

While hydraulic components are still a necessary aspect of machine power, the future of heavy equipment will continue to demand more high-efficiency, low maintenance motion control system. OEMs must undertake comprehensive machine analysis to identify opportunities to integrate electronic components. Doing this whenever possible will provide a more precise, compact option that decreases installation, reduces energy costs, and minimize fuel and oil use.

There are a few proven ways that manufacturers can start changing out their hydraulic components. The simplest, most proven method is to utilize linear actuators, rather than hydraulic cylinders. Electronic sensors constantly read position and communicate force based on the current being used. The control system monitors this current and stops the function before any damage is done.

Take, for example, the concrete screed machine pictured here. Aside from the real time feedback on position, speed, and other safety-related information, with an integrated linear actuator controlling each wheel height, an operator is able to achieve a level of smooth precision in a relatively harsh environment where cylinders were previously viewed as the sole option.

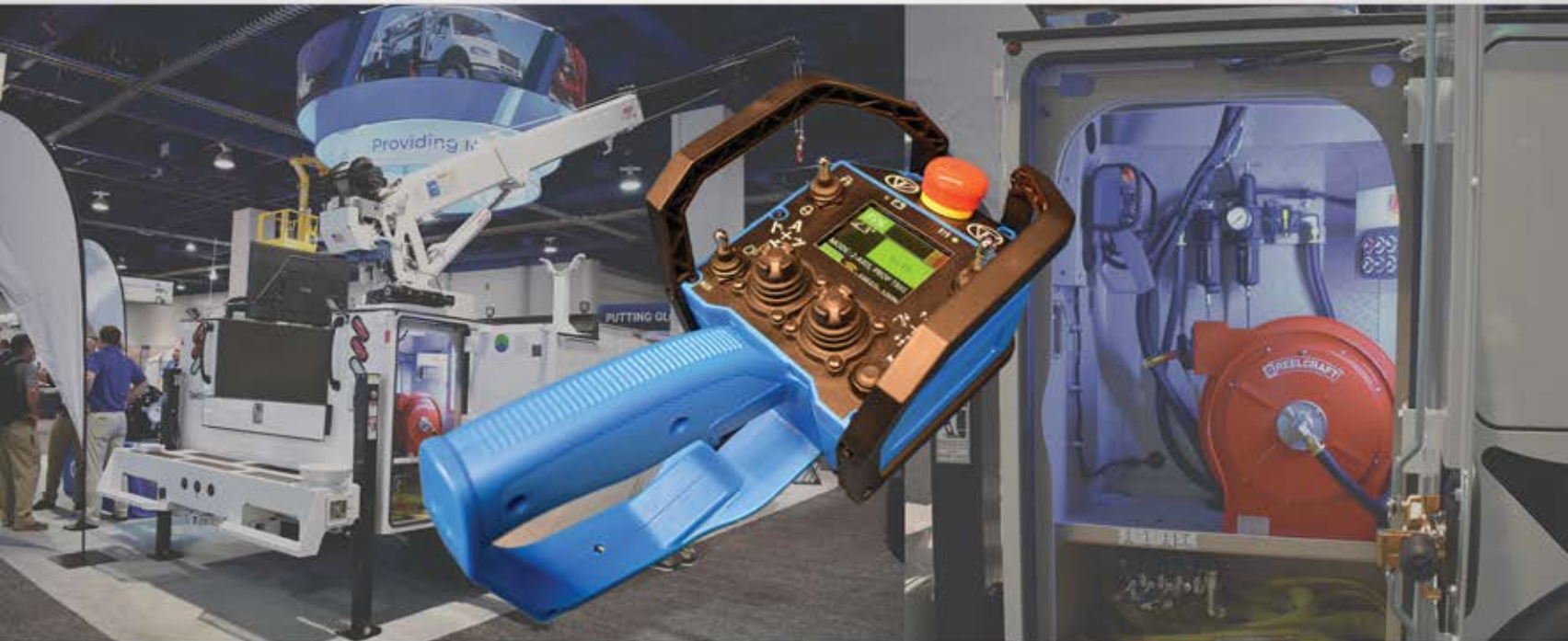
In this and other exacting or hyper specific machine control functions, swapping out hydraulics for more controllable and programmable electronic components is an effective and pragmatic way to move toward electrified machinery. For many OEMs, hydraulics are still necessary for the brunt of machine power. But by taking similar steps to what we previously outlined here, you can prepare your machine for the next phase of heavy equipment electrification. After a thorough analysis of your machine's application and environment, our experienced, forward-thinking engineering team can develop a plan to help move your machine into the age of smarter equipment.

ABOUT GS GLOBAL RESOURCES

GS Global Resources is the foremost machine performance resource. We are trusted by the world's most recognizable OEMs who demand a competitive advantage from every solution. Our integrated application solutions perform for the life of the machine, and for the lives of the people who touch it.

From system and component design to production and market support, GS Global Resources helps OEMs interpret, adapt, and adopt technology.

Our leading engineering minds in hydraulic, electronic, mechanical and software applications simplify the complex. We use innovative & reliable technologies to speed solutions to market. Whether reacting to market forces or changing markets altogether, GS Global Resources is essential to achieving total machine performance.



CONTACT

Please visit GSGlobalResources.com or contact us directly for more information. Our dedicated team of long-term, invested employees look forward to working with you.

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