



**191 W James Dr
St. Rose, LA 70087
504-620-9800 x1020
504-620-9801 (fax)
www.emi-marine.com**

Integrated Dynamic Positioning System (I-DPS-1) System Functionality Comparison Matrix

The following basic information is germane to the comparison:

- The algorithms used in the EMI system are similar to those used in the competitors systems and the mathematics of dynamic positioning is not “complex” as our competitors would ask you to believe. It is simple PID control logic taught in graduate level electrical engineering courses at all major universities.
- The major effort in the program development was the interface to the control surfaces and the graphical user man-machine interface. In the EMI design phase, the goal was to make the program simple and easy to use.
- A considerable number of enhancements were added to provide the vessel Captain’s additional capability at no additional cost.

EMI feels strongly that we provide a comparable solution to the DP problem and an enhanced system that should be carefully compared to our competitors.

Furthermore, we believe that we are the **only DP vendor to be able to provide a fully integrated system of DPS, steering and engine controls**, thereby eliminating the need for multiple technicians during any type of DP problem.

To assist in this comparison, EMI is providing a matrix below to allow for the analysis of the EMI system as compared to a typical competitor’s DPS-1 system. Since we are not experts in our competitors systems, we can provide generic information typical of their systems. Using proposals from our competitors, this matrix would allow you to insert their respective specific information in their proposal to gain a true comparison of what the owner receives for their investment and which system provides the greatest value.

DPS-1 Functional Comparison Matrix

<i>Attribute</i>	<i>EMI DPS-1</i>	<i>Typical Competitor DPS-1</i>
Integrated System	EMI can provide a <u>fully integrated system</u> with EMI DPS, EMI Steering and EMI Engine Controls	Customer must select other <u>vendors</u> not associated with DPS for steering and engine controls
Basic System	<u>Two Full DPS systems.</u> 15” Flat panel display on forward and aft consoles with identical functions. Both have automated joystick functions. <ul style="list-style-type: none"> • <u>Full Redundancy of Automatic DP</u> 	One full <u>DPS</u> on aft console with automated joystick only on forward console <ul style="list-style-type: none"> • <u>No Redundancy of Automatic DP</u>

<i>Attribute</i>	<i>EMI DPS-1</i>	<i>Typical Competitor DPS-1</i>
Hardware	All ABS approved hardware – uses ABS classed computers/flatpanel displays and SIEMENS Type Approved components	All ABS approved hardware – specific type varies between systems
Software	Open Architecture allows software to reside on any current computer platform. Linux Operating System and Java code easily upgradable. <ul style="list-style-type: none"> User desired changes easily accomplished. 	Microprocessor or PLC Based depending on manufacturer. <ul style="list-style-type: none"> User desired changes difficult and expensive to accomplish.
Operational Modes	OFF (with nav displays – see below) Hold Heading (Autopilot) Joystick Dynamic Positioning ROV Following	OFF (no functions) Hold Heading (Autopilot) Joystick Dynamic Positioning ROV Following
Non-DPS OFF Mode	Both fwd and aft console displays act as navigational tool with Gyro Heading Repeater, Wind Spd/Dir and Lat/Long displayed in OFF Mode	No functions in OFF Mode
Pitch/Roll and List/Trim Display	Available in SIGNAL MONITOR Mode as real time pitch/roll and average list/trim – aids in vessel loading at rig	Not Included
Remote Diagnostics	Links with owner provided satellite or cellular comms for initial remote problem evaluation by EMI program troubleshooters onshore	Not Included but optional by some vendors at added cost
DP Selector Switch	This is major effort to interface all control surfaces. Design and manufacture included with all EMI integrated systems	Generally not included due to integration requirements. Additional cost can be up to \$10K or more for DPS-1
Systems Integration	DP vendor must closely integrate with thruster vendors to get complete set of drawings – EMI includes this as a service at no additional cost	Generally Not Included – Will add complexity for shipyard or owner's Project Manager. Could result in additional cost of about \$10K or more
Vessel Installation	15" Touchscreen Display is generally integrated into the bridge console as a flush or swivel mount. Computers are in an enclosure under the console or in a nearby room. Minimal intrusion into the pilothouse.	Generally available only installed in <u>large self-enclosed console</u> which takes up a large space in the pilothouse. Cannot be broken down for display only. Entire console must be integrated into the control station. Could be large disruption for backfit.

<i>Attribute</i>	<i>EMI DPS-1</i>	<i>Typical Competitor DPS-1</i>
Parts Availability	Uses standard marine computers / displays and SIEMENS products all available worldwide. No proprietary hardware.	Level of availability not known. Some components in some systems are proprietary
Software Upgrades	No-cost upgrades for 3 years – owner pays for travel/perdiem to vessel only.	Unknown if any are provided.
Service Support	Local New Orleans with worldwide travel availability	Generally Houston, but some vendors provide local service. All have worldwide travel availability
Service Support Cost	Probably significantly less. Current DP rate is \$75/hr. For integrated system, only EMI needs to be called out.	
Training	System designed for Simplicity in use. Minimal training required. Conducted onboard vessel or at EMI system simulator in New Orleans. If full DP Operator certification is required then a licensed school is necessary in Houston.	Required training in Houston 4-10 days for certification and system understanding.
Installation Cable and Labor Costs	EMI is PLC based system thereby greatly reducing cabling requirements from pilothouse to the engine room and for interconnection of components. Reduces labor required for termination.	Microprocessor based system require significantly more cable from engine room to the pilothouse thereby increasing installation and labor costs.
Integration	The EMI system is designed to make is easy to integrate control surfaces directly into the DP to further decrease cable run requirements. EMI integrates our steering and engine controls into the DP system directly.	Generally requires integration agent other than the DP manufacturer at additional cost. Steering and Engine Control vendor must be involved with all decision processes.
Country Supplier	U.S. Designed and manufactured	All foreign design and manufactured
Size of Company	EMI is a small manufacturing business that can easily make user desired customized changes at minimal cost impact. EMI, for 25 years, has had an excellent reputation of providing equipment support.	All competitors are large companies with significant structure making change difficult and expensive.

<i>Attribute</i>	<i>EMI DPS-1</i>	<i>Typical Competitor DPS-1</i>
Checkout/Seatrials	Fully Included in overall price	Generally not included and can be large added cost in excess of \$10-20K.
Price	Significantly less when all functions and additional capabilities are equally compared	

EMI has shown ourselves to be a leader in innovation and have continuously upgraded our products to retain our competitive edge in the marine industry market. We have done this while always maintaining our concern for the customer in ensuring that we provide the best product support and service.

To ensure continued growth capability, EMI has recently moved into a new purpose-built 24,000 ft² facility in the James Industrial Park in St. Rose. EMI has also been designated a **SIEMENS SOLUTION PROVIDER** for the marine industry and is now providing full automation systems to the marine industry. It is our intent to remain competitive and to provide our customers the best products and service at the best price.