



## TECHNICAL ARTICLE

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### **Macro motion control and drive solutions meet the stringent demands of offshore applications**

*For offshore OEMs, the space, cost, reliability and performance benefits of single supplier, multiple technology integrated solutions represent a sensible approach in extreme environments*

***Nigel Smith, Product Sales Manager, Parker Hannifin***

*The harsh conditions and hazardous environments associated with the offshore industry mean that technology tends to be driven by the demands of robustness, reliability and safety, all of which tend towards technically proven solutions. These conservative pressures work against the constant need to adopt technologies which increase output or maintain a technical lead in ever more demanding situations.*

#### **Comparing the needs of different sectors**

If this is compared with other market sectors and the issues that drive the adoption of technology, some interesting differences emerge.

In the Science and technology sectors, technical lead and capability are of pre-eminent importance. Suppliers of motion and control technologies need to have products and solutions capable of delivering, performance, accuracy and a high level feedback. Projects may be years in duration and are often highly speculative and targeted at a small, niche customer base. The consequences of short term down-time are of limited significance in comparison with the need for innovative experimentation.

The manufacturing and production sector meanwhile is driven by the cost of production. In developed countries highly automated output may ensure a quality and cost lead over competitors who have tended towards lower levels of automation. The need to adopt control solutions with high levels of output, cost competitiveness reliability and availability are the key drivers.

Experience shows that the automation sector is generally keen to access technologies used in science and research, but frequently demands lower costs, intuitive operator interfaces and lead times associated with the demands of their market.

### **Migrating technology to offshore applications**

In the offshore industry, the requirement for high level system control capability used in monitoring, actuation and positioning or feed operations is driven by the need for technical solutions to meet the evolving challenges faced by the industry.

Many technologies from the Science, Construction and Industrial Automation sectors have obvious benefits in the offshore industry if successfully applied. Some examples of this are:

- Pneumatic systems, offering low cost, simple and relatively safe process and actuation control
- Robotic Linear actuation enabling intelligent control and actuation of the smallest manipulator to a complete drilling rig
- Variable speed drive technology, where motor control or the application expertise gained in web and film winding can be applied to marine, subsea and offshore applications

The challenge though is to ensure that these technologies remain fit for purpose when transferred to the offshore industry with its demanding, often remote, operating environment and extremes of temperature, depth and pressure. Suppliers need to ensure that products and solutions meet the challenges associated with safety, reliability and robustness required throughout the industry. If these challenges are met, the real benefits of migrating technologies and solutions between different market sectors can be fully realised. Some example could be:

### **Integrating servo control solutions from electromechanical systems into hydraulic actuation**

Most industrial screw or belt driven mechanical actuators would not easily comply with ATEX standards or be made of materials suitable for the extreme corrosive environments typical in offshore applications. But integration of industrial servo drives with hydraulic proportional control and suitable feedback technologies gives integrators the ability to offer high level motion control normally associated with industrial robotics to even the largest positioning system.

### **Mixing and matching technologies**

The benefits of variable speed drives have long been understood; capable of accurate motor speed control of fans pumps winches and winders and process control equipment, energy savings benefits have been realised in many applications.

Suppliers able to offer both hydraulic and drive solutions can support OEMs in adopting simpler, more tolerant fixed displacement pump solutions for power-packs, that offer the dynamic performance and capability normally associated with complex variable displacement pump solutions. To the end customer, further operation cost benefits in terms of space savings, reduced

energy consumption, low noise and an extended interval between maintenance may also be possible.

### **The benefits of multiple technologies and one supplier.**

Whilst many of the technologies may be available from multiple suppliers. Manufactures such as Parker Hannifin who are able to offer motion and control capability across all of these technologies can be a source of an elegant, integrated solution that gives a host of system benefits. These can include:

- Reduced assembly time that results from a supplier who can offer a large, single sub-assembly for installation as opposed to individual drives, motors, actuators etc. that need to be connected in-situ and tested before use
- Reduced pipework and potential leak paths as a consequence of an optimised integrated design that minimises interconnects and complexity
- The same carefully thought out integrated solution should also lead to overall space savings; Parker Hannifin has, in many applications, achieved valuable space savings of over 25% compared to a solution that draws individual parts from multiple suppliers for assembly by the OEM or an appointed specialist sub-contractor
- Better guarantees of functionality and reliability in the extreme operating environments typical in offshore installations

Working with manufacturers and Integration partners who offer bespoke macro solutions allows end customers to focus on their own areas of speciality and source modular, integrated assemblies that contain multiple technologies from specialists in those particular areas. The resultant space, cost and assembly time savings coupled with enhanced reliability and performance fit well with the very demanding needs of offshore applications.

### **About Parker Hannifin Corporation**

With annual sales exceeding \$13 billion in fiscal year 2012, Parker Hannifin is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. The company employs approximately 60,000 people in 48 countries around the world. Parker has increased its annual dividends paid to shareholders for 56 consecutive fiscal years, among the top five longest-running dividend-increase records in the S&P 500 index. For more information, visit the company's web site at [www.parker.com](http://www.parker.com), or its investor information web site at [www.phstock.com](http://www.phstock.com).

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