



MOTOR-MOUNTED DRIVES

KEY CONSIDERATIONS



INTRODUCTION

Motor-mounted and wall-mounted variable speed drives (VSDs) integrate intelligent control to manage single and multi-pump systems and are widely used in pump control applications. Common examples include motor-mounted solutions from manufacturers such as Grundfos, Wilo, Vasco and Xylem, alongside wall-mounted drives like ABB's ACQ580 that incorporate intelligent pump control functionality.

While these approaches are well established, the way control is implemented, has a direct impact on system complexity, commissioning effort, serviceability, and long-term cost. These factors are not always obvious during early design decisions but become increasingly significant as systems are manufactured, installed, and maintained over time.

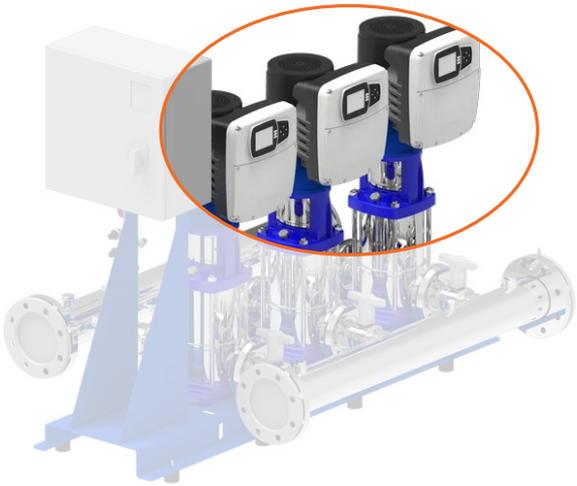
When specifying pump control architecture, there are generally two main system approaches available:

Standalone Distributed Drive Control - where intelligence is embedded within motor-mounted or wall-mounted drives, specific for each motor or pump.

Centralised or Hybrid Panel-Based Control - where system logic and power distribution are managed within a single dedicated control panel.

This paper examines both approaches and outlines the practical implications of each across the full project lifecycle.

STANDALONE DISTRIBUTED MOTOR-MOUNTED DRIVES



PERCEIVED ADVANTAGES

Motor-mounted drives are often selected early in the design process due to their compact form factor and the perception of reduced system complexity. In certain applications, they can offer practical benefits.

These include a reduced footprint in small pump rooms where space constraints limit the use of separate control equipment. Motor-mounted configurations can also allow additional drives to be added incrementally as systems expand.

Each pump is typically fitted with its own transducer, which is sometimes interpreted as providing redundancy through distributed sensing. Some platforms also incorporate features such as suction pressure inputs or flow-based setpoint adjustment to accommodate sites with variable mains pressure.

PRACTICAL LIMITATIONS

In practice, motor-mounted drive systems can introduce challenges that are often underestimated during specification and design.

Customers or OEMs are typically required to design, manufacture, and wire their own power distribution methodology. Programming and control interfaces can be time-consuming and complex to configure, for example, on small LCD screens with limited buttons to navigate the options and settings. These systems are not always intuitive to set up, increasing the risk of commissioning errors.

Additional workshop floor space and staff time are required to assemble, test, and prepare pump skids. Warranty risks may arise if electricians need to access internal components. Managing multiple components also increases inventory requirements, compliance obligations and record-keeping.

As a result, pump skids often remain in the workshop for extended periods, tying up both labour and valuable floor space prior to installation.

CENTRALISED OR HYBRID PANEL-BASED CONTROL

MATElec Australia offers two panel-based control configurations, depending on project requirements.

OPTION 1 - FPC-63X20/1 HYDROWHIZ VSD PANEL (FULLY INTEGRATED SYSTEM)

The HydroWHIZ VSD control panel is a complete, fully integrated pump control solution contained within a single enclosure – a neat, professional, and simpler alternative, whilst offering expandable functionality and clever operational benefits.

The system centralises power distribution and control logic, incorporating an integrated VSD, colour touchscreen interface, clearly labelled terminals, built-in communications for system integration, and comprehensive monitoring, alarm and protection functionality. MATElec systems utilise recognised industrial VSD platforms from established manufacturers, ensuring proven motor control performance, EMC compliance and long-term parts availability.

A centralised HMI interface also provides operators with a complete system overview, including pump status, alarms and operating conditions. This level of system visibility is difficult to achieve when programming multiple individual drives.

Having an integrated VSD inside removes the need for separate independent drives on each connected motor or pump in the system.

Each unit is fully wired, tested and compliant prior to delivery. Circuit breakers are incorporated to allow safe pump isolation during servicing. Cabinet heat loads are calculated and ventilation is matched to the application, with IP-rated options available where required. Mounting drives within the dedicated control enclosure also protects sensitive electronics from environmental factors such as heat, vibration, dust, moisture and UV exposure, conditions that can significantly shorten the service life of exposed motor-mounted drives.

The HydroWHIZ VSD panel can be mounted directly to the pump skid and configured for level, pressure or temperature-based applications.



ADVANCED MULTI-PUMP SYSTEMS – HYDROTOUCH

For applications requiring pump and sensor redundancy or advanced sequencing, the MATElec Australia HydroTOUCH control panel range provide a suitable solution and can be incorporated as part of the overall system architecture. HydroTOUCH delivers advanced control functionality, including dual-sensor capability with backup sensing, optimised multi-pump staging, enhanced alarm management, and clear visibility of Modbus communications for seamless system integration. Rather than assuming redundancy through distributed drives, redundancy is deliberately engineered within the system design. This integrated architecture delivers greater clarity, scalability, and long-term serviceability across the full lifecycle of the installation.

OPTION 2 - HYBRID PANEL WITH MOTOR-MOUNTED DRIVES

In some projects, motor-mounted drives are already specified or preferred. In these cases, MATElec Australia offers a hybrid panel solution through the HydroWHIZ motor-mounted control panel configuration. Under this approach, the VSD remains motor-mounted, while the control panel manages power distribution and centralises additional system control logic. Programming complexity is reduced and wiring is simplified, bringing greater structure and consistency to the overall installation.

This configuration provides improved organisation, clearer system architecture and enhanced protection compared to fully distributed or independent arrangements. The hybrid model is well suited to projects where motor-mounted drives form part of the specification, but additional control, coordination and system clarity are required.



COST: SHORT-TERM VS LONG-TERM REALITY

A common perception is that integrated MATElec Australia control solutions carry a higher upfront cost.

While individual motor-mounted components may appear cheaper when sourced separately, this view overlooks the broader lifecycle implications.

Labour time for assembly and wiring, workshop floor space constraints, project delays, compliance administration, and extended troubleshooting during commissioning and servicing all introduce measurable cost.

When total cost of ownership is properly considered, a complete MATElec Australia solution is not more expensive, and in many cases proves to be the more economical and efficient option over the life of the system.

SUMMARY & RECOMMENDATIONS

Motor-mounted drives have a place, but they are not always the most efficient, scalable, or cost-effective solution once real-world manufacturing, installation, and servicing requirements are taken into account.

MATElec Australia's centralised control architecture provides two structured pathways:

- A fully integrated HydroWHIZ VSD control system for maximum integration, lifecycle efficiency, and expandable functionality
- A hybrid panel solution for systems retaining motor-mounted drives

Both approaches centralise operation, commissioning and servicing complexity, improve serviceability and reduce long-term operational risk compared with fully distributed motor-mounted configurations.

COMMON QUESTIONS

Could it be that motor-mounted drives provide redundancy by having one input per drive?

Redundancy can be achieved more cost-effectively using a HydroTOUCH with a backup transducer, particularly on larger multi-pump systems.

Do all major players use motor-mounted drives?

Motor-mounted drives are not new, and many designs have been replicated over time by many major brands. Established practice does not always equate to optimisation. MATElec Australia's solutions are purpose-designed for Australian conditions and modern system expectations.