

Switching Hydraulic to Electromechanical Actuation

10 Reasons for the Transition

Hydraulically-driven actuators are increasingly being replaced by Electromechanical (EM) solutions. Industries where this transition is especially pronounced include aerospace, defense, robotics, factory

automation, automotive, marine, mobile off-highway and automated guided vehicles.

Here's the top 10 factors that have motivated this transition:

1. Hydraulic systems are larger and require more space than EM systems
2. EM systems have lower maintenance
3. EM systems have a higher MTBF (Mean Time between Failure) – less components and no high pressure vulnerabilities
4. EM systems are quieter – reducing audible noise is an important design criteria for the vast majority of applications
5. A typical EM system provides better control over the motion profile
6. Electric wires are significantly smaller, more flexible, and withstand higher temperatures – making them less of a “target” to get destroyed – think, for example, in a fighter jet
7. EM systems have become much more efficient and downsized into much smaller packages in recent years
8. EM systems are more readily available components – are usually in stock, or have a short lead time
9. EM systems are “portable” using battery power – dramatic improvements in battery efficiency in recent years has further enhanced EM effectiveness
10. The biggest problem with hydraulics is the fluid – it leaks, it's dirty, and it's hazardous – plus all the components required to make a functional system (hydraulic accumulator, motor-pump and associated plumbing) are hard to keep sealed – an EM system eliminates all these components, and the mess and risk that go with them

Why SEPAC Clutches/Brakes

SEPAC specializes in clutches and brakes for high-performance applications requiring customized actuation solutions. Dramatic advances in design engineering software and manufacturing techniques have contributed to a new level of clutch and brake performance far superior to products from the recent past.

For example, ten years ago, a tooth clutch would only be considered if the RPM was less than 3,600. Today, we manufacture tooth clutches that run at speeds over 10,000 RPM and power-off brakes that can handle speeds up to 20,000 RPM!

As engineers look to push systems to the edge of design limitations, EM systems will continue to get smaller and smaller. In stride with this trend, SEPAC has developed miniature tooth clutches and power off brakes slightly over one inch in diameter. These are ideally suited for today's compact, high-performance actuation requirements in medical, packaging, robotics, oil & gas, and many other market sectors.



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