Technical Bulletin
Select the Right Type of Actuator - Don't Let Hidden Operating Costs Sink Your Ship

More than the Initial Purchase Price . . .

When comparing different actuation technologies, equipment purchases are often decided based on initial up-front purchase cost. Ongoing operating costs can far exceed up-front purchase costs and over time have significant impact on a company's bottom line.

Evaluating the annual operating costs for different types of actuators provides a comprehensive picture of the Total Cost of Ownership. See how Kyntronics SMART Electro-Hydraulic Actuators (SHA) compare to traditional hydraulic power units (HPUs) with hydraulic cylinders.

Annual Operating Cost Comparison
Kyntronics SMART Electro-Hydraulic Actuator (SHA) vs. Traditional Hydraulic System (HPU)

Operating Cost Component	SHA	HPU	Assumptions / Cost Basis (April 2022)
Environmental			200 Gallon HPU Tank
			Hydraulic Fluid Index (HFI) = 4.1
			SHA is sealed - no fluid replacement or disposal is required
Oil Replenishment	$0	$30,400	$38/gal X 800 gallons (4:1 HFI)
Used Oil Disposal	$0	$16,000	$20/gal X 800 gallons (4:1 HFI)
Energy			SHA Uses Power on Demand
			30 HP Hydraulic Power Unit that Runs Continuously
			SHA is 70% efficient (based on Kyntronics testing)
			HPU 22% is efficient (based on IFPE paper)
Energy Usage	$966	$9,664	Using $0.10 per KWh (rates vary from - $0.08 to $0.19 per KWh)
Floor Space Utilization / Maintenance Time			SHA is All-In-One, no floor space required
Floor Space	$0	$2,000	HPU requires space of 10'x10' = 100 Sq-Ft @ $20 per sq-ft
			SHA @ 1 hr/week @ Labor $35/hr
Maintenance Time	$1,750	$5,250	HPU @ 3 hrs/week @ Labor $35/hr
Human Factor			HPU oil leaks create hazardous conditions and safety risk
			SHA is totally sealed, no oil leak risk
Time off / Medical / Legal	$0	$2,000	Lost days + Medical costs + Legal costs
Machine Downtime / Product Scrap			SHA is totally sealed, no oil leak risk, minimal downtime risk.
80% of unplanned machine downtime	$0	$10,000	$4k-$6k average downtime costs per incident.
is caused by contaminated lubricants			Assuming two downtime events.
Product Spoilage	$0	$10,000	1% scrap from product contamination due to leaky connections
Annual Operating Costs	**$2,716**	**$85,314**	**An $82,598 Annual Savings Opportunity!**

See industry references on the next page for assumptions used in determining annual operating cost

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Traditional HPU with Hydraulic Cylinder

Kyntronics All-In-One SMART Electro-Hydraulic Actuator (SHA)

References:

The basis for several of the assumptions used in the previous annual operating cost table originate from Fluid Power Industry published statistics and sources noted below:

Drops - lost gallons / year

- Nearly 100 million gallons of hydraulic fluid is lost every year in North America
- Recent environmental studies show that a portion of this leaked fluid ends up in ground water, rivers, lakes, and in the soil itself, causing untold damage to the environment, fish and wildlife.

Energy Usage

- Studies reveal that efficiencies of industrial hydraulic systems range from <9% to 60% efficient, and average efficiency was 22%.

Oil Consumption / HFI - Costs

- A one drop / second hydraulic leak equates to nearly 405 gallons / year in lost fluid.
- The Average Hydraulic Fluid Index (HFI) [total fluid used / total site capacity] is ~4:1 in the US. Hydraulic Fluid should be changed every 6 months – used oil must be carefully disposed of.
- Every day in North America, a machine operator or technician slips and falls on the remnants of a leaking hydraulic system. Costs include: lost wages, medical expenses, workman's compensation claims, legal costs.

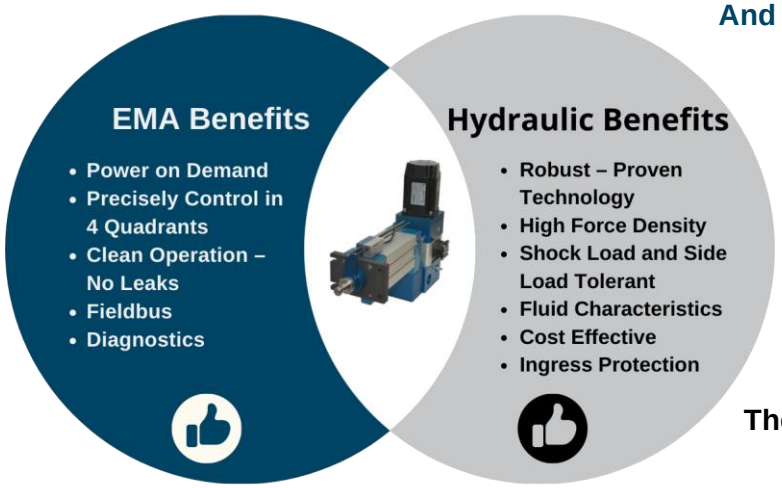
Cost-of-Downtime

- 80% of hydraulic equipment stoppages and component failures are caused by contaminated lubricants.
  - At $4,000 to $6,000 per minute cost for downtime, this equates to nearly $10 billion lost per year in unplanned downtime.

Until now, there were Two Actuation Options: Electro-Mechanical Actuators (EMAs) or Hydraulics

What if . . . You could combine the benefits of both . . .

And . . . Eliminate their challenges?



The Kyntronics SMART Electro-Hydraulic Actuator Accomplishes All This and More!

The SHA Supports Sustainable Manufacturing by reducing environmental risk, lowering energy consumption, improving employee safety, and reducing operating expenses

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Contact Kyntronics to find out how much you can save by converting from traditional hydraulics to the All-In-One SHA

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