



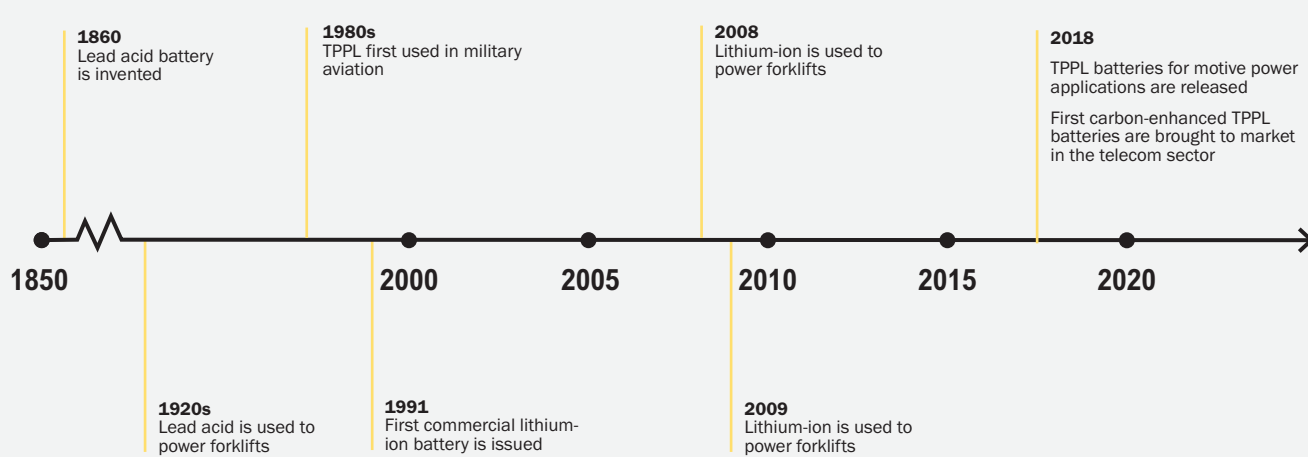
# FLEXIBILITY IS CHANGING THE WAY OPERATIONS MANAGE FORKLIFT MOTIVE POWER

Material handling operations must choose the forklift power source that best matches their unique characteristics – but we all know businesses aren't static. Your future could involve more intense forklift duty cycles, or perhaps you need to free up battery storage space for additional capacity. Forklift batteries must also be carefully managed, not only to minimize the time that equipment is unavailable while charging, but to protect long-term battery performance and longevity.

What should operations know to have the right battery type at their disposal and to keep batteries in good health?

## // The battery-electric landscape

For almost a century, using electric forklifts generally meant relying on traditional lead acid batteries. But advancements in both equipment and battery technology have expanded your options beyond lead acid to alternatives that improve performance and eliminate battery maintenance - including multiple types of lithium-ion and thin plate pure lead (TPPL).



## // How do the battery-electric options stack up?

BATTERY TYPE	EMISSIONS	SPACE REQUIREMENTS	MAINTENANCE	LOCAL UTILITY REQUIREMENTS	OPERATOR INVOLVEMENT	POWER IMPACT ON PRODUCTIVITY
LEAD ACID	None in operation, emits fumes that require ventilation during charging	Separate room, infrastructure often required for charging, changing and maintenance	Higher maintenance requirements compared to other electric options	Moderate electrical requirements, depending on fleet size	Complex, time-consuming maintenance, charging or changing	Diminishing power output as charge depletes
THIN PLATE PURE LEAD (TPPL)	No harmful emissions	No specialized changing or maintenance rooms required	No maintenance required, fast equalization	Moderate electrical requirements, depending on fleet size	Designed for opportunity charging; faster recharge than traditional lead acid	Slight power output decline as charge depletes
LITHIUM-ION	No harmful emissions	No specialized changing or maintenance rooms required	No maintenance or equalization required	More intense electrical grid burden, depending on fleet size and charge intervals	Designed for opportunity charging; faster recharge than lead acid	Consistent power delivery until full depletion

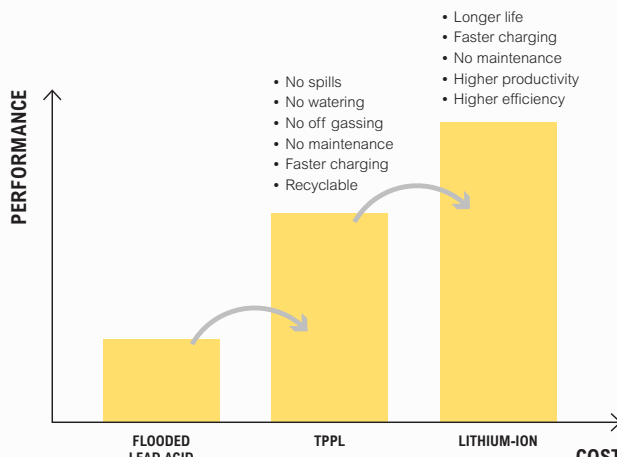


### What is TPPL?

This advanced battery technology maintains the advantages of traditional lead acid batteries but provides faster, more flexible charging, opportunity charging and maintenance-free upkeep.

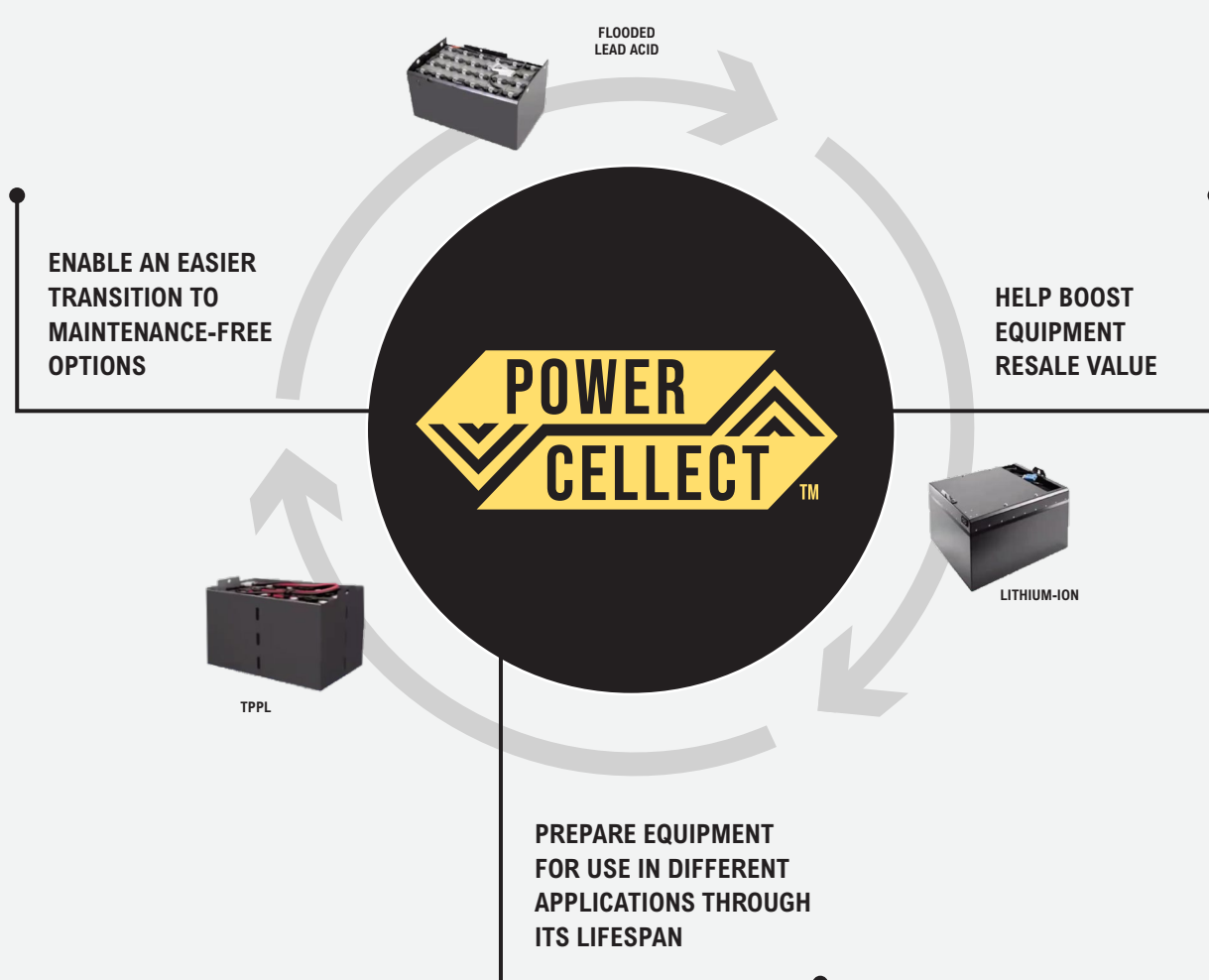
TPPL can be a particularly strong option for operations that don't have the high equipment runtimes necessary to justify an investment in lithium-ion but still:

- Have sustainability initiatives
- Would benefit from a maintenance-free battery



## // There is more flexibility now, too

Some new power solutions allow operations to choose the power source that's best for their operation now and secure the flexibility to change at any time, without replacing the entire fleet. This fluidity across battery types is particularly valuable because it can:



## // How a solution like this works

Optional package available when purchasing certain electric forklift models\*



Enables change between battery type without:

- ⊗ External accessories
- ⊗ Software downloads
- ⊗ Integrations

## // What do you need to look out for?

Information like battery state of charge is critical for managing battery health and longevity, but some manufacturers only provide this information on the truck's display for their own proprietary batteries - not for ones from third-party suppliers.

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