

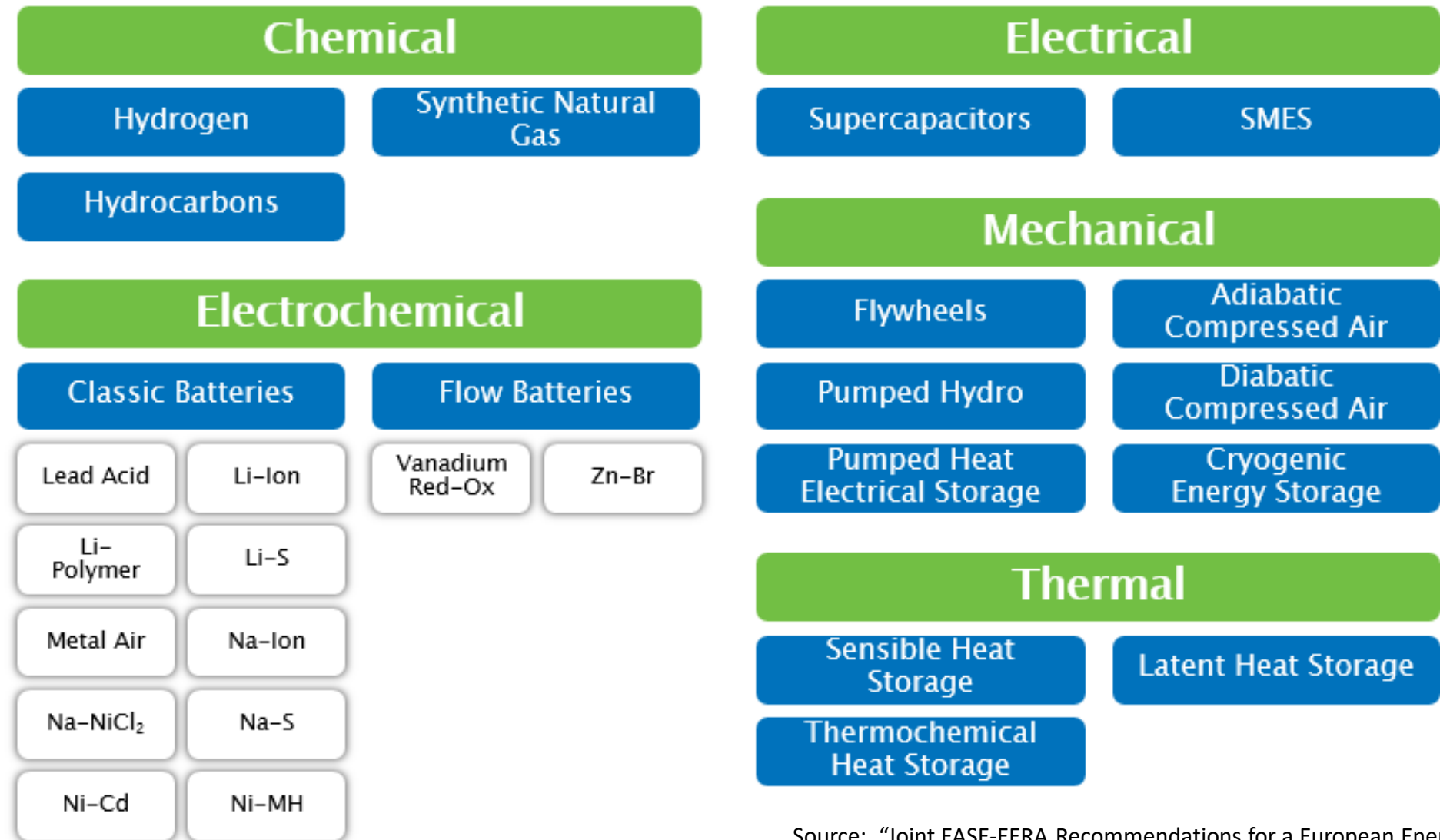
Intro to Energy Storage

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Energy storage technologies



Source: "Joint EASE-EERA Recommendations for a European Energy Storage Technology Development Roadmap Towards 2030 – Update" (Draft, 1/17)

Ways to use Energy Storage to Support Power Systems

Generation/Bulk Services	Ancillary Services	Transmission Infrastructure Services	Distribution Infrastructure Services	Customer Energy Management Services
Arbitrage	Primary frequency control	Transmission investment deferral	Capacity support	End-user peak shaving
Electric supply capacity	Secondary frequency control	Angular stability	Contingency grid support	Time-of-use energy cost management
Support to conventional generation	Tertiary frequency control	Transmission support	Distribution investment deferral	Particular requirements in power quality
Ancillary services RES support	Frequency stability of weak grids		Distribution power quality	Maximising self-production & self-consumption of electricity
Capacity firming	Black start		Dynamic, local voltage control	Demand charge management
Curtailement minimisation	Voltage support		Intentional islanding	Continuity of energy supply
Limitation of upstream disturbances	New ancillary services		Limitation of upstream disturbances	Limitation of upstream disturbances
			Reactive power compensation	Reactive power compensation
				EV integration

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