

FLOW BATTERIES

Vanadium Redox Flow Battery

WHAT IS FLOW BATTERY?

Vanadium redox flow battery is a new type of green electrochemical energy storage battery.

The positive electrode and negative electrode are stored in two electrolyte tanks, the pump drives the electrolyte into the stack.

Oxidation-reduction reactions are taking place at positive electrode side and negative electrode side simultaneously since there are active substances in electrolyte.

The output power of flow battery energy storage system depends on the power of stacks while the capacity depends on the volume of electrolyte.

BENEFITS OF FLOW BATTERY

- Better payback for large-scale projects
- No decay
- Long lifespan
- Incombustible
- Less maintenance
- High total lifecycle
- High depth of discharge
- More economic
- Highly customized

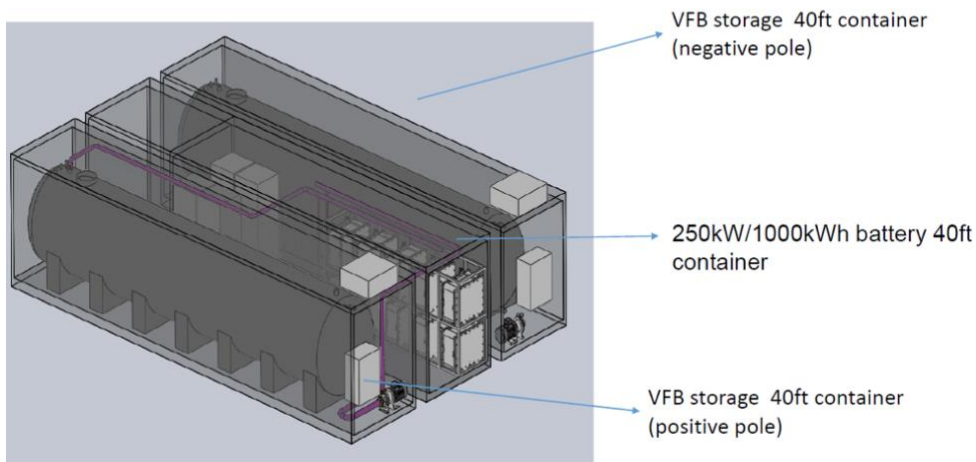
When a project is not suitable to use LFP solution, TROES will recommend flow battery solution as an alternative.



FLOW BATTERY VS LFP SPECIFICATIONS

	TROES 1C	Flow Battery
Material	LFP	Vanadium redox
C Rate	1C	Less than 1C
Temperature Range (°C)	0-45	-15-50
Efficiency (%)	98%	85%
Depth of Discharge (%)	90%	100%
Lifespan	10 years 6000 cycles	25 years 15000 cycles
Advantage	High energy density, quick response	Long life cycle, flexible layout, non-flammable
Application	Peak shaving, Back-up	Load balancing, UPS

250kW/1000kWh Vanadium Redox BESS Unit

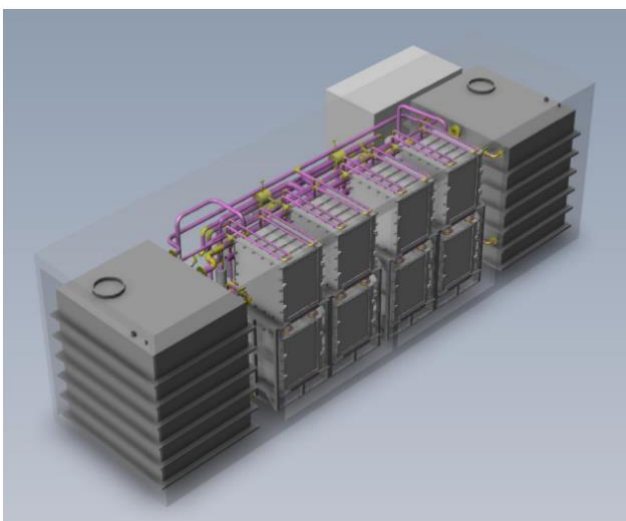
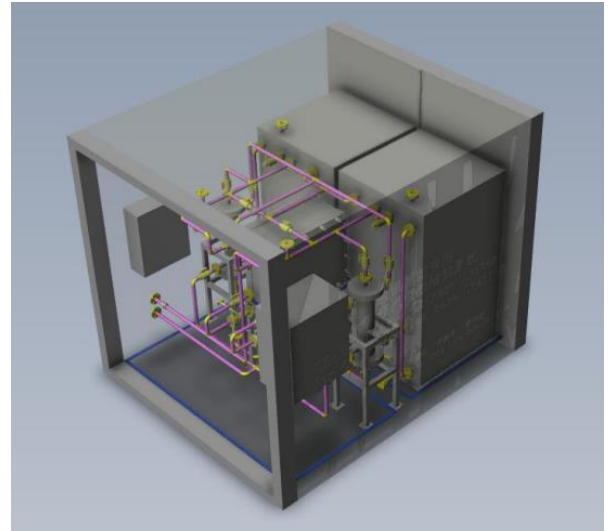


	Case Study	
	TROES 1C	Flow Battery
Power(kW)	50	
Energy(kWh)	600	
Dimension(L*W*H, mm)	6060*2440*2590	12190*7200*4000
Weight(t)	14	65
Energy Density (kWh/L)	0.35kWh/L	0.015~0.03kWh/L
Price(\$)(installation is excluded)	\$350~\$450/kWh	\$550~\$650/kWh



FLOW BATTERY SAMPLE

	Features
Name	Technical Property
Battery Material	Vanadium Flow
Rated Power	30 - 50 kW
Rated Capacity	30 - 100 kWh
DC Side Rated Voltage	48V/96V
Efficiency	70 - 85%
Operation Temperature	-30 - 50°C
Protection Level	IP54
Climate Control System	Industrial Level Air Conditioner
Dimensions L*W*H(mm)	2991*2438*2591 mm



	Features
Name	Technical Property
Battery Material	Vanadium Flow
Rated Power	125 - 250 kW
Rated Capacity	250 kWh (or customized)
DC Side Rated Voltage	520 - 850
Efficiency	70 - 85%
Operation Temperature	-30 - 50°C
Protection Level	IP54
Climate Control System	Industrial Level Air Conditioner
Dimensions L*W*H(mm)	9058*2438*2591 mm