Fuji Electric DC Quick Charger

Comparison of Gen 3 25kW and Gen 2 / Other 50 kW Chargers

Fuji Electric

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Product

The Fuji Electric Generation 3 DC Quick Charger features a scalable 12.5 kW Power Supply Architecture. This reduces the size and weight of the charger while providing a reliable 25kW Charge.

	25kW Fuji Electric Gen 3 DC Quick Charger 	50kW Fuji Electric Gen 2 DC Quick Charger and Others 	Significance
Price	$25,000 (standalone)	$35,000 to $60,000	Lower unit price improves business case for station owners
Size	1/3 Smaller than Gen 2	Larger	Easier to find appropriate installation locations
Weight	430 lb.	1,500 lb. to 2,000 lb.	Ease of installation, No special foundation required
Scalability	12.5 kW Power Supply Architecture	Isolation Transformer	Smaller building blocks allow for multiple charger sizes with common building blocks
Maintainability	40 lb. Power Supply	More than 500 lb. Transformer	Smaller building blocks make field service easier
Reliability	Proven design, used in high uptime server power supplies	Reliable design used in many applications	Product improvements are achieved without sacrificing product reliability

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Installation

	25kW Fuji Electric Gen 3 DC Quick Charger	50kW Fuji Electric Gen 2 DC Quick Charger and Others	Significance
Foundation / Preparation	No special foundation required, Standard concrete pad is adequate	Foundation prepared or validated for high pound per square foot devices	Some locations are not adequately prepared to support heavy devices with a small footprint
Placement	Basic equipment. Pallet Jack, Rollers, etc.	Crane, Fork Truck	Equipment use adds to installation costs
Electrical Wiring	Reduced based on 25kW Max Output	Increased based on 50kW Max Output	Electrical components to support 50kW Output increase installation costs
Supply Power	Charger – 208V 3 phase Input Building with 480V supply - 480V to 208V about **$700**	Charger - 480V 3 phase Input Building with 208V Supply 208V to 480V about **$4000**	Installation sites with 480V available power is easily adjusted to 208V input. Sites with 208V available power is costly to step up to 480V
Site Selection	30kVA available power	60kVA available power (typical 100,000 sq. ft. office and warehouse peaks at about 60kVA)	Sites with 60kVA available power are hard to find and can lengthen the permitting time

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Operation

	25kW Fuji Electric Gen 3 DC Quick Charger	50kW Fuji Electric Gen 2 DC Quick Charger and Others	Significance
Usage Charge (kWh)	Based on usage	Based on usage	Essentially the same for all products based on number of cars charged
Demand Charges (kW)	25kW Max Charger Output. Output can be limited based on local demand rate structure	50kW Max Charger Output	Demand Charges are $28 per kW in some areas. Demand charges start at 19kW in some areas. This is within the working range of a 25kW Charger
Payment Options	Chargepoint integration available	Standalone or proprietary payment method	Chargepoint is the leading network and provides for instant revenue generation from charger use
Charge Time	Typically 7 to 10 minutes longer than 50kW Chargers	Typically charges at 25kW rate after 7 to 10 minutes	*Please see next slide for explanation*

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Cost Summary

			Over 10 Years	
	25kW	50kW	25kW	50kW
Charger Cost	$25,000	$40,000	$25,000	$40,000
Install Cost (wiring)	$20,000	$20,000	$20,000	$20,000
Install Cost (transformer)	$700	$4,000	$700	$4,000
Install Cost (Crane Rental)	$0	$1,000	$0	$1,000
Operating Cost (kWh)	same	same	same	same
Demand Cost ($28/kW)	$700	$1,400	$84,000	$168,000
Total			$129,700	$233,000

Long-term savings will be more significant than short-term savings (i.e. Installation-related savings) due to the reduced Demand Charges associated with 25kW charging

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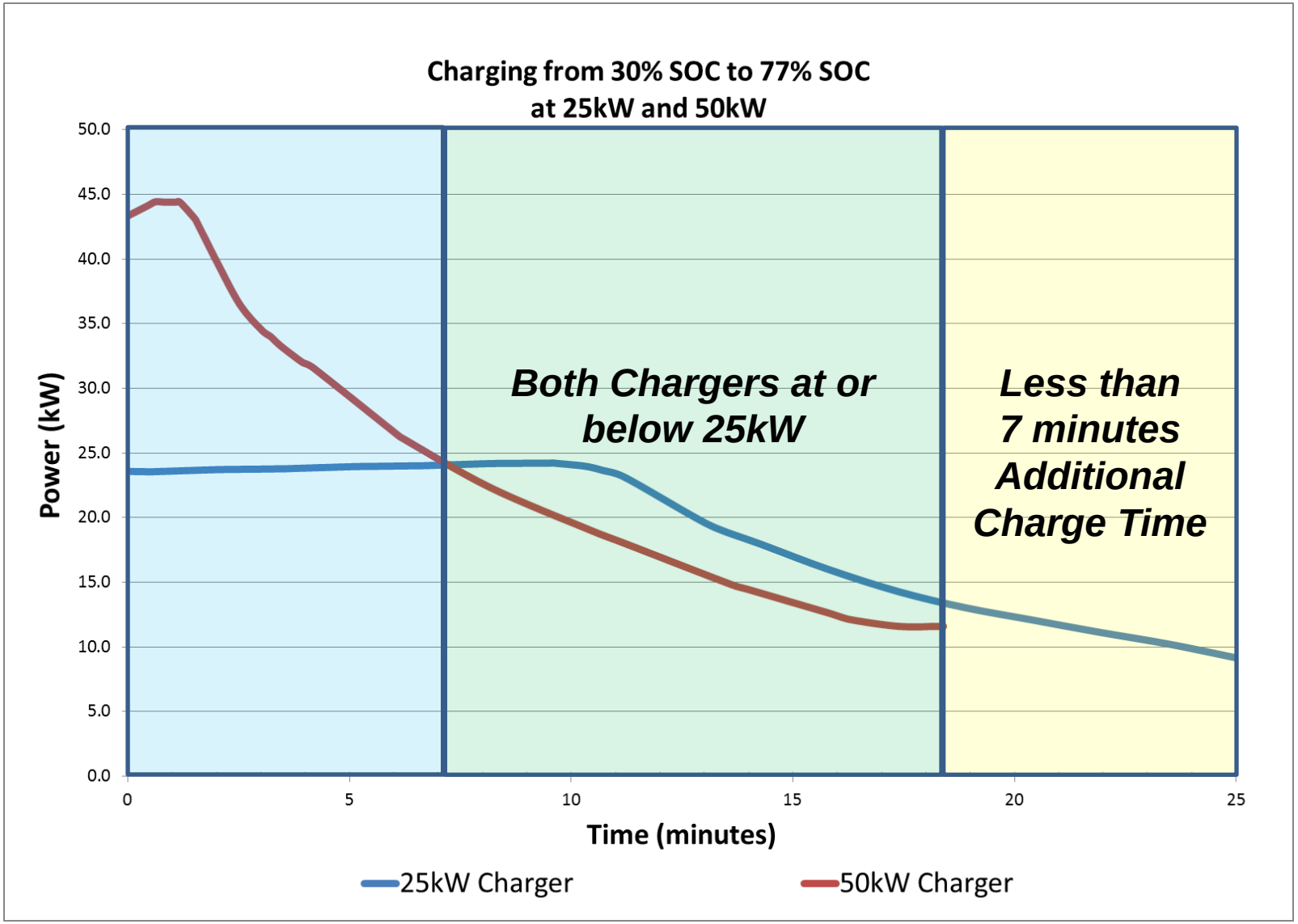
Example A – Popular EV Auto Manufacturer



Study Conducted by Larry Butkovich, GM of EV Systems Dept. for FEA

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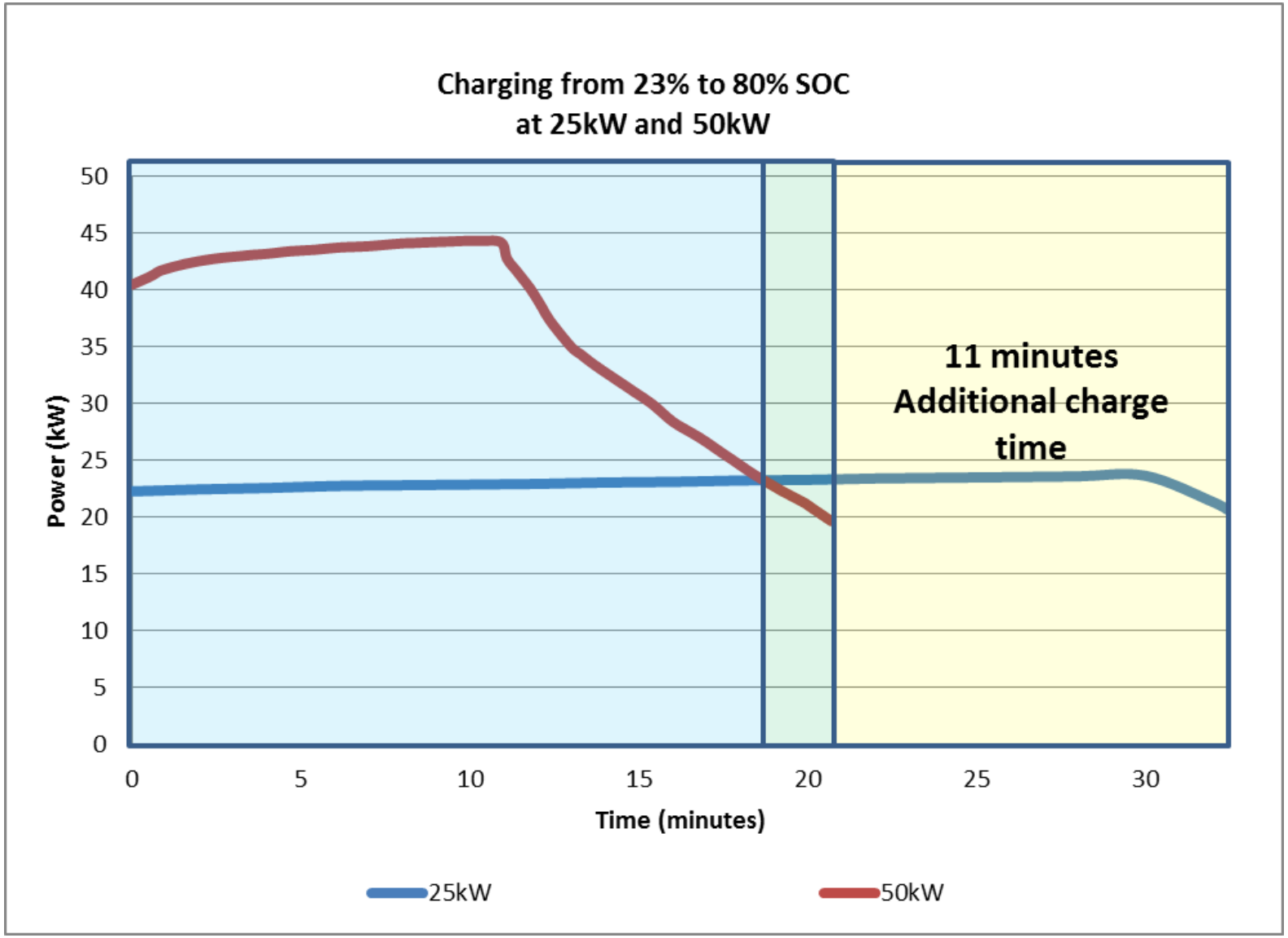
Example B – Popular EV Auto Manufacturer



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Upgradability – SAE / CHAdeMO

Significant demand does and will exist for CHAdeMO Chargers. Therefore, the right size infrastructure should be put in place to support this demand. SAE chargers should be deployed as driven by the market and should not influence the decision to support current CHAdeMO demand.

	CHAdeMO	*SAE*	*Significance*
Vehicle Sales	More than 10,000	0	Significant demand exists for CHAdeMO charging infrastructure
Deployment Plan	Now	2013/2014	The demand for CHAdeMO infrastructure exists now and increases as more vehicles are sold
Expected Vehicle Life	More than 10 years	More than 10 years	Vehicles supporting the CHAdeMO standard will require Fast Charging for the next 10 years
Technology Development	Rapidly developing	Rapidly developing	Charging technology will be significantly improved by the time the SAE standard reaches the market

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Summary

- The 25kW Gen 3 DC Quick Charger from Fuji Electric offers costs savings in terms of product, installation and operating costs over other 50kW charging products
- Increases in charge time between 25kW and 50kW is not significant in real world scenarios
- At current CHAdeMO vehicle sales levels, there is a demand for CHAdeMO Quick Charging that is not influenced by any potential standard changes
- The 25kW Gen 3 DC Quick Charger from Fuji Electric offers the right size solution for today's Quick Charging needs

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