EV charging

On-line event opening

Kari Tammi
2021

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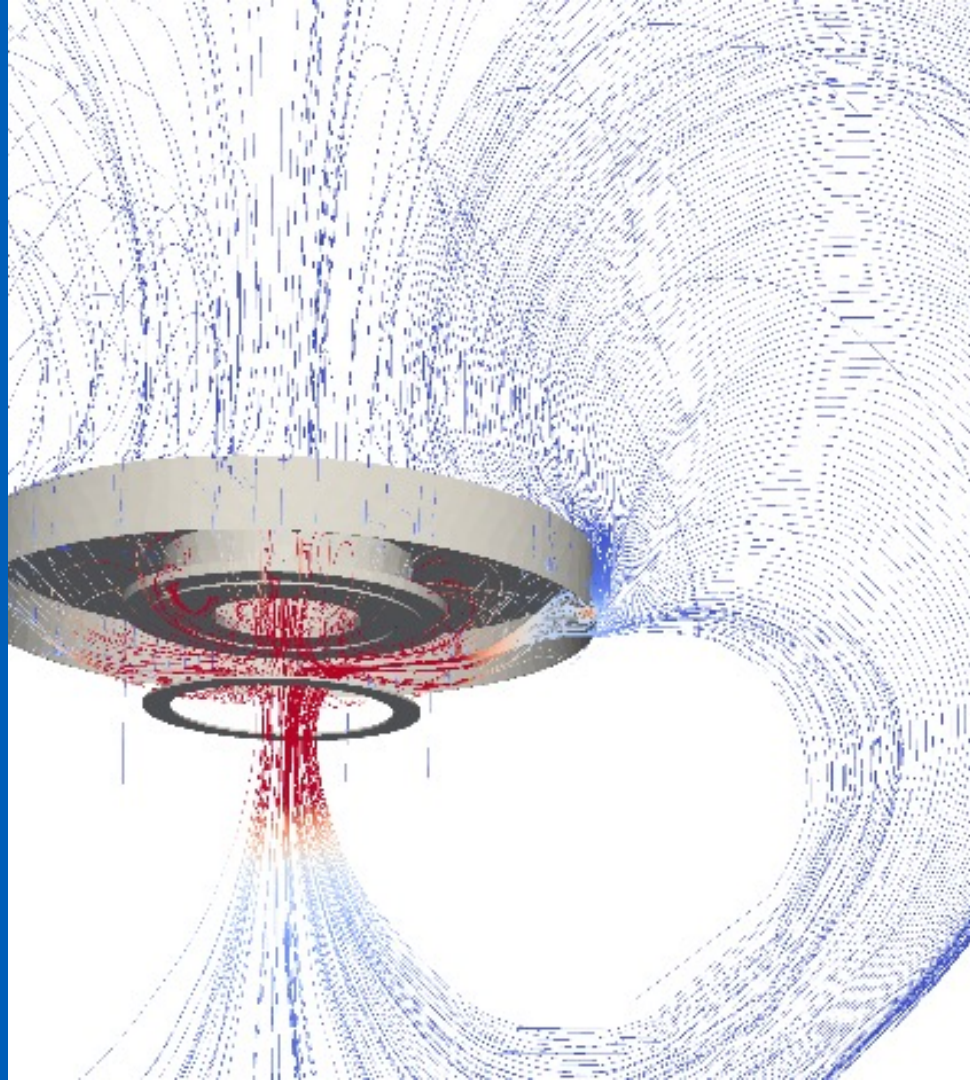
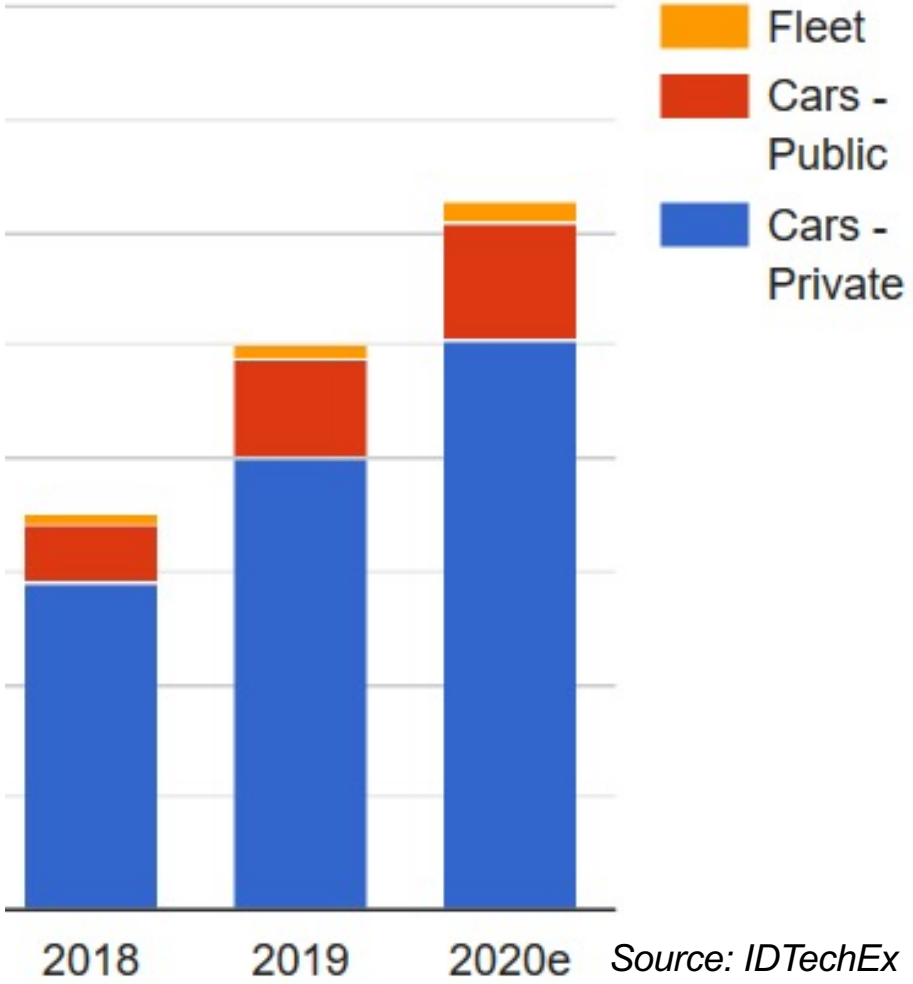


Chargers globally

About 6 million chargers installed in 2020

10 MW 100 % renewable charging site @ UK

https://www.carsupermarket.com/news/oxford-charging-station-to-be-europes-most-powerful



Source: IDTechEx

What is sufficiently fast charging?

		Minimum Charging Time (minutes)		
Year	Global Average Car Battery Size	20kW AC	120kW DC	300kW DC
2019	40kWh	120 minutes	20 minutes	8 minutes
2031	70kWh	210 minutes	35 minutes	14 minutes
2041	100kWh	300 minutes	50 minutes	20 minutes
2021 cost		$1000 - $2000	$100,000 - $200,000	$300,000+

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Heavy vehicles

MW scale power required for trucks

Busses OK with < 1 MW

High power requires automation

Where to locate chargers?

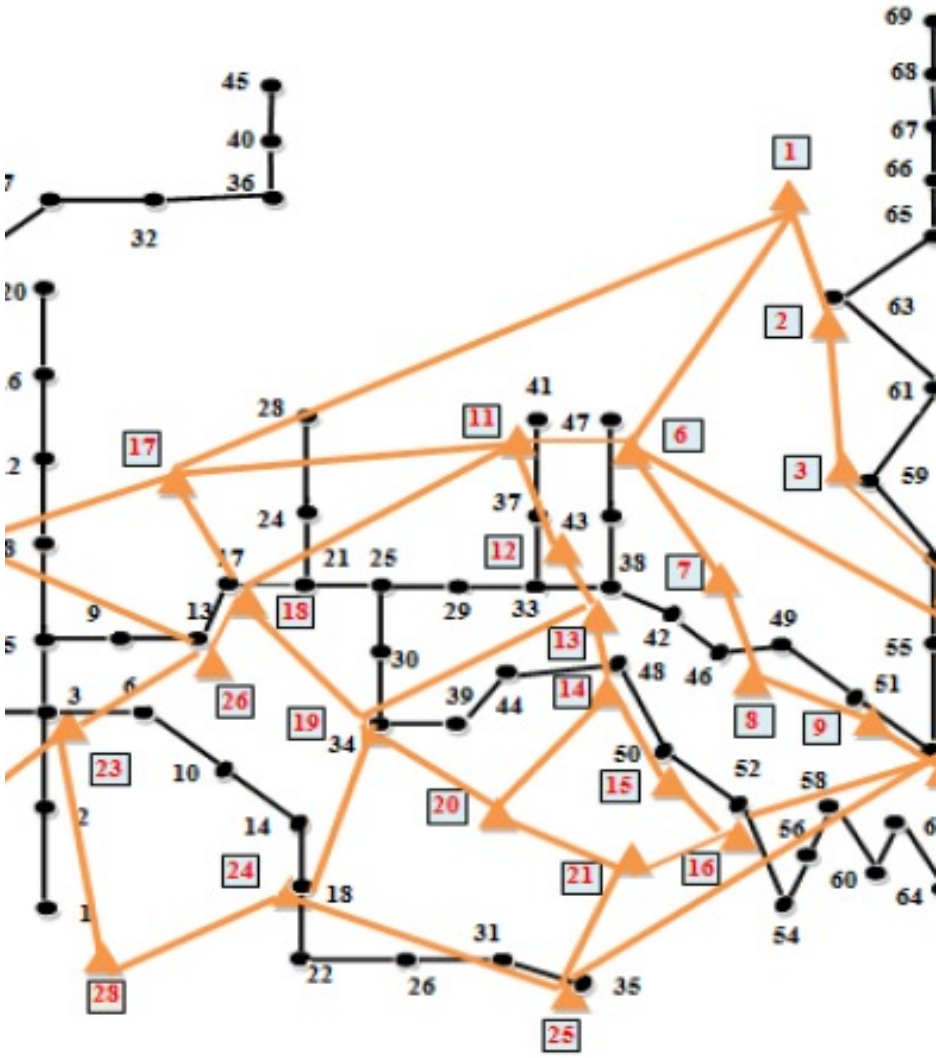
Domestic chargers work for suburban areas – how about urban areas?

Fast chargers are expensive investments → location!

No jams, but high utility rate

Automation?

Battery swapping?



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