Low/Zero Carbon Off-Highway Equipment

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- Justin is currently the product manager for compaction products with Volvo CE. Prior to his current role, he was head of electromobility for road products. He started in the heavy equipment industry with Ingersoll Rand in 2003 as an electrical engineer and has worked in various capacities including systems engineer, cab engineering manager and head of the asphalt compaction development team.

What we do

Volvo Group offers trucks, buses, construction equipment, power solutions for marine and industrial applications, financing and services that increase our customers' uptime and productivity.

We contribute to the development of electrified and autonomous solutions for the benefit of customers, society and for the environment.

Environmental Care is a long-standing core value for Volvo Group.

Volvo Construction Equipment

- Develops, manufactures and markets equipment for construction and related industries
- Broad range of products and services under Volvo and Rokbak
- Employ ~15,100 people
- 17 facilities in 8 countries globally

Volvo electric equipment – Current lineup

- Compact excavators
- Compact wheel loaders
- Asphalt compactor
- Midsize excavator
- Midsize wheel loaders
- More to come

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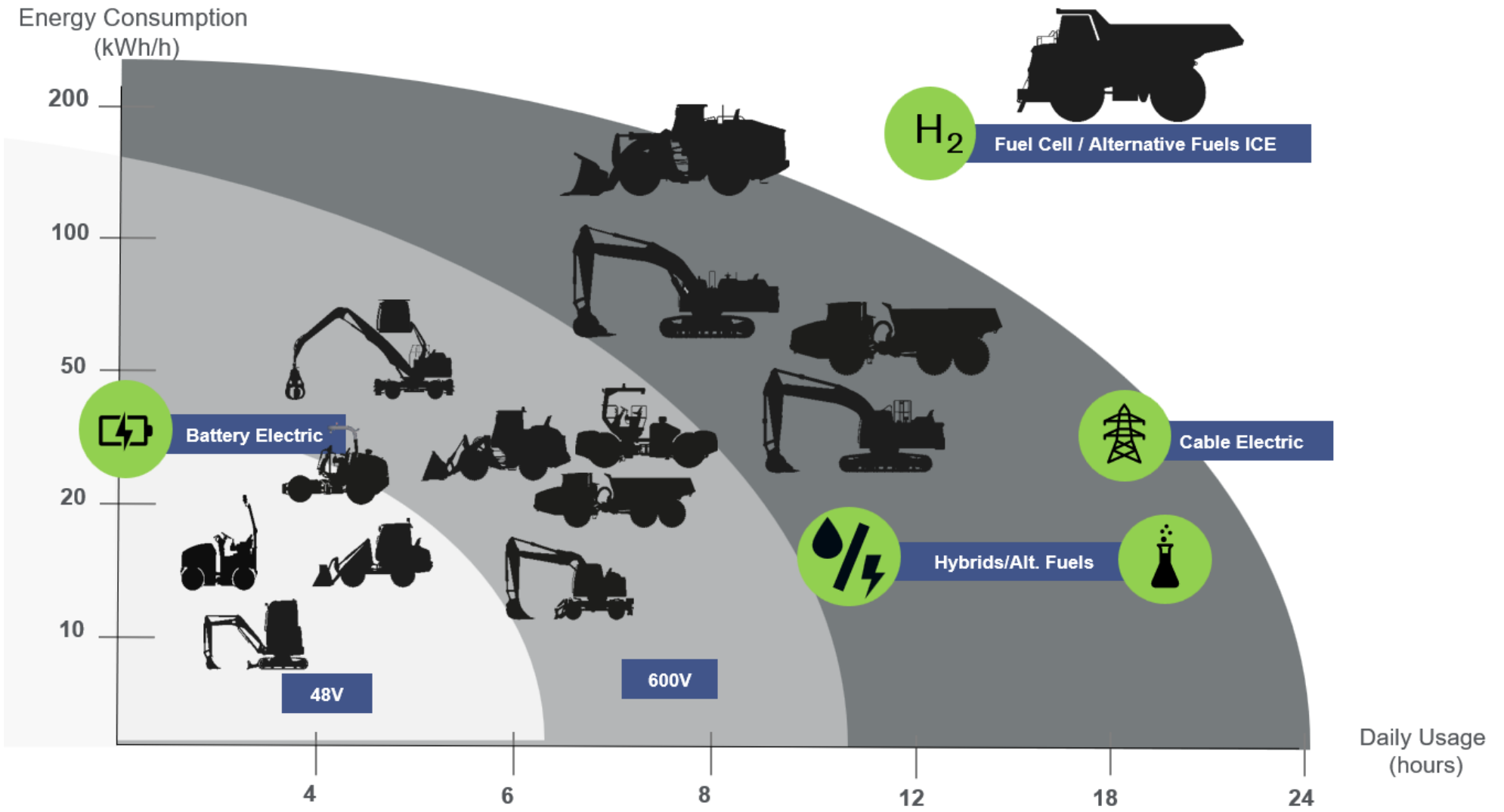
VOLVO


Energy Consumption
(kWh/h)
200
100
50
20
10
H_2
Fuel Cell / Alternative Fuels ICE
Battery Electric
Cable Electric
Hybrids/Alt. Fuels
48V
600V
4
6
8
12
18
24
Daily Usage
(hours)

Top questions we get on electric equipment

- How to charge and charging times
- Machine runtimes
- Available charging solutions
- Electric vs. diesel comparisons
- Battery life and recycling
- Maintenance
- Cost
- Applications
- Where we go from here

First electric compactor from Volvo CE

- Designed and manufactured in Shippensburg, PA
- Production start April 2024
- First shipments Q2 – 2024
- Ideal for patching, limited shoulder work, small to medium sized parking lots, indoor applications, utility work, bike/cart path work
- Will not replace equivalent diesel machine in all applications but suited for ~70%

Electric compared to diesel

DD25B

ELECTRIC

	DD25B Electric		DD25B diesel	
	39" drum	**47" drum**	**39" drum**	**47" drum**
Operating weight	5,870 lb	6,140 lb	5,545 lb	5,776 lb
Shipping weight	5,324 lb	5,564 lb	5,201 lb	5,445 lb
Water tank capacity	69 gal	69 gal	69 gal	69 gal
Vibration	55/67 hz 3,300/4,000 vpm	55/67 hz 3,300/4,000 vpm	55/67 hz 3,300/4,000 vpm	55/67 hz 3,300/4,000 vpm
Travel speed	0 - 6.4 mph	0 - 6.4 mph	0 - 6.4 mph	0 - 6.4 mph
Gradability	30%	30%	30%	30%
Motor, peak power	32.9 hp	32.9 hp	24.4 hp	24.4 hp

DD25B

DIESEL

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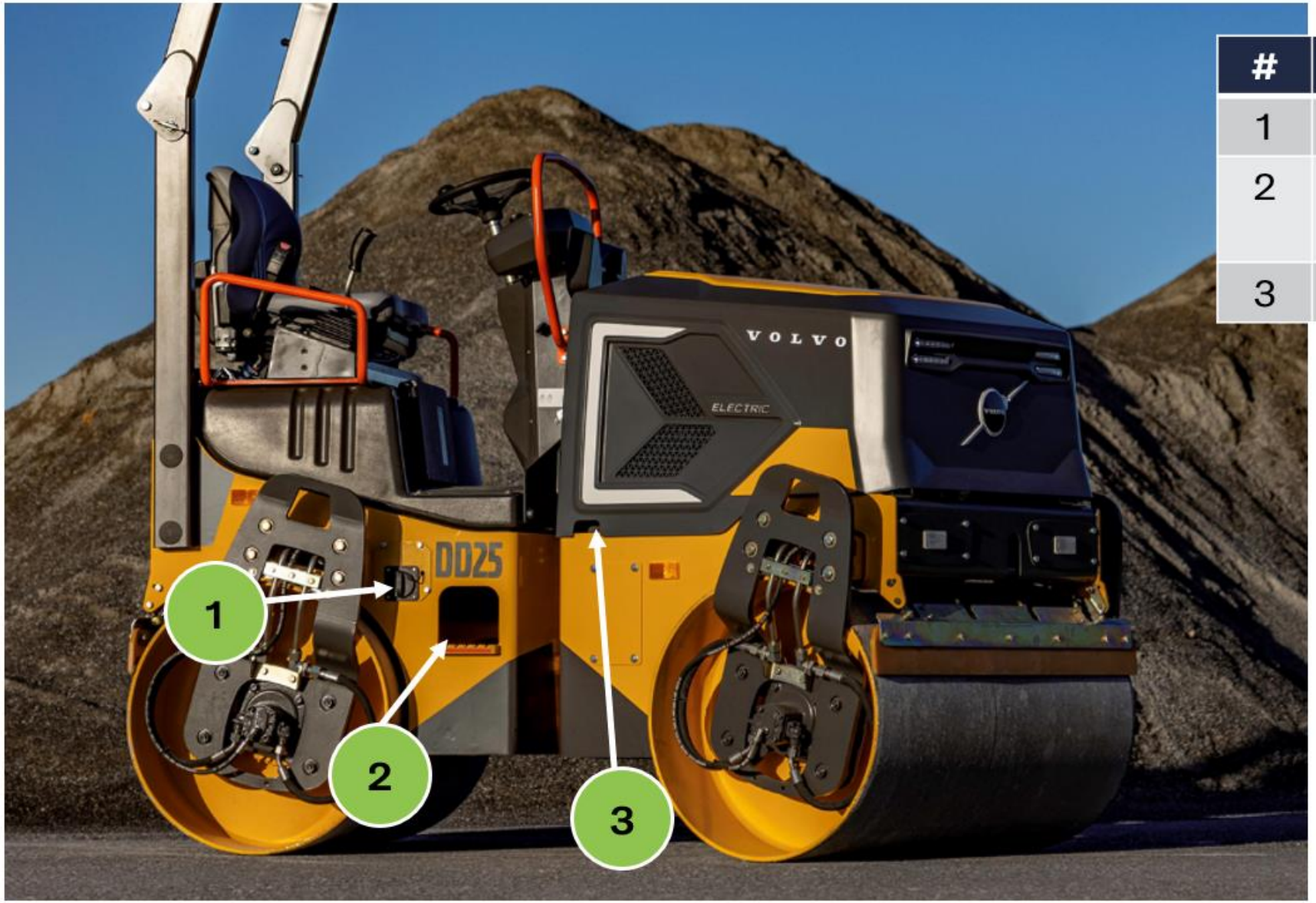
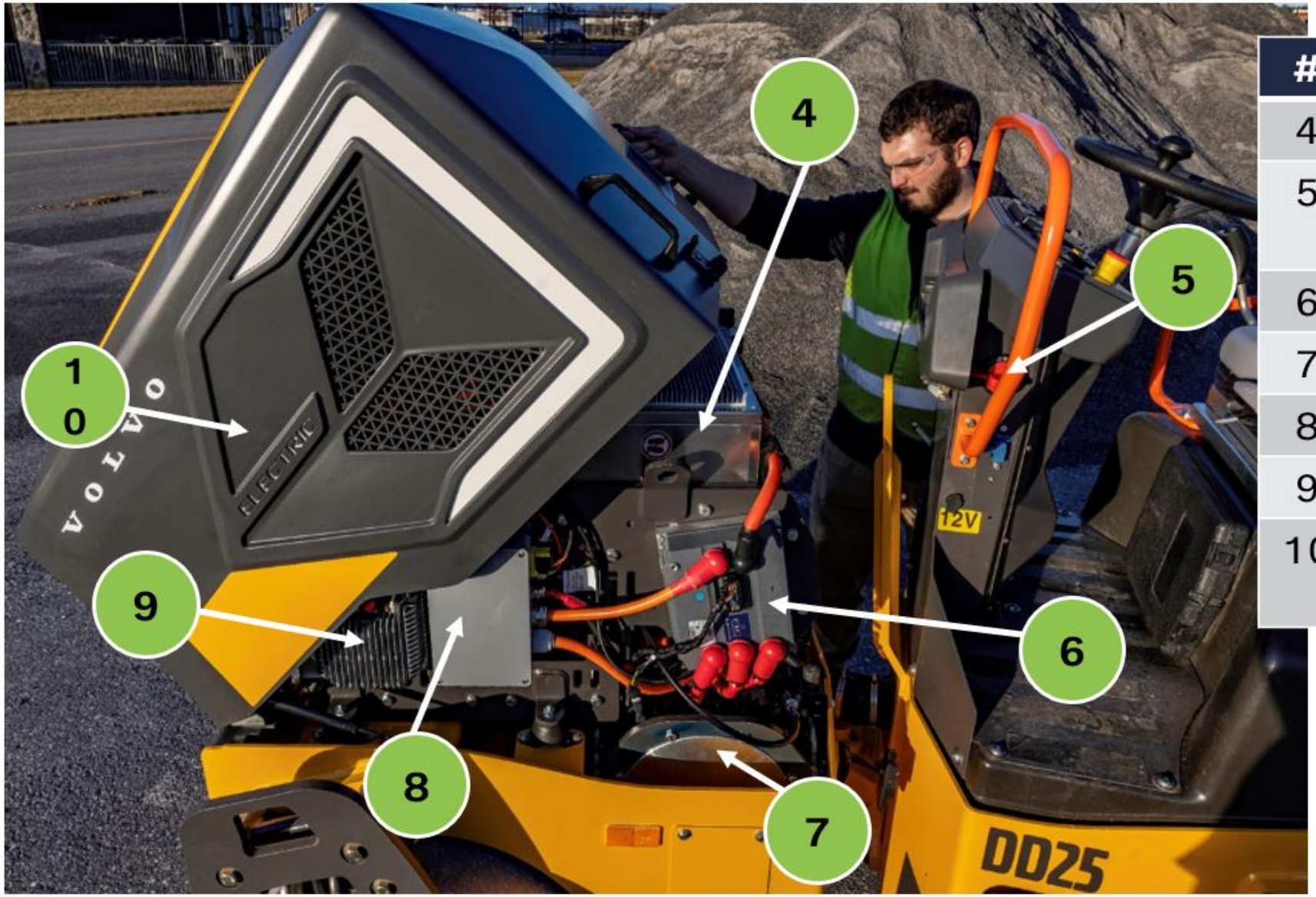


#	Description
1	AC charging port
2	Dual onboard charger (OBC) location
3	DC charging port



#	Description
4	Battery and BMS assembly
5	System voltage master disconnect
6	DC motor controller
7	DC motor
8	Fuse/junction box
9	DC-DC voltage converter
10	12VDC battery (*shown in location under hood*)

48V machine commonality

DD25

ELECTRIC

Electrical architecture

Batteries/BMU

HMI/display

Charging cables/interface

Charging solutions

ECR25

ELECTRIC

L20/L25

ELECTRIC

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AC/DC charging connections for 48V machines

	POWER SOURCES	
AC CHARGING 120V NEMA 5-15  240V NEMA 14-50 		**DC CHARGING** NEMA L16-30P 
AC CHARGING J1772 	**CHARGER INPUT PLUGS**	**DC CHARGING** Direct Current Fast Charger 

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Charging times and runtime

	L25	L20	ECR25	ECR18	EC18	DD25
Runtime Up to, depending on applications	4-6 hr					
DC Fast Charging 0-80%	~2 hr	~2 hr	~1 hr	~40 min	~1 hr	~1 hr
Level 2 0-100%	~6 hr	~6 hr	~6 hr	~5 hr	~6 hr	~3 hr
Battery Capacity	40 kWh	40 kWh	20 kWh	16 kWh	20 kWh	20 kWh

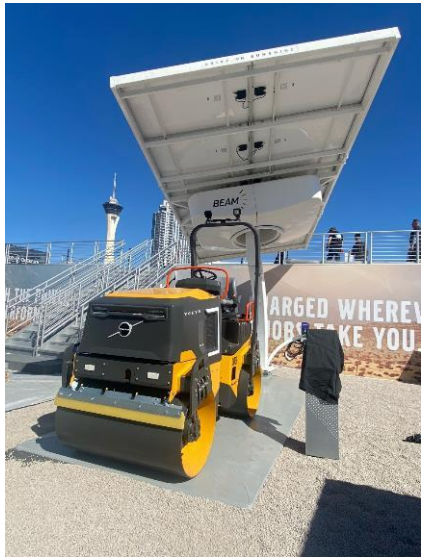
Charging solutions – charge cable

- For North America a Type 1 cable with various NEMA connectors is used
  - Automatic current limit recognition
  - Adjustable power load
- Standard cable used across all VCE 48V machines

Charging solutions

Grid connected

Portable



Off-grid generation

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Battery life

- Equal to or better than batteries used on diesel models
- Temperature range
- Replacement costs
- Volvo Energy (battery lifecycle)
- 35% savings in maintenance costs over the life of the machine

Maintenance

- Electrical components sealed and guarded
- Required supplies include grease and hydraulic oil
- No DEF fluid or filters
- Charging systems may also need service at times

Cost: electric vs diesel

- Initial purchase price currently higher for electric vs diesel
- Incentives available in some areas
- Don't forget about TCO. Electric has:
  - Much less maintenance
  - No diesel or DEF expenses
  - No idling time, resulting in fewer machine hours and potentially a higher resale value

Potential customers

OR

- Will not replace diesel machine in all applications but good fit for ~70%
- Application/typical runtime?
- Special requirements?
- Charging?
- Fleet size?

- Some customers are up to speed but many need education
- Don’t underestimate

Expand your capabilities

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