

PROJECT ZOMBOID · BUILD 42.20.4

Modern EVs

Player Guide · Version 1.0.0 · 2026-09-13



A self-contained electric vehicle framework: twelve imported modern EVs, a unique mechanics console, traction packs, thermal and BMS systems, and a craftable charging station. Independent of the vanilla gas UI. Optional bridge to Project Faded Car.

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1. What this mod is

Modern EVs is a from-scratch Build 42.20.4 electric-vehicle pack. It does not hijack vanilla gasoline as the player-facing system. Each native Modern EVs car stores energy in traction packs (kWh), wears high-voltage parts, runs a thermal loop, and opens a dedicated console when you use mechanics. A hidden GasTank still exists so the Project Zomboid drivetrain can move the car; the mod blocks vanilla fuel radials and start paths on these vehicles.

The pack is self-contained. Project Faded Car is optional. When PFC is loaded and the bridge sandbox option is on, Modern EVs stamps csrEV / csrEVCharge and mirrors pack charge and HV wear into PFC so both mods stay in sync.

2. Install and enable

- Copy the **Modern EVs** folder into your mods directory (or install from the Faded Local Mod Installer after Refresh Mod List).
- Enable **Modern EVs** in the Load Order. Minimum version: 42.20.4.
- Optional: enable **Project Faded Car**. Load Modern EVs after PFC.
- In Sandbox, open the **Modern EVs** page. Leave Enable Modern EVs on.
- Start or load a world. Cars spawn in parking stalls and other vehicle zones if world spawns are enabled.

3. Vehicle roster

Every car below is a native ModernEVs.* script. Opening mechanics on any of them opens the Modern EVs console. Wheels physically roll on all twelve. Visual door / hood / trunk animation is listed in the last column.

Vehicle	Script	Seats	Slots	km/kWh	kW	Spawn	Animated panels
2021 Hyundai Lafesta EV	LafestaEV	4	3	6.2	80	Common	4 doors + trunk
2022 BYD Han EV	HanEV	4	3	5.6	140	Common	Body only
2022 Kia EV6 GT-Line	EV6	4	3	5.9	160	Sport	4 doors + hood + trunk
2022 Volkswagen ID.5 GTX	ID5GTX	4	3	5.7	130	Common	Body only
2025 Lotus Emeya	Emeya	4	3	5.1	180	Sport	Hood
Tesla Cybertruck	CyberTruck	4	4	4.2	170	Heavy	Body only
Fisker Ocean	FiskerOcean	4	3	5.4	125	Common	Body only
Golf GT-555 Electric Cart	GolfCart	2	1	8.5	25	Utility	Body only
Tesla Model S Prior Design	TeslaModelS	4	3	5.8	175	Sport	Body only
Vanda Electrics Dendrobium	Dendrobium	2	2	4.8	200	Sport	Body only
Herfst 2 Solar EV	HerfstEV	4	3	6.8	110	Common	Body only
Volkswagen ID. Buzz	IDBuzz	4	4	5.2	110	Common	Body only

km/kWh is the designed range efficiency used by the energy sim. Peak kW is the spec used for dashboard / drain scaling. Spawn tier maps to the four sandbox spawn-weight options. Truck-bed capacity is larger on the Cybertruck (90) and ID. Buzz (70), smaller on the golf cart (12) and Dendrobium (8).

4. Driving and starting

Sit in the driver seat and use the normal start control. Modern EVs intercepts that path and runs startEV instead of vanilla ignition. The car will not start if the framework is off, there is no traction pack, charge is empty, the motor or inverter is dead, or (when Require Key is on) you have neither the key nor a Hotwire recipe / Electrical 1 fallback.

- Charge empty: the hidden fuel buffer is forced to 0 and a running motor stalls.
- While running, driving speed draws kWh. Idle ready-state drain (default 0.35 kWh/h) applies when you sit still with the motor on.
- Regen recovers energy when you slow down, scaled by Regen Strength and the regen module condition.
- Motor and pack temperatures rise under load. Past ~85 C motor / ~58 C pack the car draws more and the console shows THERMAL LIMIT.
- Vanilla gasoline pour / siphon radials are blocked on these vehicles.

5. The Modern EVs console

Open mechanics on a Modern EV, or use the world context option **Modern EVs: Open console**. The vanilla mechanics window is closed and replaced. The console has three columns: high-voltage systems, body / running gear, and traction pack slots.

- Select a system to see condition and the Service system action (consumes the matching service kit).
- Install traction pack / Remove pack operate on the selected empty or filled slot. Motor must be off and the car stopped.
- Default skill gates: Mechanics 4 for packs, Electrical 5 for HV parts (sandbox).
- If PFC is loaded, Open PFC workshop is available from the same window.
- The footer shows PFC linked or Standalone.

6. Dashboard readout

With Enable Dashboard on, an overlay on the in-car dash shows charge percent, estimated range in km, READY / OFF / CHARGING / DEPLETED / THERMAL LIMIT, motor temp, pack temp, regen, and current draw. This is display-only; energy still lives on the vehicle ModData store (MEV).

7. Traction packs

Pack	Item	Capacity	Weight	Heat	Notes
Makeshift Traction Pack	ModernEVs.TractionBatteryMakeshift	18 kWh	16	1.15x	Scavenged cells. Crafted from battery boxes.
Traction Pack	ModernEVs.TractionBattery	28 kWh	18	1.00x	Default spawn pack on most cars.
Performance Traction Pack	ModernEVs.TractionBatteryPerformance	40 kWh	22	1.20x	Crafted from two standard packs.

Slot count is per vehicle. A newly spawned car gets a standard pack; cars with 3+ slots also get a partial makeshift pack. Charge at spawn is rolled between the sandbox min / max percents (default 15–85). Packs store state of health; SOH drops slowly while driving and reduces usable kWh. Removing a pack returns the item with its remaining charge as drainable delta.

8. High-voltage systems

System	Item	Service kit	Skill	Role
Drive motor	ElectricMotor	Motor Service Kit	4	Moves the car. Dead motor cannot start.
Inverter / controller	MotorController	Controller Service Kit	5	DC to drive. Dead inverter cannot start.
Battery management	BMSModule	Controller Service Kit	4	Watches pack limits.
Thermal loop	ThermalLoopKit	Thermal Loop Kit	3	Keeps motor/pack temps in check. Service also adds coolant.
On-board charger	OnboardCharger	Controller Service Kit	4	Scales station charge rate.
Charge port	ChargeCable	Charge Cable	2	Scales station charge rate.
12V auxiliary	Aux12VBattery	Aux12VBattery	2	Cabin electrics when HV is isolated.
Cabin climate	CabinHVACModule	CabinHVACModule	3	HVAC draw from the traction pack.
Regen module	RegenModule	RegenModule	3	Energy recovered while slowing down.

Parts wear while the motor is running. Motor and inverter wear faster under speed. The thermal loop wears faster when the motor is already hot. Pack Service Kit is used from the pack column to restore pack health.

9. Charging

Station (preferred)

Craft an EV Charging Station Kit, then build the **Charge Station** entity (Electricity 5, Mechanics 3, screwdriver + wrench, 250 time). The built pedestal is marked with ModData MEV_Station. Do not treat every vanilla machinery sprite as a station — only objects this mod created. Default bank is 80 kWh. Default push rate is 11 kW, scaled by on-board charger and charge-port condition.

- Walk a Modern EV next to the pedestal. Context: Modern EVs: Connect to station (needs a charge cable in play).
- Motor must be off for station charge to flow.
- Modern EVs: Inspect charging station reads bank kWh.
- Modern EVs: Feed station from batteries dumps spare car batteries into the bank.
- Modern EVs: Disconnect charger clears the charging flag.
- If Stations pull from nearby generators is on, an activated generator on the station square trickles ~2 kW into the bank.

Portable charge

Context Modern EVs: Portable charge (long timed action). Uses the charge cable plus donor batteries or a generator. Default rate 3.3 kW. Slower than a built station; meant for field top-ups.

10. Crafting

All recipes sit under Electrical or Mechanics in the crafting menu.

Recipe	Skills	Key inputs	Output
Build Makeshift Traction Pack	Elec 3 / Mech 2	12 BatteryBox, 4 Wire, 4 ElectronicsScrap	Makeshift pack
Build Traction Pack	Elec 5 / Mech 4	6 car batteries, scrap, wire, sheet metal	Traction Pack
Build Performance Traction Pack	Elec 8 / Mech 6	2 Traction Packs + scrap / wire / sheet	Performance pack
Build Drive Motor	Elec 6 / Mech 5	12 EngineParts, scrap, wire, sheet metal	Drive Motor
Build Motor Controller	Elec 6 / Mech 3	12 scrap, 8 Wire, Amplifier	Motor Controller
Build BMS Module	Elec 5	8 scrap, 4 Wire, Aluminum	BMS Module

Recipe	Skills	Key inputs	Output
Build On Board Charger	Elec 6 / Mech 3	CarBatteryCharger, scrap, wire	On-Board Charger
Build EV Charge Cable	Elec 3	8 Wire, 2 scrap, DuctTape	Charge Cable
Build Thermal Loop Kit	Mech 4 / Elec 2	EngineParts, MetalPipe, WaterBottle	Thermal Loop Kit
Mix EV Coolant	Mech 2	WaterBottle + Bleach	EV Coolant
Build EV Charging Station Kit	Elec 6 / Mech 4	Generator, charger, 2 batteries, scrap, wire, pipe, sheet	Station Kit
Build 12V Auxiliary Battery	Elec 3 / Mech 2	1 car battery + scrap	12V Aux
Build Cabin Climate Module	Elec 4 / Mech 3	scrap, EngineParts, wire	HVAC module
Build Regen Module	Elec 5 / Mech 4	EngineParts, scrap, wire	Regen module
Build Motor / Controller / Pack Service Kit	Mech or Elec 3	small scrap + parts or a battery	Service kits

11. Loot and world spawns

Parts and kits appear in electronics shelves, electronic stores, garage mechanics, mechanic special, electronics crates, warehouse electronics, and army electronics (station kit is rare). Vehicles use VehicleZoneDistribution:

- Common: parkingstall, medium, good, trafficjams — Lafesta, Han, ID.5, Fisker, Herfst, ID. Buzz.
- Sport: parkingstall, good, sport — EV6, Emeya, Model S, Dendrobium.
- Heavy: parkingstall, farm, ranger — Cybertruck.
- Utility: parkingstall, farm, ranger, medium — golf cart.

Interior loot uses VehicleDistributions keyed by the short script name (LafestaEV, not ModernEVs.LafestaEV).

12. Sandbox options

Page name: Modern EVs.

Option	Default	What it does
Enable Modern EVs	On	Master switch. Cars still exist when off; energy, UI, and stations sleep.
Spawn Modern EVs in the world	On	Allow zone spawns.
Use Modern EVs mechanics console	On	Redirect vanilla mechanics to our window.
Show EV dashboard readout	On	In-car overlay.
Enable Project Faded Car bridge	On	Share identity, wear, and charge with PFC. Harmless if PFC is absent.
Require vehicle key to start	On	Key, or Hotwire / Electrical fallback.
Enable regenerative braking	On	Recover energy while slowing.
Enable thermal load	On	Temps rise and affect efficiency.
Enable ready-state drain	On	Idle kWh use while running and stopped.
Stations pull from nearby generators	On	Activated generator on the station square refills the bank.
Minimum / maximum spawn charge	15 / 85 %%	Rolled charge on a newly spawned car.
Energy drain multiplier	1.0	Scales driving use.
Ready-state drain	0.35 kWh/h	Idle use while ready.
Regen strength	1.0	Scales recovered energy.

Option	Default	What it does
System wear multiplier	1.0	Scales HV and pack SOH wear.
Station charge rate	11 kW	Pedestal push rate.
Station battery bank	80 kWh	New station stored energy capacity.
Portable charger rate	3.3 kW	Field charge without a station.
Common / Sport / Heavy / Utility spawn weight	4 / 2 / 1 / 2	Relative zone chances. 0 disables that tier.
Mechanics / Electrical install level	4 / 5	Skill gates for packs and HV service.

13. Project Faded Car bridge

When PFC is active, Modern EVs stamps vehicle identity, sets `csrEV` and `csrEVCharge`, and copies HV condition into `pfcStore.evParts` (`evMotor`, `motorController`, `bms`, `thermalSystem`, `onBoardCharger`, `evBrakes`, `hvacEV`, `accessorySystem`, `batterySystem`). Coolant and charge snapshot are mirrored. PFC EV-tune multipliers (`evPowerMult`) scale drain. `PFC.API.modernEVs` points at the Modern EVs API. The mods work together; Modern EVs still owns energy and the mechanics window.

14. Known mesh limits

These are source-mesh facts, not missing scripts. Physics wheels use a vanishing `NullWheel` so every car still rolls.

- No source pack gave four clean, correctly offset wheel meshes. Visual tires do not spin on their own.
- Lafesta: animated 4 doors + trunk. EV6: 4 doors + hood + trunk. Emeya: hood only. All others: body-only — panels do not swing, but you can still use the part for access.
- ID.5 GTX, Fisker Ocean, ID. Buzz, and Herfst 2 use the vanilla modern car shell texture. Those zips had no usable albedo (AO-only, embedded materials, or a screenshot collage).
- The second charging-station zip is a full canopy scene, not the placeable pedestal. The craftable station is the EV charging pedestal.

15. Other-mod API

Shared table: `ModernEVs.API`, also published as `_G.MEV` and `_G.ModernEVsAPI`. Nil-guard everything. Do not `pcall`.

Call	Returns / does
<code>isEV(vehicle)</code>	true if this is a Modern EVs native (or stamped) car
<code>enabled()</code>	sandbox master switch
<code>getStore(vehicle)</code>	seeded MEV store, or nil
<code>getCharge</code> / <code>getChargePercent</code> / <code>getChargeKWh</code> / <code>getCapacityKWh</code>	0–1 ratio, 0–100, kWh values
<code>getRangeKm(vehicle)</code>	estimated remaining km
<code>isCharging(vehicle)</code>	station tether flag
<code>addChargeKWh(vehicle, kWh)</code>	apply charge (negative drains); returns applied kWh
<code>getSnapshot(vehicle)</code>	table: charge, capacity, range, temps, packs, parts, pfc flag
<code>openMechanics(player, vehicle)</code>	opens the Modern EVs console

That is the whole loop: find a Modern EV, keep packs and HV parts alive, charge at a pedestal or in the field, and ignore the gas can.