



*155 years of
locomotives
know-how*

EXPRESS SERVICE battery locos – a sustainable
and efficient approach to railway shunting.
The green and maintenance-free future of
industrial railways.





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Company today



Express Service in brief:

- Mid-size family business – clear, flat ownership + management
- Business based on 155+ years of expertise and know-how
- New buildings and modern equipment
- 150 persons skilled and experienced workforce and 12600m² covered area
- Own R&D department, CAD design and simulations
- Own spare parts and components production facility
- ECM functions 1, 2, 3, 4



***2021 – 1866 = 155 years
of locomotive factory in Ruse***



*150 years of
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New Locomotive Types

EXPRESS SERVICE new locomotives - overview



Battery technology – emissions free,
maintenance free, low operator expertise



Diesel technology – economic, Stage V
engines, low maintenance cost.





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Battery locomotives

EXPRESS SERVICE battery shunting vehicles



ES 600 (discontinued since 2021)

16t. shunter for depot or
light industrial service



ES 1000

27t. shunter for heavy
depot or
industrial service



ES 3000

48t. shunter for heavy
industrial service

Brief **technical comparison** battery locomotives

	ES600	ES1000	ES3000
Own mass	16t.	25t.	48t.
Nominal power*	34kW	60kW	90kW
Towing capacity**	600t.	1000t.	3000t.
Battery capacity	60kWh	100kWh	220kWh
Max. charge time	5,5h	5,5h	5,5h
Battery life in cycles	>1800	>1800	>1800
Max. speed**	6km/h	8km/h	10km/h

* Maximal short-term power is up to 250% greater

** Adjustable parameter





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Features and options

Standard features Vs. Options in ES locomotives

	ES600	ES1000	ES3000
Built-in charger	Yes	Yes	Yes
Screw compressor on board	Optional	Optional	Yes
Train pneumatic brakes	No	Optional	Yes
Radio RC	Yes	Yes	Yes
Battery air mix	No	Yes	Yes
Battery Wi-iQ	No	Yes	Yes
UWL interlock	Optional	Optional	Optional



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ES locomotives features

Easy logistics – design fit for
standard road truck + easy rail
transport

Easy lifting + battery replacement.

Special platform wagon by ES



Battery technology is **energy efficient**



Even not moving, old locos work idle with diesel fuel expenditure of 20l/hour.

IDLE BATTERY LOCO SPENDS 0!

- ✓ No idle working costs
- ✓ Full battery charge price is max. €20,00 (@ € 0,10 per kWh)
- ✓ Total energy consumption is < 20000kWh / year
- ✓ No need of winter heating, no freezing parts
- ✓ No need of complex diesel fueling procedures
- ✓ Regeneration when stopping (recharging battery)
- ✓ No thermal waste of energy

CASE STUDY IN AURUBIS METALLURGICAL PLANT:

3xES3000 shunters replaced old diesel locos and performed same job for 6 months. Battery charging costs were €5200 Vs. €58600 for diesel fuel of the diesel locos.



Battery technology is clean, emission free, low noise /for the responsible industry of tomorrow/

- ✓ The only solution for covered spaces, warehouses;
- ✓ Zero environmental impact on surrounding environment;
- ✓ Totally emissions-free solution;
- ✓ Very low noise pressure on men at work;
- ✓ Almost silent operations;
- ✓ Great improvement of surrounding industrial environment.
- ✓ Energy for battery shunters of Express Service is backed by roof solar production of our factory



Wherever there is environmentally and socially responsible industry – we are there to help with our solutions.

Battery technology is **maintenance-free**



No need of expensive and lengthy repairs of diesel engines.

No complex transmissions, hydraulics and expensive mechanics.

ES vehicle are virtually maintenance-free with only few moving parts that drastically reduces maintenance.

Daily inspections are done within a minute, no monthly or annual revisions needed.

All important components are industrial electronics that is widely available.

Battery technology optimizes **shunting manpower**

- ☐ Radio Remote Control allows one operator action
- ☐ No full shunting crew needed for coupling, switches, driving
- ☐ No heavy locomotive legislation applicable
- ☐ Training certificates issued by manufacturer
- ☐ Very intuitive and safe human-machine interface

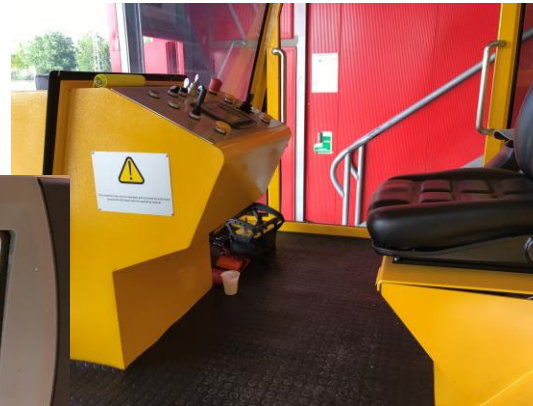
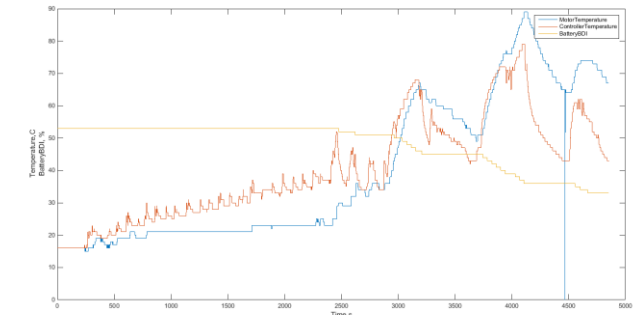


Electronic controls for optimal settings

EXPRESS SERVICE electric shunters use state of the art inverters to control AC traction motors. We have full flexibility to adjust vehicle parameters and work behavior given the task to be performed.

Adjustable parameters:

- ✓ Max. AC motor speed (i.e. vehicle top speed);
- ✓ Max. AC motor current (we may limit current to protect motors, inverters from overheating);
- ✓ Acceleration rate (how fast vehicle would reach top speed);
- ✓ Deceleration (braking) rate – regeneration rate to charge back battery;
- ✓ Operating pressure in train pipe line;
- ✓ Air compressor output rate via adjusting motor's speed.



Smart battery+charger to **protect and enhance battery**

We input the most advanced lead-acid batteries on the market. Advantages of lead batteries are numerous compared to the popular Li technology. Lead batteries work in colder climate, they are fire and explosion safe, and are more heavy (great advantage in shunters).

Battery is equipped with intelligent WI-IQ data collection system that communicates with the charger through wi-fi, alarms operators for maintenance procedures and logs the most important data for battery's performance.



The powerful Life-iQ battery charger is securely integrated on board. It allows full battery recharge in just 5,5 hours.

Charger automatically decides whether to stop a charging process or to proceed with an equalizing charge. Information transmitted from battery is logged into charger's memory and operators have access to the most important data – charge cycles, energy input, discharge behavior, etc.

Real time information on charging process is displayed pointing charge status, remaining time, current input, and battery voltage. Optional software allows operators to access more detailed statistical data on vehicle energy consumption, work performance and load cycles.



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**ES battery shunters for safer, greener,
energy-saving last-mile industrial
operations. ES for responsible industry.
Contact Express Service for details.**

