

Guideline to determining P&D parameter for battery installations

According to Article 10 of the EU battery regulation (2023/1542), information on the values for the electrochemical performance and durability (P&D) parameter of rechargeable industrial batteries with a capacity greater than 2 kWh are required.

This also includes battery installations, with a capacity greater than 2 kWh, consisting of individual cells or blocs connected in series and/or parallel.

Exide is providing the values for the P&D parameter of single cells or blocs and a guideline to determine this parameter for a battery installation, which is built with our products.

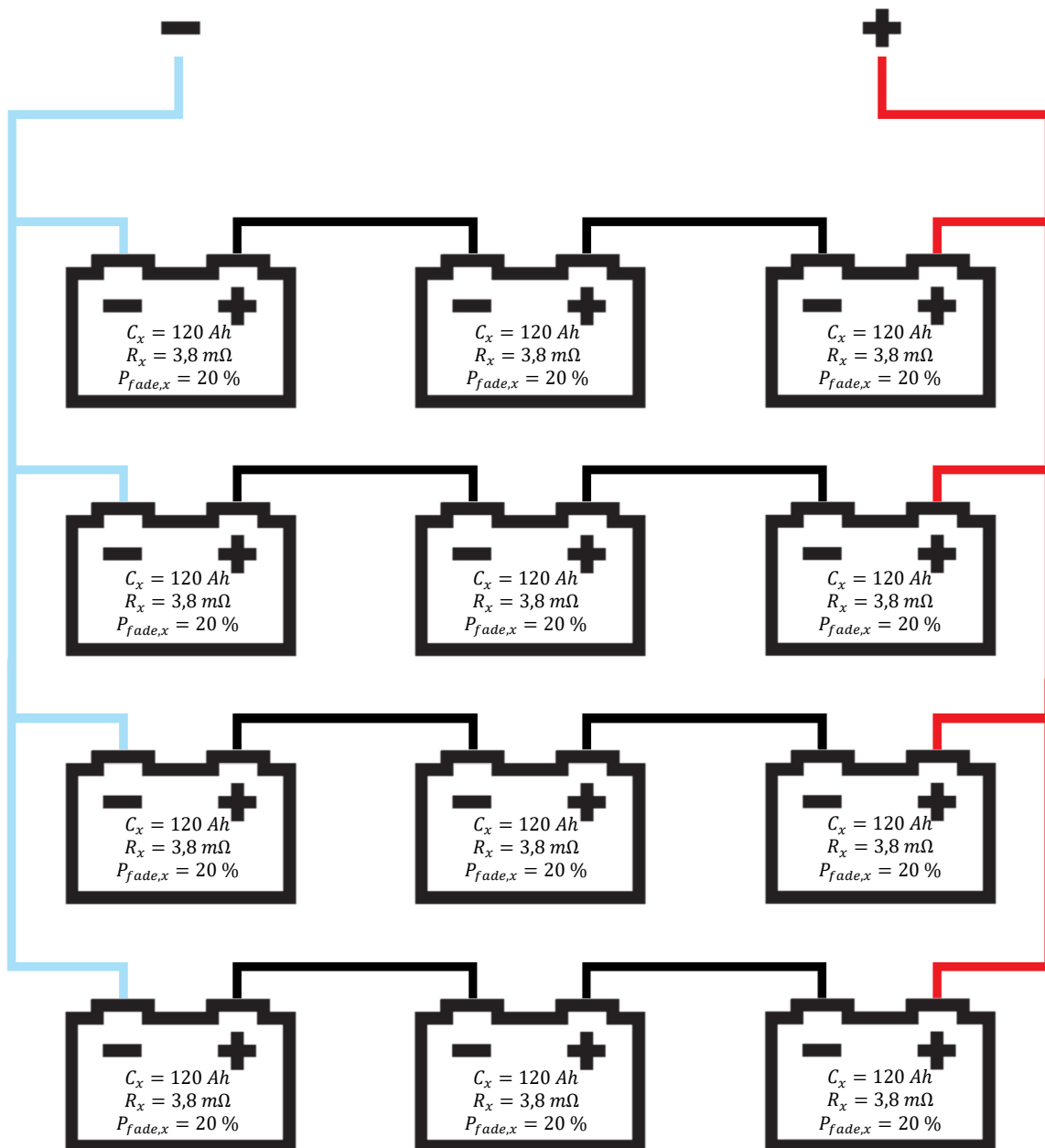
For further details, please visit www.exidegroup.com/eu/en/eu-performance-data

Parameter	Value of single cell or bloc	Formula
Rated capacity	C_x	$C = C_x \cdot N_{parallel}$
Capacity fade	$C_{fade,x}$	$C_{fade} = C_{fade,x}$
Power	P_x	$P = P_x \cdot N_{series} \cdot N_{parallel}$
Power fade	$P_{fade,x}$	$P_{fade} = P_{fade,x}$
Internal resistance	R_x	$R = (R_x \cdot N_{series}) \div N_{parallel}$
Internal resistance increase	$R_{fade,x}$	$R_{fade} = R_{fade,x}$
Energy round trip efficiency	RTE_x	$RTE = RTE_x$
Energy round trip efficiency fade	$RTE_{fade,x}$	$RTE_{fade} = RTE_{fade,x}$
Expected life-time	$CalenderYears_x$	$CalenderYears = CalenderYears_x$
Expected life-time	$Cycles_x$	$Cycles = Cycles_x$

N_{series} = Number of cells or blocs connected in series

$N_{parallel}$ = Number of cells or blocs connected in parallel

Example:



Determine configuration:

$N_{Series} = \text{Number of cells or blocs connected in series} = 3$

$N_{Parallel} = \text{Number of cells or blocs connected in parallel} = 4$

Calculate parameter:

$C = C_X \cdot N_{parallel} = 120 \text{ Ah} \cdot 3 = 360 \text{ Ah}$

$R = (R_X \cdot N_{series}) \div N_{parallel} = (3,8 \text{ m}\Omega \cdot 3) \div 4 = 2,85 \text{ m}\Omega$

$P_{fade} = P_{fade,x} = 20 \%$