Supplemental Data

Table S1. List of abbreviations

Full name	Abbreviation	Full name	Abbreviation
Alternating Current	AC	Direct Current	DC
Automatic Transformer Rectifier Unit	ATRU	E-Brake Power Supply Unit	E-BPSU
Automatic Transformer Rectifier Unit Controller	ATRUC	Left	L
Auxiliary Power Breaker	APB	Main Battery	MN Bat
Auxiliary Power Unit	APU	Generator	Gen
Battery	BAT	Generator Control Breaker	GCB
Auxiliary Generator	Aux Gen	Right	R
Battery Charger Controller	BC	Ram Air Turbine	RAT
Battery Discharger Controller	BD	RAT Controller Breaker	RCB
Bus Tie Breaker	BTB	Transformer Rectifier Unit	TRU

Table S2. Definition of the pin of the main generator model

Pin name	Input or Output	Function
DFSTS1	input	Receive four generator state variables *G* from MATLAB
DFSTS2	output	Export data to subordinate component (GCB)
N	input	Generator number

Table S3. Definition of the pin of the auxiliary generator model

Pin name	Input or Output	Function
DFSTS1	input	Receive four generator state variables *G* from MATLAB
DFSTS2	output	Export data to subordinate component
DFSTS3	input	Control state from MATLAB
DFSTSM	output	Current operating state output to MATLAB

Table S4. Definition of the pin of the RAT generator model

Pin name	Input or Output	Function
DFSTS1	input	Receive four generator state variables *G*
DFSTS2	input	Receive the state of the auxiliary generator
DFSTS3	input	Receive the state of another auxiliary generator
DFSTS4	output	Export data to subordinate component
DFSTS5	input	Control state from MATLAB

DFSTSM	output	Current operating state output to MATLAB

Table S5. Definition of the pin of the BTB model

Pin name	Input or Output	Function
DFSTS1	input	Receive four generator state variables *G*
N	input	Number of BTB
DFSTS2	Input/output	Export data to subordinate component
DFSTS3	Input/output	Export data to subordinate component
DFSTS4	input	Receive the state of RAT
DFSTS5	input	Receive the state of the auxiliary generator
DFSTS6	input	Receive the state of another auxiliary generator
DFSTSM	output	Current operating state output to MATLAB

Table S6. Definition of the pin of the GCB, ATRU, TRU, APB, BC and BD model

Pin name	Input or Output	Function
DFSTS1	input	Receive the state value of a superior component
DFSTS2	output	Export data to subordinate component
DFSTSM	output	Current operating state output to MATLAB

Table S7. Definition of the pin of the 230V AC bus model

Pin name	Input or Output	Function
DFSTS1	input	Receive the state value of a superior generator
DFSTS2	input	Receive four generator state variables *G*
DFSTS3	input	Receive the state of the auxiliary generator
DFSTS4	input	Receive the state of another auxiliary generator
DFSTS5	input	Receive the state of the RAT
DFSTS6	Input/output	Interaction with BTB
DFSTS7	Input/output	Interaction with ATRU(in first mode) or RAT(in second mode)
DFSTS8	Input/output	Interaction with BTB or ATRU
DFSTS9 (only in second mode)	output	Export data to subordinate devices(BTB or ATRU)
DFSTSM	output	Current operating state output to MATLAB

Table S8. Definition of the pin of the 115V AC bus, 270V DC bus and parking device mode

Pin name	Input or Output	Function
DFSTS1	input	Receive the state value of a superior component

DFSTSM	output	Current operating state output to MATLAB

Table S9. Definition of the pin of the 28V DC bus model

Pin name	Input or Output	Function
DFSTS1	input	Receive the state value of a superior component
DFSTS2	input	Receive four generator state variables *G*
DFSTS3	input	Receive the state of the auxiliary generator
DFSTS4	input	Receive the state of another auxiliary generator
DFSTS5	input	Receive the state of the RAT
DFSTS6	output	Output the control signal to the BC
DFSTS7	output	Output the control signal to the brake control device.
DFSTS8	Input	Receive the state of the BD
DFSTSM	output	Current operating state output to MATLAB

Table S10. Definition of the pin of the battery model

Pin name	Input or Output	Function
DFSTS1	input	Receive four generator state variables *G*
DFSTS2	input	Receive the state of the RAT
DFSTS3	input	Receive the state of the auxiliary generator
DFSTS4	input	Receive the state of another auxiliary generator
DFSTS5	input	Receive the state of the BC
DFSTS6	output	Output the control signal to the BD
DFSTSM	output	Current operating state output to MATLAB