

Electrical Budget Worksheet (Kitty Mambo Beneteau First Class 10)

1 Calculate your DC Loads:

Category	Device	Amps	Hours	AH/Day	Notes
Lighting	Running Lights LED	0.2	11	2.0	
	Masthead Tricolor Light			0.0	
	Anchor Light			0.0	
	Strobe Light			0.0	AA Cells
	Spreader Lights			0.0	
	Cabin Light	0.1	2	0.2	LED AAA Cells
	Cabing Light (big incandescent)			0.0	
	Cabing Light (flourescent)			0.0	
	Instrument Lights			0.0	LED AA Cells
	Handheld Spot Light	1.0	0.01	0.0	
	Other			0.0	
Lighting AH				2.2	
Galley	Refrigeration			0.0	
	Prop Solenoid			0.0	Alcohol Stove
	Other			0.0	
	Galley AH				0.0
Electronics	Autopilot	4.0	10	40.0	Also Wind Steering
	VHF (receive)	0.2		0.0	
	VHF (transmit)	3.0	0.01	0.0	
	Sat Phone Battery Charge	1.0	0.2	0.2	?
	GPS	0.3	10	3.0	Also 2 backup AA Cell and AAA Cell Powered
	Instruments	0.1	24	2.4	
	AIS	0.3	24	6.0	
	Stereo			0.0	MP3 AA Cells
Electronics AH				51.6	
Plumbing	Fresh Water Pump	3.0	0.1	0.3	Calculate using average water consumption.
	Bilge Pump(s)			0.0	This should be zero unless the boat leaks.
	Plumbing AH				0.3
Inverter	Microwave			0.0	All values assume inverter efficiency = 85%.
	Chargers (nicad)	1.0	1	0.1	Power factor may mess up this estimate.
	Other			0.0	
	Inverter AH				0.1
Gross Energy Consumption AH/Day				54.2	

2 Alternative Energy Sources

Device	Amps	Hrs/day	AH/day	Notes
Solar, avg	1.0	8	8.0	Assumes one large panel.
Generator	30.0	0.6	18.0	Portable gas generator
Contribution of AES AH/Day			26.0	

3 Net Energy Consumption, AH/Day **28.2**

4 Desired Hours Between Charging **12**

5 Range of Battery Use **0.50**

For example, from 50-85% state of charge.

6 Recommended Battery Capacity **28**

7 Alternator Output, Amps **30**

Target would be 25% flooded, 40% gel, of capacity.

8 Charge Efficiency Factor **0.85**

Gels = 95%, flooded cells = 85%

9 Minimum Minutes to Charge **33**

Assumes alternator runs at full output.

Note: Boat has 4 AGM 97AH house batteries, one dedicated starter battery, solar panel, a 1200 watt generator, and boxes of AA and AAA cells.