

Electrical Budget Worksheet for Alchera

1 Calculate your DC Loads:

Lighting	Amps	Hours	AH/Day
Running Lights	4.6		0.0
Masthead Tricolor Light	2.2	9	19.8
Anchor Light	1.8		0.0
Strobe Light	0.6	2	1.2
Foredeck Light	1.4	0.1	0.1
Cabin Light (small)	0.3	9	2.7
Cabin Light (big)	0.7	2	1.4
Steaming Light	0.8		0.0
Instrument Lights	0.3	9	2.3
Other			0.0
Lighting AH			27.5

Galley	Amps	Hours	AH/Day
Refrigeration	4.7	6	28.2
Prop Solenoid	0.5	0.5	0.3
Other			0.0
Galley AH			28.5

Electronics	Amps	Hours	AH/Day
Autopilot	4.5	24	108.0
VHF (receive)	0.1	24	2.4
VHF (transmit)	7.0	0.03	0.2
SSB (receive)	1.8	2	3.6
SSB (transmit)	27.0	0.08	2.2
SSB Digital controller			0.0
GPS	0.2	24	4.8
Instruments	2.0	24	48.0
Weather fax receiver			0.0
Radar (standby)	1.8	20	36.0
Radar (transmit)	4.0	4	16.0
AIS	0.2	24	4.8
Energy Monitors			0.0
Stereo	0.5		0.0
Computer (screen off)	0.8	20	16.0
Computer (screen on)	1.3	4	5.2
Computer (serial adapter)			0.0
Iridium	0.5	0.25	0.1
Electronics AH			247.3

Plumbing	Amps	Hours	AH/Day
Fresh Water Pump	6.3	0.05	0.3
Bilge Pump(s)	5.0		0.0
Other			0.0
Plumbing AH			0.3

Calculate using average water consumption.
This should be zero unless the boat leaks.

Inverter	Amps	Hrs/day	AH/Day
Microwave	70.0	0.17	11.9
Chargers (nicad)			0.0
Other			0.0
Inverter AH			11.9

All values assume inverter efficiency = 85%.
Power factor may mess up this estimate.

Gross Energy Consumption AH/Day **315.5**

2 Alternative Energy Sources	Device	Amps	Hrs/day	AH/day
	Solar, avg	5.0	9	45.0
	Wind, avg		18	0.0
	Water, avg.			0.0
	Contribution of AES AH/Day			45.0

Assumes one large panel.
Assumes AIR Marine wind turbine in good location.

3 Net Energy Consumption, AH/Day **270.5**

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 **270**

7 Alternator Output, Amps **90**

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 **106**

Assumes alternator runs at full output.