

12 V and 230 V of stream enough! Also after the hibernation.

This was the most difficult subject what it till present for me gave, because many ways lead to Rome and everybody the super solution in the drawer lie has, is also mostly advertisement! After a long search with suppliers, battery manufacturer, half-timbered site and on the Internet among other things camper forum etc. I have everything for the moment on the row placed have to go, by the amount in information and disinformation.

The first important step was what we use within the family in stream in the season and in winter on the stand where he stands in the hall.

Not only on one day, but also several days with X kilometers / hours, long weekend without 230 V of mains connection or 5 months in the hall.

Personal stream need

Stream need Consumer	230 V	12 V	Number Hours	Time	Connection Worth x	Consumption VA=Watt		Accumu- lator Ah :12V	From protection Ampere
	Ext.	Ext.				p. Hour Watts	p. Day Watts		
Coffee machine*	1		0.11	6	1000	450	297.0	25	1.96
Radio		1	4			20	80.0	7	0.35
Television						40			0.17
Interior lighting		5	2			10	100.0	8	0.04
Fridge RM 7505	1		0		250	125	0.0	0	0.54
Fridge 12 V		1	2.5		175	125	312.5	26	0.54
Water pump		1	0.25	10		60	90.0	8	0.26
Vacuum cleaner	1			1	1000	450	112.5	9	1.96
Sleeping mask	1		8		75	40	320.0	27	0.17
Whole kW						1260	1,312.0	109	1.31

Our need amounts to 1.3 kWh. This value is representative for a lot of travel mobile and, therefore, can be laid to general considerations. Where does one fetch, however, the stream if one does not want to be every day in the net or is able?

Procurement of the required energy of 1.3 kWh per day.

230 V of the stream producer (also Knattermax called),

Yield about 400 Wh/hours, costs from 1,700€

Sound and smoke; because of the noise and exhaust gas development a motor stream producer can be used only seldom. Put this sometimes in on a camping place or parking lot, they have immediately richly party company. Not to talk about late evening or at night sometimes.

And he would have to run at least three hours to cover our need.

The connection exists in the Laika Ecovip 4.1

Other info:

Almost in every catalogue available.

Solar modules with 240 Watt peak.

Yield lies between 300 Wh and 600 Wh per day, cost with installation from 2,000€.

Also how to receive same stone kit from. 1,700€

Fist value 100 Wh/days of achievement is 1 m² roof surface and energy yield according to season and location.

To cover our day need, the required roof surface is too small. Moreover, a PV arrangement uses nothing if like in our case the vehicle stands in the wintertime in the hall or if it rains. Solar stream is interesting for small consumer and for stays around the Mediterranean.

More information :

Also famously and almost in every catalogue available.

Generator with Special regulation HPR of Hella.

HPR SansSouci, yield possibly. 1,000 Wh/hours, reequip coast from 1,650€

The yield is with from 600 to 2500 Wh/hours, with state gas drive according to size of the generator about 50% from this. The Agtar system HPR SansSouci encloses the Hella HPR, reinforced pipelines, a switch shooter, battery computer etc.

More information:

Agtar manual 2006, [HPR.pdf](#) or www.agtar.com

Generator, change judge and battery charger,

Yield about 500 - 1,400 Wh/hours, costs with installation about 2,300€

- 500 W per hour possibly with use of the net stream,
- 1,000 W per hour possibly with generator 90A,
- 1,400 W per hour possibly with reinforced generator 120A. (**Possibly our day need**)

There had to be one more possibility, because I have gone in 1983 with Travel-mobile from the Netherlands on vacation and was not 3 weeks in the net, without I needed to send my coffeemaker in the retirement. I have called the coach farmer immediately and have asked like he has made in Travel-mobile at that time in 1983.

Exactly, with a change judge, big battery and relay like with the coaches.

Because we have decided for the coach farmer solution with topical changes, find the way back further under ours Whole 12 V and 230 V of solution.

Fuel cell

Yield about 1,200 Wh/days, costs about 3,000€

The fuel cell SFC. As a fuel methanol is carried along in a special container.

More info:

Agtar manual 2006, www.agtar.com and

SFC Smart Fuel Cell AG, D-85649 Brunnthl or www.efoy.com

Batteries choice

Start, tank, Solar, gel or mike glass fleece batteries?

All called batteries are of lead acid accumulators. The difference lies in whether the electrolyte is liquid (then one speaks of wet batteries) or is fixed (as a gel or in a fleece). Moreover, differences exist in the design, on account of grids, tanks, tube records what has effect on higher stream deliveries, short or longer unloading time, life span.

- Start battery is an accumulator with liquid electrolyte, suitable only for brief high stream delivery. Not suitably for cyclic application.
- Traction, impulse, armored batteries are accumulators with liquid electrolyte, a lot of in use applications are with electric vehicles.
- Solar battery is also a liquid electrolyte accumulator.
- Gel or mike glass fleece batteries are accumulators with agreed electrolyte.

More information:

The accumulator of lead, his case and discharged technology and loading machine to the optimum store from, [Dieter Werner](#) or in www.elweb.info

Agtar manual 2006, [batteries](#) or www.agtar.com etc.

Type	gel/mike glass fleece	Start/Traction/Solar
Maintenance-free	yes	yes
Cycle number	300 – 900	300 - 1200
To follow gas evolution	very slightly	to observe
Self-unloading	2 years	from 4 to 8 months
To follow Sulfatierung	very slightly	to observe
Abschlammung to follow	none	to observe (rising capacity loss)

What one can combine with the available start battery from, 88ah, or 100, Ah, if for a bigger battery no place exists in the engine space of Fiat Ducato.

Combination	serial circuit	parallel circuit
Wet battery shrill battery	does not go	goes with dividing relay for stream backflow.
Gel battery gel battery	goes	goes
New and old battery	goes with an age difference	from maxi. 1 year
Big and small battery	does not go	goes with the same cable cross section of her Link (capacity relation 1:3)

Which capacity does one need?

There is probably a recommendation in different reports, however, better it is to be worked out his personal need in possibly;

- A. **Minimum need**; lighting, water pump \Rightarrow 12 V 80 to 100, Ah (20)
- B. **Middle need**; lighting, water pump, fridge, hairdryer, television \Rightarrow 12 V 160 from (20 to) 220 Ah (20 or 2x 12) V 100, Ah (20).
- C. **Middle need**; how B with air-conditioning \Rightarrow 2x 12 V 200, Ah (20 or 4x 12) V 100, Ah (20).
- D. **Bigger need**; please consult.

Personal need: 109, Ah: 65% of unloading = about 165, Ah (20) minimally.
 109, Ah: 50% of unloading = about 220, Ah (20) is enough.

Case was entitled	Rest tension	
	Wet	Gel / fleece
100%	> 12.6	> 12.8
80%	12.35	12.6
60%	12.1	12.4
40%	11.8	12.2
30%	11.3	11.8

Unloading	Rest tension	
	Wet	Gel / fleece
0%	> 12.6	> 12.8
20%	12.35	12.6
40%	11.95	12.4
60%	11.8	12.2
70%	11.3	11.8

Which brand Accumulator / battery?

* Energy density

Batteries	In	G flat.	Cycles with		KWh	G	Cost	EUR	Wh*	Remark
	Nr.	Capec.	% Unloading	L.duration	approx.	flat. Gew.	Approx.	KWh	Kg	
DETA Funline 220	1	220	700	60%	739	70	560,-	0.76	38	1.2
DETA Drive-mobile Pzs "H"	1	160	1,000	50%	1,000	70	451,-	0.45		2.3
Accumulator Solar	1	220	500	50%	660	61	310,-	0.47	43	2
Lifeline GPL-8DL AGM	1	255	1,000	50%	1,530	74	659,-	0.43	42	1,2,3,4
Trojan T-145 (2x 6V)	2	244			1.346	65	399,-	0.30	45	2,3,4
Elecsol CF 270	1	270	1,000	50%	1,620	63	449,-	0.28	52	2,3,4
Elecsol CF 100	2	200	1,000	50%	1,200	40	289,-	0.24	61	2,3,4

1. Gel maintenance-free
 2. Wet
 3. Able of high current
 4. Deep unloading party to 80% of unloading

Batteries / accumulators capable of high current are important for consumers the high approach stream need (Unloads, Charging current and Cycles) among other things air-conditioning and very highly competitive change judges.

Certainly there is to solve even more possibilities around the stream problem, beyond the solutions reported till present, but it should sprinkle the frame of this report to bring forward everybody. Personally I think that I have taken up the most important.

Ours Whole 12 V and 230 V of solution, total expenses with installation about 2,300€

2004: On receipt of from Travel-mobile we have exchanged for the moment the battery under the front passenger seat for a DETA Funline 220 Ah (20) gels and these immediately moved after the medium seat group with a change judge MT MT 1500-N behind the front passenger seat.

The very professional assembly has taken over the company moCom Ltd in Voerde. Thus our electricity supply was guaranteed for 2004.

Remark: We have chosen a battery with a higher capacity, because he is loaded less by the Unload stream/depth and thereby a longer life span has.

Moreover, gel, maintenance-free and Appropriate for interior for the medium seat group what is to be considered with the other accumulators from what unites only in the cuddy are to be answered, specially the traction, impulse, armored battery (Corrosive acid)

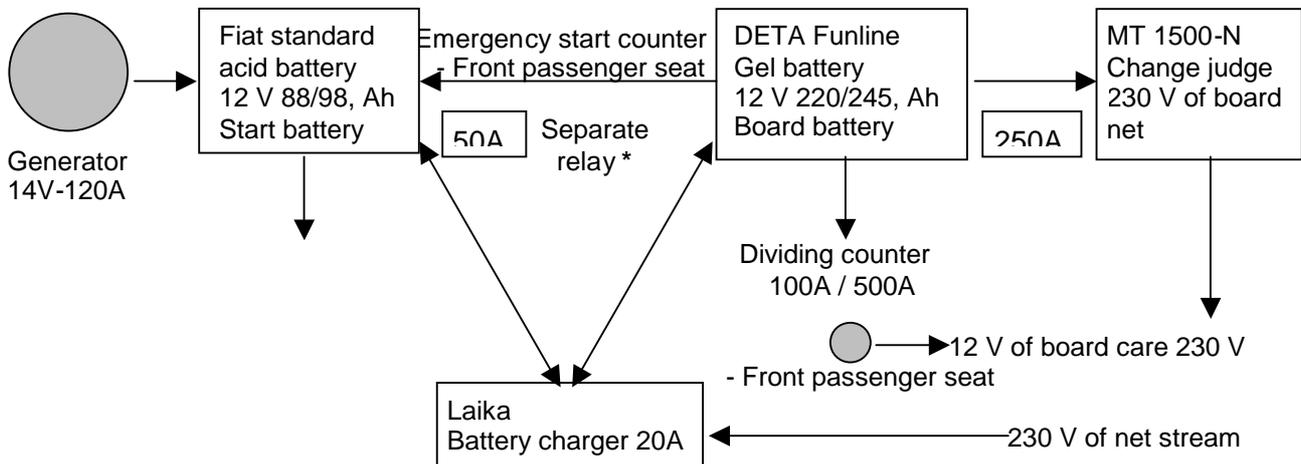
Moreover, we have to raise with bigger stream need always the possibility by the capacity.

(Example; 2x 12 V 220, Ah (20) with parallel circuit)

The change judge immediately has automatic Net change-over-first 230 V of external current then 12V-temperature sensor and more.

Laika EcoVip 4.1 electricity supply in 2005

Fiat standard
Generator 14V-90A



In 2005 optimization 12 V and 230 V

- Exchange of 12 V 88, Ah, 550A by start battery 12 V 100, Ah, 720A.
- Battery charger MT 1240.
(Charging current 40A, capacity 85 Ah – 480 Ah, gel counters with temperature sensor etc.)
- Emergency start counter in the front passenger seat. (Hook up of the board battery with start problems)
- Dividing relay concerning stream backflow of board battery in the starter battery.
- ***Not urgently with only gel batteries!**
- Reinforced generator 14V-120A

12 V of starter battery and state time.

- a. Connect travel-mobile to net stream if exists or is permitted.
- b. Deficit pool clamp and in a cloth wrap, then lay besides.
- c. Battery develop and with a battery guard or loader in the cellar place.
- d. Another solution is also possible, but is given by me only by personal information, concerning the theft protection linked with it and **rear switching!**

Care in regions where it in winter strongly freezes, for example, -15 C and more, the capacity from the accumulator / battery takes up to 65% and more of his capacity! Complete failure is possible!

12 V of emergency start counter

By 225, AH, gel-board battery I have a really assisted takeoff aboard also after a state time / hibernation of 5 months, because the gel battery from only about 10 to 15% of self unloading has in the period, (from 2 to 3% p. Month), however, like is possible for it around in addition to are of use?

To make by the board battery with the start battery connection, about the plus cable with protections, and a dividing counter at the side of the front passenger seat.

If one needs with start problems only briefly the board battery with connect taking into account that the start battery minimum (11.3V) has and the engine runs again.

After use immediately again switch off.

If costs in the **professional workshop** with dividing counter, small material and assembly about 200€ to 300€

12 V 100, Ah, start battery self unloading lies with **me personally** with from about 50 to 65% for this period. (From 10 to 13% p. Month)

Assisted takeoff

We have got the first spot assisted takeoff van to our winter stand renter, but this did not clap. An ADAC employee and neighbour came to assistance and then said immediately, you need an auxiliary vehicle with minimally 90, AH. **No common passenger car.**

Auxiliary vehicles should have a bigger battery or at least one commensurate ones, how the vehicle to be begun! Moreover, a start cable for diesel vehicles.

We have got a bigger estate car with 100, AH, near, connection laid with the plus pool, red cables, and the deficit pool, black cable to the engine block of the vehicle to be begun, and it clapped.

IMPORTANTLY: Because of the whole battery of volumes **ALL lights** turn on with the vehicle to be begun and again put out after from about 3 to 5 minutes, differently one can get protection problems!

More information:

moCom Ltd, D-46562 Voerde

Tel. +49 (0) 2855 – 965 40 or www.mocom-voerde.de

MT by Büttner electronics, D-48429 to the Rhine

Tel. +49 (0) 5971 – in 8080 890 or www.buettner-elektronik.de

AGTAR Elsenheimer & Partner GbR

Tel. +49 (0) 2203 – 9 88 80 or www.agtar.com

Recommendation:

By that there remains a difficult subject, one can recommend outside to the emergency start counter and assisted takeoff, a little, because everybody needs a to measure tailored stream package, at own need, place and weight possibilities coordinatedly.

But for which solution one chooses, there is not a good electricity supply less than 1,500€.

Our consideration was that we go about 20 years or 200,000 km with Travel-mobile and apart from spare batteries, it costs us about 115€ per year or 1.2 cents per km.