



Volvo Trucks. Driving Progress

BATTERY RECONDITIONER

EXTENDS WARRANTY AND REDUCES DOWNTIME



The Volvo Battery Reconditioner not only extends battery life, it extends service life of the electrical equipment and reduces truck downtime. That is why we offer extended warranty* on trucks fitted with a Volvo Battery Reconditioner.

All lead-acid batteries suffer from sulphation from day one. This causes the battery to lose power output and capacity and is a leading cause of early battery failure. Preventing this saves money and finite natural resources.

Saving batteries and alternators

The Volvo Battery Reconditioner removes and prevents sulphation. This enables the battery to continue to operate at full capacity. As a result, the alternators perform as designed and the batteries will not overheat during charging. This in turn extends battery life, reduces downtime and maximizes service life of the electrical equipment.

The Volvo Battery Reconditioner:

- Fits all batteries
- Is easy to install
- Stores up to 1500 Ah
- Provides a high pulse power
- Makes cold starting easier
- Has a compact, rugged and water resistant design

Benefits

- More uptime
- Maximum battery performance and service life
- Extended battery warranty
- Environmentally friendly

VOLVO

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Emne: Megapuls and Mercedes-Benz

Dear Sir

I am pleased to give you some information about our experience with the product Megapulse.

It has been known for some time in Norway and the result so far is astonishing, I am convinced about the effect this product gives the electrical system on our vehicles. First of all it gives the batteries a "much better and longer life", which results in avoiding a lot of electrical problems both for customers and our workshops. In Norway with the climatic conditions we have, the Megapulse product is saving us from a lot of problems.

In Norway we have decided to fit Megapulse on every Vito and Sprinter sold to our customers. Our experience is that customers with older vans are also installing Megapulse when they replace their vehicles.

We are also aware that large corporate customers such as the Coca Cola company in Norway have made the decision to fit Megapulse on their older vehicles with newer vehicles to follow.

If you want to have a more technical information you may contact our technical expert, Jörg Tantow, jorg.tantow@mercedes-benz.no. He is very well informed.

Best regards
Bertel O. Steen AS



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BAYLISS BOATWORKS

We used the Megapulse to bring an Odyssey PC1500 AGM battery from 0 CCA to its factory specification of 880 CCA. Over a five-week period with a 2-amp charge and the Megapulse wired to the battery, we saw amazing results on our bench test. We will be installing this product on all our new builds for preventative maintenance on our intricate battery systems.



Stokke, August 2011

Our experience with Megapulse FAB

We first made contact with Megapulse in August 2005.

After an introduction on the function, features and benefits of installing Megapulse FAB on lead acid batteries, we decided to conduct an in-house test by installing the Megapulse FAB on five of our order pickers which use 24V traction battery systems.

The result after one year of testing was very encouraging, following this positive result, management decided in August 2006 to install Megapulse FAB on all our battery applications, as well as in all our distribution vehicles at the Stokke facility.

To date we have only replaced one traction battery (450Ah), and two AGM batteries on "snail mini mover equipment". In the same period we have not had any significant expenses in relation to Speed/Load controllers or other electrical equipment on any of our electric vehicles. We attribute the credit for this directly to the use of Megapulse FAB.

We have a large number of petrol / Diesel and electric vehicles which have lead-acid batteries as their primary power source, these vehicles over the past 5 years have experienced a significant reduction in maintenance costs, and as a direct result of "healthy batteries", we have had a significant increase in production.

We have also experienced very severe winters since 2006 with up to 28 degrees below Zero (Celsius), we have not had any downtime on the trucks, add to this that "the snail mini movers" have operated flawlessly in temperatures of four degrees Celsius for two consecutive shifts.

Our crews and managers confidently recommend Megapulse FAB as a significant product in terms of cost reduction, safety and reliability.

Mathias Fon
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We purchased our first Megapulse FAB in April of 2009, to install on one of our forklift trucks running a 48V / 630Ah battery system.

The battery bank in the forklift truck was due for replacement as it was exhibiting signs of failure.

The cost of replacing the batteries at that time was 38,000 NOK, our technicians advised us after some product research was carried out on Megapulse FAB, to purchase FAB instead of buying new batteries.

The batteries in the forklift truck in question are still performing to this day at near new capacity.

We must say that we are very impressed with the FAB concept of keeping existing batteries healthy and in service longer instead of discarding them and buying new batteries.

Since April 2009 we have purchased an additional 43 Megapulse FAB for installation on our trucks.

Our Technicians and Management confidently recommend this product as a cost saving measure.

Porsgrunn 4-10-2011

Svein Skoglund
Operational Purchaser

24 month field Evaluation of Megapulse

By **UNIBUSS** Norway.

Megapulse FAB was installed on all 460 vehicles at UNIBUSS AS, Oslo. As a result no batteries have been replaced due to “sulfation” damage in the past 2 years.

Evaluation after 2 years of operation in 24V system busses. 2x12x240Ah batteries used in all tests and measurements. No maintenance charging of batteries was carried out prior to measurements.

Nils Ellingsen, technical manager at UNIBUSS AS says about Megapulse;

“To me it’s all about predictability and that the busses run when they should. After two years of testing Megapulse in all our vehicles, I can genuinely recommend Megapulse“.



In cooperation with mechanical shop manager **Tom André Haldammen** at UNIBUSS, measurements were taken from 7 randomly selected bus batteries of varying brands. Measurements show stable and nominal battery cell values with clear electrolytes. Megapulse was installed directly over the first Positive battery terminal and the last negative battery terminal. Installation was done by in-house service personnel.

Bus no. 517; VOLVO

Battery 1. All cells at 1.260 acid density and clear sulfuric acid. Quiescent voltage 12.2V.

Battery 2. All cells at 1.260 acid density and clear sulfuric acid. Quiescent voltage 12.2V.

Bus no. 601; SCANIA BioFuel

Batteries 1 and 2 measured as one 24V battery bank.

Cells at 1.250 and 1.280 acid density and clear sulfuric acid. Quiescent voltage 25.0V.

Bus no. 604; SCANIA BioFuel

Cells at 1.260 and 1.280 acid density and clear sulfuric acid. Quiescent voltage 25.1V.

Bus no. 566; MAN

Batteries 1 and 2 measured as one 24V battery bank.

Cells at 1.240 and 1.260 acid density and clear sulfuric acid. Quiescent voltage 24.9V.

Bus no. 565; MAN

Batteries 1 and 2 measured as one 24V battery bank.

Cells at 1.240 and 1.260 acid density and clear sulfuric acid. Quiescent voltage 25.1V.

Bus no. 440; Mercedes Benz

Valve regulated battery at quiescent voltage 25.5V.

Conclusion by e-mail, September 9th 2009 from UNIBUSS AS. Reproduced with permission.



Pictured above are battery caps from one of our lead-acid batteries that have been in use for 2 years. As evident the caps are completely clean and free from sulfation, something that has kept the battery "like new" and yielding the rated power of 225Ah.

"We are very pleased with the performance of the Megapulse installations on our buses. We rarely need to replace batteries, thanks to Megapulse. We especially appreciate that all bus electronics function properly, and the assistance from Megapulse, so that almost all our previous problems have been resolved".

Tom André Haldammen
Mechanical shop manager

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REPORT

To: Mike Janssen
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From: Bjørn Engesmo

Oslo, 30. april 2009

MEGAPULSE IN NORWAY

Regarding Mega Pulse in Norway we have a truck fleet of 70 trucks with Mega Pulse fitted, these trucks are now 3 years old and we have made a comparison with trucks in the same operation type and with the same drive and mileage-production per year.

Test results have surprised us greatly:

On trucks with Mega Pulse we have in the course of three years not changed batteries, generator, or other components due to power problems and we have not had the costs on the agreements that go on starthelt etc.

Total these cars had an error percentage of power problems in 0.3% off stock while trucks without Mega Pulse had faults on 56% of stock.

We have had periodic acid measurements for those cars and acid balance is completely smooth and high after three years.

Norsk Scania AS has also made a decision to mount the Mega Pulse on all new trucks with R&M agreement and on all trucks with R&M contract that has more than 3 years left of contract period.

We do not have a scientific test on the product but all our figures conclude that Megapulse is a cost reducing product that have a good effect on the batteries and the cost is very low on each vehicle.

Oslo, August 2011

Evaluation of Battery Conditioner - Megapulse.

Scania AS of Norway has been testing Megapulse MK4-24V in our contract vehicles and in Scania vehicles sold to Eastern ASKO AS since 2005. The Megapulse products were acquired from the Scandinavian Distributor of Megapulse Australia.

All vehicles installed with Megapulse have been regularly monitored and battery measurements carried out and recorded. Selected vehicles are used in the distribution sector and are fitted with electric loading platforms.

We have learned from reports generated from tests carried out on 70 trucks from the period of 2005 to 2010 that Megapulse helps to reduce operating costs.

The tests entailed monitoring the batteries on the 70 vehicles fitted with Megapulse throughout the contract period of 5 years, and at the same time monitoring similar vehicles not fitted with Megapulse over the same 5-year period. The total cost over the period for battery replacement and electrical system faults for the 70 vehicles fitted with Megapulse was NKR 69,000 whereas vehicles not fitted with Megapulse incurred significantly higher costs, in fact more than 50% higher over the same period.

Based on our previous experiences, we were not surprised by the evaluation (below) made by ASKO East AS on 22 August 2011 on 5 vehicles fitted with Megapulse in 2007. The battery measurements carried out on the vehicles in question were performed in the afternoon, after all trucks had been on distribution runs from that morning. The battery cells were measured with an optical hydrometer with 3 decimals.

Vehicles tested on 22/8/2011:

AE 17833 fitted with Megapulse in 2007.

End voltage of 25.6V and all cells had acid weight of 1270 and clear electrolyte. The vehicle was also fitted with a second unit on the cooling unit from Thermo King, and this battery measured a rest voltage of 12.8V. This battery is valve regulated so no cells were measured.

AE 17376 fitted with Megapulse in 2007

End voltage of 25.6V and all cells had acid weight of 1260 and clear electrolyte. The vehicle was also fitted with a second unit on the cooling unit from Thermo King, and this battery measured a rest voltage of 12.6V. This battery is valve regulated so no cells were measured.



AE 22618 fitted with Megapulse in 2007
End voltage of 25.3V and all cells had acid weight of 1260 and clear electrolyte.

AE 22648 fitted with Megapulse in 2007
End voltage of 25.2V and all cells had acid weight of 1250 and clear electrolyte.

AE 18793 Joined 2007
End voltage of 25.4V and all cells had acid weight of 1250 and clear electrolyte.

In addition to the cost savings in terms of battery operation that our customers experience with our vehicles, the environmental benefit of Megapulse contributes to our vehicles in making them more environmentally friendly because each vehicle is fitted with 2 x 225Ah Lead Acid batteries weighing approximately 115Kg, Megapulse keeps these batteries in service longer helping to reduce the number of discarded batteries annually.

We also confirm that all of our SCANIA OMNI Biofuel buses delivered to Unibuss AS Oslo in 2007 and fitted with Megapulse, have to date experienced no battery related costs or electrical-related costs.

We are pleased to provide this reference and we believe that Megapulse will be included as a "Green" cost reduction aid in our vehicles.

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