

# 24 month field Evaluation of Megapulse FAB

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.

#### **Test results:**

All test measurements performed between 4th and 7th of September 2009. Measurements performed by UNIBUSS' in-house service personnel using approved instruments. Batteries were not maintenance charged during summer or prior to testing. Batteries are wet-cell type.

#### **Bus no. 516; VOLVO**

**Battery 1.** All cells at 1.280 acid density and clear sulfuric acid. Quiescent voltage 12.5V.

**Battery 2.** All cells at 1.280 acid density and clear sulfuric acid. Quiescent voltage 12.6V.

#### **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, Alnabru

Tom André Haldammen

**UNIBUSS**

Verkstedleder, Alnabru  
Strømsveien 196-198  
PO Box 210 Alnabru, NO. 0614 Oslo

[www.unibuss.no](http://www.unibuss.no)

Telefon: + 47 22 08 43 00

Direkte: + 47 22 08 43 61

Mobil: + 47 46 80 04 98

Faks: + 47 22 08 43 01