Vertailussa 3,2 megapikselin kamerakännykät

TM

18/06

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VERTAILUSSA:
62 Ah:n käynnistysakut

KOEAJO:
Suzuki SX4 1,6 4WD

ENSITESTI:
VOLVO C30

PARIISI: Autosyksy uutuuksia tulvillaan

62 Ah starting batteries

62 Ah:n käynnistysakut

Jaksaa käynnistyä

Power to Start

In comparison

- Banner
- Biltena
- Bonn
- Bosch
- Energie
- Exide
- Faam (60 Ah)
- Freedom
- Hankook
- Hella
- Trane
- Varta
- Zap

It is almost that time in autumn, when in the morning you need to check the outdoor thermometer and hope that your battery has enough power to at least start one more time. If your suspicions are like this now, soon the morning will arrive when there will be no power and it's time to get a new battery.

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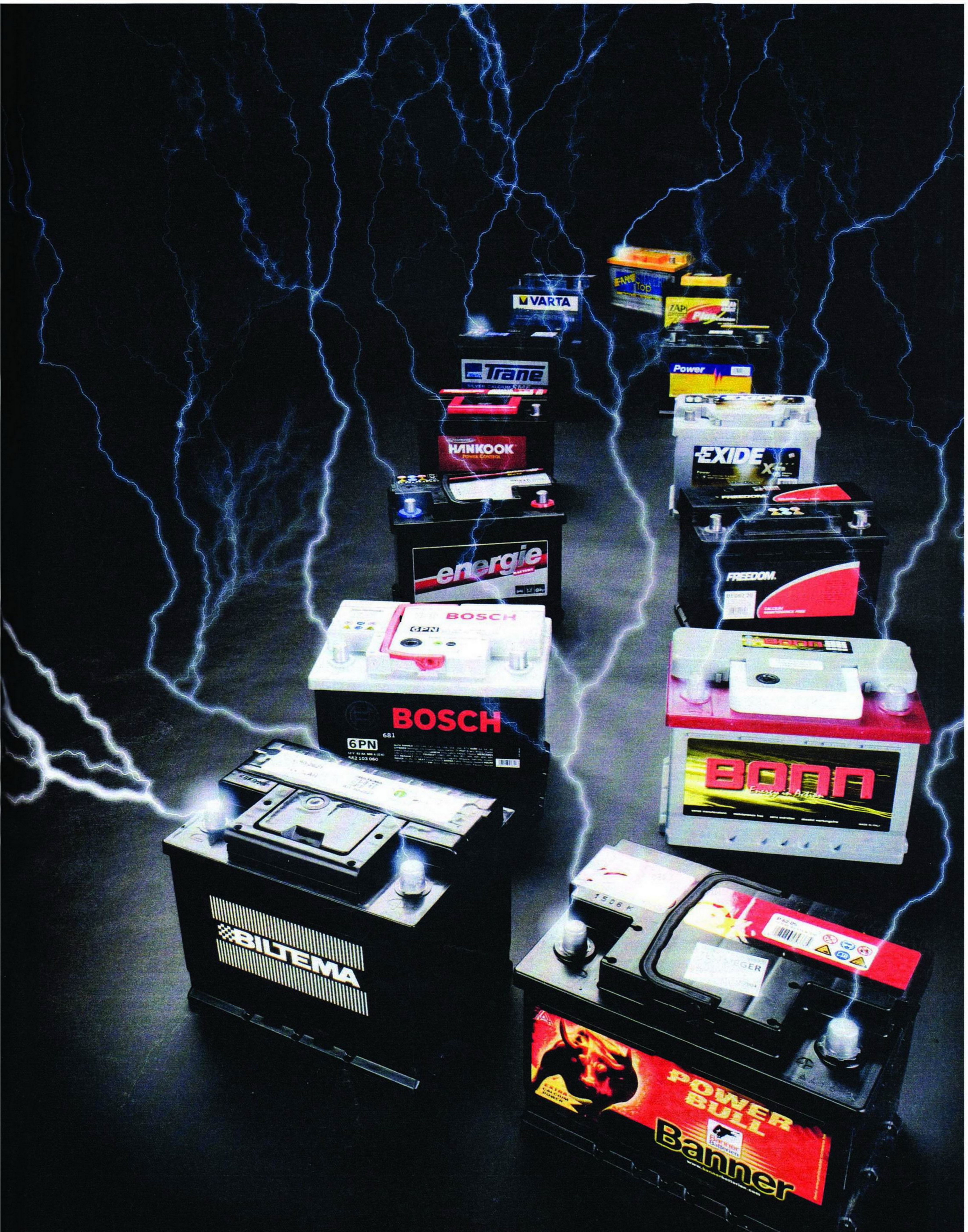
A-TEST & CONSULTING, planning and applying
MARKUS PENTIK?INEN, photos
VESA PYNN?NIEMI, grafics

In this year's battery comparison, we tested middle sized, 62 ampere hour batteries, which are mainly used in cars with benzene engines. They are similar in size with 55 Ah batteries but their capacities provide enough for a few more starts. It comes as no surprise that they are the best selling battery class.

This time there were 13 different brands of batteries tested which were provided by the importers. We asked the importers to send the most powerful 62 Ah battery that they had. Faam's battery differs from others as it is only 60 Ah, but it is so close to the others that it went well with this comparison. Bosch had model 6 PN which is about to displace their best selling 6 CN model. The new battery model's cold start current's value is bigger so the innovation will be


VARTA
Top
ZAP
Plus
Trane
Power
HANKOOK
POWER CONTROL
EXIDE
energie
FREEDOM.
BOSCH
6PN
681
BOSCH
6PN
BONN
BONN
1506 K
BILTEMA
POWER BULL
Banner

The different characteristics of the batteries were measured by a measuring method where it was possible to both charge and discharge the batteries. The measurement equipment included information collection that measured and saved the battery's current and voltage on a computer. This way it was possible to follow the testing event all the time.

Four measurement points

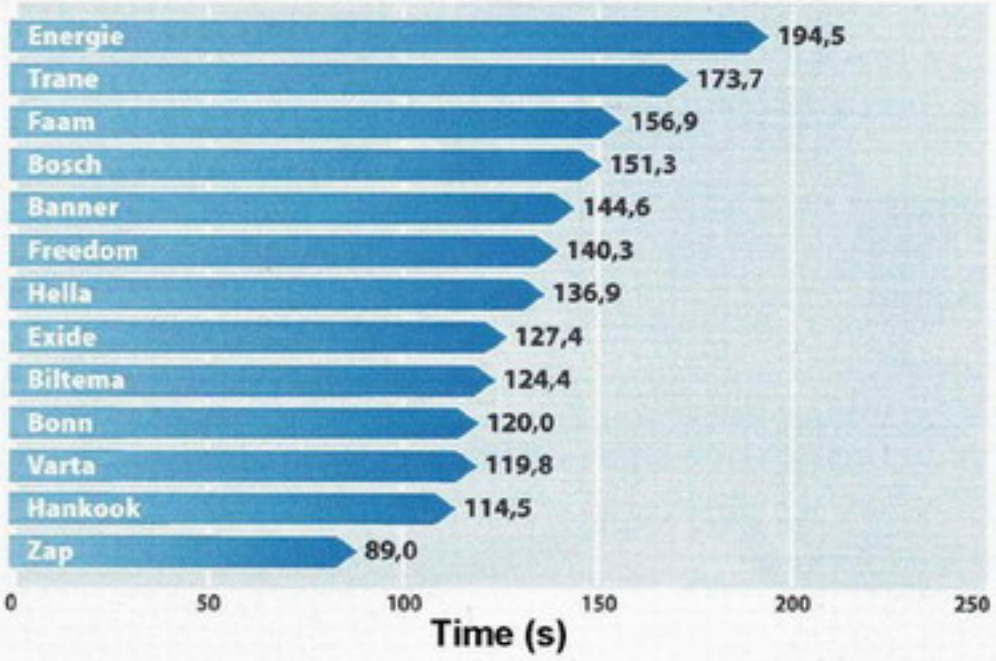
The batteries were put into order by using four different measurements. Two of these, i.e. cold start voltage and starting time, tell how well the battery will start a car in frozen temperatures when it's fully charged. The third test tells how well the battery receives current that is how well it charges in between the starts. The fourth test is storage capacity, which tells the remaining driving time if the charging is disconnected, for example, if the charger belt gets broken. Before starting the cold start measurement, the batteries were put on the same line by five charge and discharge cycles.

This was done to eliminate, for example, the differences due to longer storage time. After each cycle the batteries were of course fully charged again.

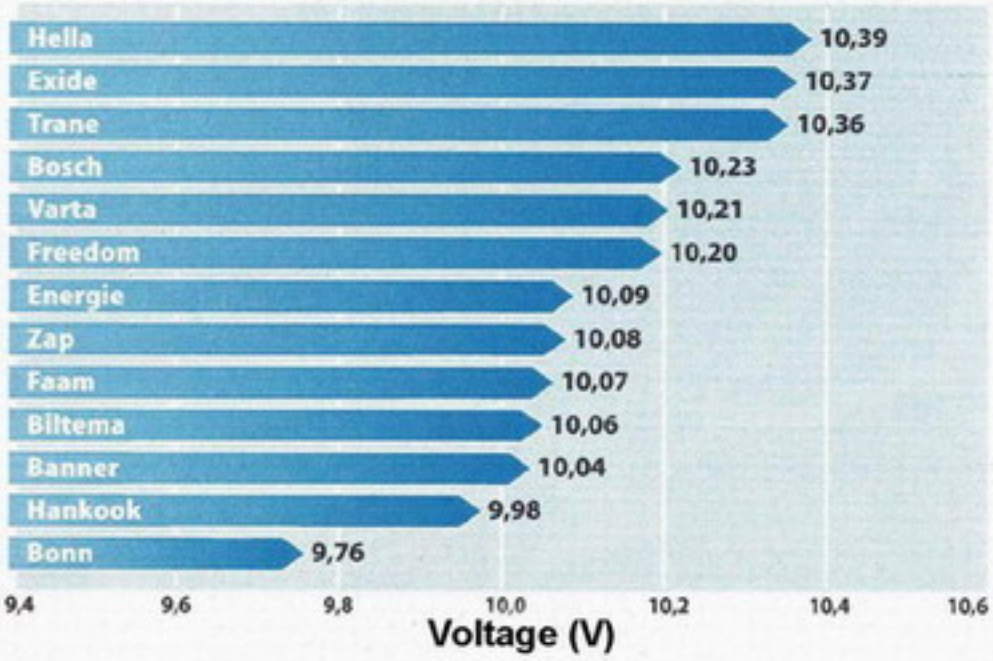
The real cold start tests were done in -20°C degrees temperature. The batteries had been kept at this temperature for 36 hours before starting the test. In the beginning of the measurement the batteries were charged with 200 ampere current for 15 seconds. The charging was followed by a rest period which also was 15 seconds and these series were done three times. After the last rest period the batteries were discharged continuously until the terminal voltage dropped to 7.5 volts. At that stage the terminal voltage was considered to be so low that the car would probably have no chance of starting again.

None of the batteries that we compared received a full grade of 10, but Exide, Hella and Trane all got 9. All these had an average voltage of over 10.3 V. during the first 15 second start. The others received a grade of 7 or 8 and the lowest by a slight margin was Bonn with a grade of 6. Its voltage average during the 15 seconds was 9.76 V.

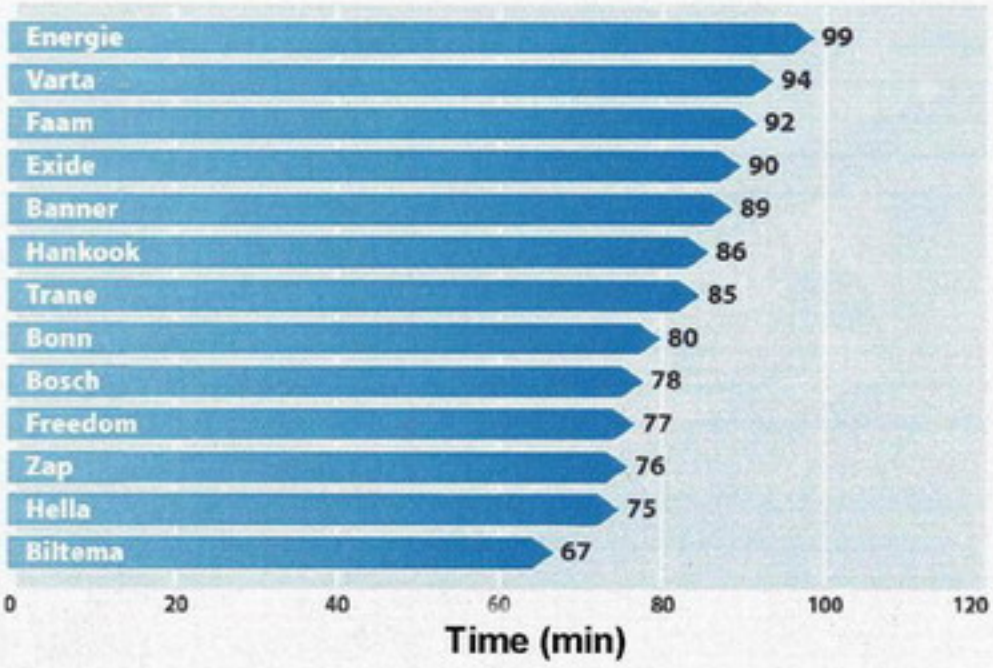
STARTING TIME



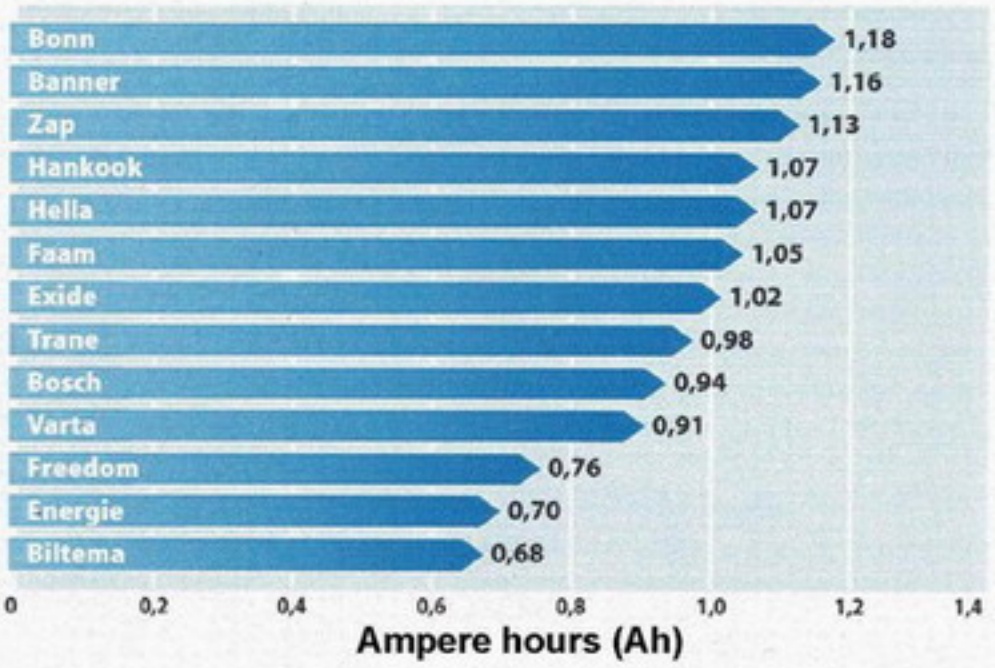
STARTING VOLTAGE

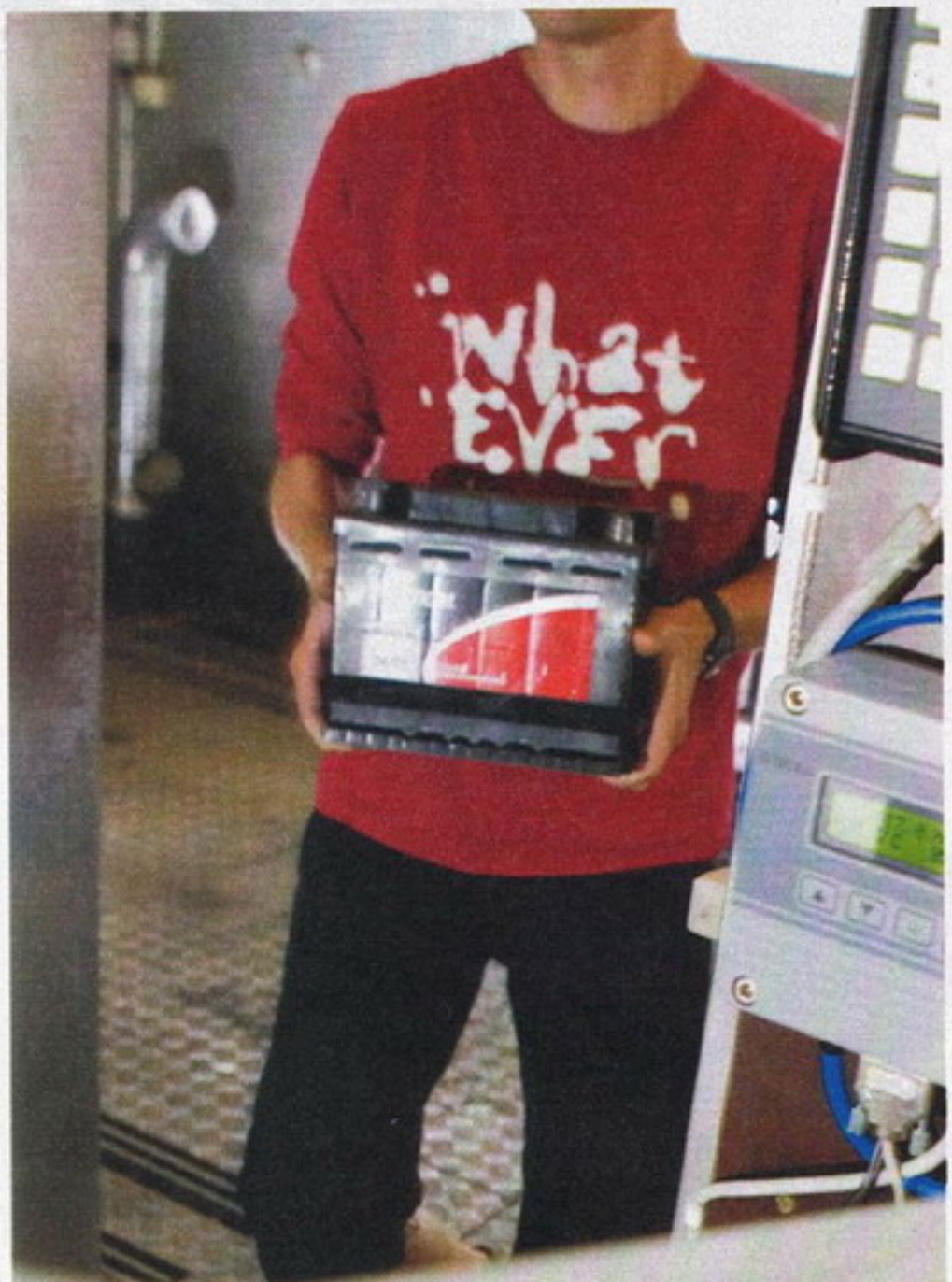


RESERVE CAPACITY



CHARGING WHILE COLD





The batteries were kept in a cold room for 24 hours before the cold start tests because the battery's capacity to release and receive current drops remarkably as the temperature falls. The individual batteries were brought to the testing area just before the measurements took place.

For the starting time Energie received the highest grade because it could carry the current for 195 seconds before the voltage dropped to 7.5 V. Trane's capacity was 20 seconds shorter and the others' even less than this. Exide and Hella, which did well in starting voltage were not on the top for starting time. Both were below 140 seconds and received grades of 7.

Receiving charging even in cold

Mainly in cars driving short distances in cities it may easily occur that the battery will gradually get empty and one morning the battery may not have enough power in it to start the engine. This can particularly happen when the temperature is below 0°C for several days when cold battery receives power remarkably less than a warm one. This is why the measurements for receiving the loading was done under -20°C degrees temperature.

In the beginning of the measuring, the batteries were at room temperature and fully charged. They were discharged so that 20 Ah amount of energy exited from them. After that the batteries were taken into a cold storage where they were let to cool down for 24 hours. After this, each one of the cold batteries were connected to the measuring device where they were first discharged for three seconds with 200 A current and then charged with 14.4 V. voltage for ten minutes.

The best charging batteries were Banner and Bonn. Also Exide, Faam, Hankook, Hella and Zap received an excellent grade (9). There were no total failures as even the lowest one, Biltema, received grade 6.

Also the belt can let you down

The belt of the charger can also break although this is extremely rare. According to Murphy's Law it will happen at the most inconvenient time: at night and in a place where no help can be received. When this happens, the best thing to do is to hope that you have chosen a battery with large reserve storage. The reserve capacity tells exactly how long it is possible to drive with the amount of energy the battery has.

Differences in the battery units

■In the test there were two batteries from each manufacturer so that it would be possible to eliminate the wrong measurement results. Even though the batteries look alike from the outside, there are often small differences with each unit. All is well if the differences are small, but in this case there were too big of a difference between the Bosch's batteries. In the cold start time measurement, one of the Bosch's batteries was the best and the other one the worst. The importer gave us a third battery for testing and it was almost exactly in-between the first two. So, in the test results we included the average times for Bosch, but with the help of the importer of the Bosch batteries, we sent the best and the worst Bosch battery back to the factory for testing.

The results are not quite ready yet, but the first tests in the factory also showed that the other battery is not up to the quality standards. The reason for the battery's lower than usual quality can not be told yet, as the tests have not been finished.

We will return to this matter when we receive the results from the Bosch's battery factory.

Recent changes in starting batteries

■A battery is an old invention and many people think that there has been no technical development for the last 20-30 years; from outside, batteries look just like they always have.

In fact the technical improvements of cars have caused that the batteries have been under similar pressures. Their development has been slower than that of cars; however, there have been gradual improvements. The power and the mass of the battery have clearly increased, stress endurance in drive has improved and the fact that the prices have remained more or less the same at the time when the prices for raw materials have gone up, all tell about improvements in cost fficiency of the production. Anyway, there have been no remarkable innovations in the production technology of the battery. It's just that the production units are now 5-10 times bigger and the factories have been automated and they have moved after the car factories where labor-and transportation costs are smaller.

Most of the developments have happened in changes of the product's main raw material i.e. lead mixture (alloy), which have further developed the usage and storage properties of the batteries. About ten years ago there was the so called maintenance free low antimonial battery, after which came the even more carefree lead calcium battery. The latest one is the silver calcium battery which is mostly done to be totally closed and meant to be maintenance free for its entire usage time. With all these structures it has been possible to lessen the water consumption of the battery, first by lessening the antimonial content of the lead alloy used as frame material in the battery's plate and then by moving to lead calcium alloy and finally to silver calcium alloy. Also with the silver alloy, it has been possible to receive a feature that has improved the battery's durability and usage time, particularly in hot temperatures. This practically means that the power and mass properties have also improved.

In addition, in recent years the battery's other electrochemical features have been improved, for example; the receiving capacity of charging, the inner structure's conducting ability and general quality improvements through automation of the production. Self-discharging of the battery has been reduced remarkably which in practice enables, for example, the storage time of a silver calcium battery to be 2-3 times longer than that of the old low antimonial battery's storage time. In other words, we have entered an era where the checking of batteries, opening the lids and adding water is not necessary any more and the battery has become a typical electric component that can be changed, just like many other car parts.

When the battery no more receives charging, the reserve capacity of the battery is naturally affected by the battery's primary capacity. But because the batteries were all of 60-62 Ah capacity, they are all equal for this matter.

The measurement was done with an adaptation from SAE norms, so that the batteries were discharged with 25 A current until the voltage dropped to 9.5 V. This discharging time was measured and so it was possible to give a grade to the battery's reserve capacity.

If your charger belt breaks, you can travel the longest distance with Energie, for it took 99 minutes before its voltage dropped to 9.5 V. Also, Exide Faam and Varta lasted more than 90 minutes. All the others were between 90 and 67 minutes.

Surprisingly when all the points are added after the four tests, it can be seen that the batteries are quite equal. **The winner is Trane, which in all tests was on top or right behind the leaders. The worst grade Trane received was from receiving the charging and even that was 8. The general grade for Trane is 8.8 which is above the five star level.**

After Trane came Banner and Exide with general grade of 8.5. Banner's worst point was cold start voltage and Exide's worst point was starting time. For receiving the charging Banner got a full 10 but that was not enough to put it on the top, because cold start voltage gave it only 7. Except for the starting time, Exide received 9's in all other categories, but one weaker grade dropped it from the top spot.

To be the winner in the test, a battery must be strong in all areas. Energie, Faam and Hella also were given four stars. The others were in the class of two or three stars and this time the last one was Biltema. Even it received one star so there were no classless batteries this time in our test.

■ In order to perform well the battery must both charge and discharge energy efficiently because just one weak feature can spoil the whole entity. If the battery is not capable of receiving current, it will sooner or later get empty no matter how well a full battery could give out current. On the other hand, good charging will not help if discharging is poor. A battery is a good one if it is good in all areas.

Grades	Overall value%	Banner	Biltema	Bonn	Bosch	Energie	Exide	Faam	Freedom	Hankook	Hella	Trane	Varta	Zap
Cold Start	25	7	7	6	8	7	9	7	8	7	9	9	8	7
Starting Time	25	8	7	6	8	10	7	8	8	6	7	9	7	5
Reserve Capacity	25	9	7	8	8	9	9	9	8	9	8	9	9	8
Receiving Charge	25	10	6	10	8	7	9	9	7	9	9	8	8	9
General Grade	100	8,5	6,8	7,5	8,0	8,3	8,5	8,3	7,8	7,8	8,3	8,8	8,0	7,3

Trane

Model: 56219 SMF
Capacity: 62 Ah
Cold start current: 480 A EN
Number of plates: 13 pc
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 175x 189 mm
Recommended price: 62 E
Importer: PJP Batteries-Co.,Ltd
tel. (019) 325 072
Country of origin: Thailand
Warranty: 1 year

- cold start voltage
- starting time
- reserve capacity

- only 1 year warranty

Overall Grade 8.8 ★★★★★

Banner

Model: P6205
Capacity: 62 Ah
Cold start current: 510 A EN
Number of plates: 12 pc
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: no
Dimensions: (LxWxH)
214 x 175 x 175 mm
Recommended price: 101 E
Importer: Motoral Co,Ltd.
tel. (09) 37 541
www.motoral.fi
Country of origin: Austria
Warranty: 2 years

Pros

- receiving charge
- reserve capacity

Cons

- cold start voltage

Overall grade 8.5 ★★★★

Exide

Model: X-TRA 46-400
Capacity: 62 Ah
Cold start current: 640 A EN
Number of plates: 14 pc
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 175 x 190 mm
Recommended price: 121 E
Importer: Exide Co.,Ltd.
(09) 4154 5500
www.exide.fi
Country of origin: Spain/Poland
Warranty: 2 years

Pros

- reserve capacity
- receiving charge

Cons

- starting time

Overall grade 8.5 ★★★★

Energie

Model: Gold
Capacity: 62 Ah
Cold start current: 520 A EN
Number of plates: Manufacture doesn't mention
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 175 x 190 mm
Recommended price: 65 E
Importer: Akkutalo Finn Sukon Co.,Ltd. tel. 0207 890 790
www.akkutalo.fi
Country of origin: Italy
Warranty: 2 years

Pros

- starting time
- reserve capacity

Cons

- receiving charge

Overall grade 8.3 ★★★★

Faam

Model: Top Silver 12 V 60L22
Capacity: 60 Ah
Cold start current: 540 A EN
Number of plates: 11 pc
Maintenance free: no
Carrying handles: yes
Display for the state of charge: no
Dimensions: (LxWxH)
242 x 175 x 190 mm
Recommended price: 62 E
Importer: Teboil Co., Ltd.
tel. 020 47 001, www.teboil.fi
Country of origin: Italy
Warranty: 2 years

Pros

- reserve capacity
- receiving charge

Cons

- cold start voltage

Overall grade 8.3 ★★★★

Hella

Model: Power 131
Capacity: 62 Ah
Cold start current: 480 A EN
Number of plates: 10 pc
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: no
Dimensions: (LxWxH)
246 x 175 x 190 mm
Recommended price: 96.80 E
Importer: Oy ?rum Co.,Ltd
tel 010 56 941 www.orum.fi
Country of origin: Czech
Warranty: 2 years

Pros

- cold start time
- receiving charge

Cons

- starting time

Overall Grade 8.3 ★★★★

Bosch

Model: 6PN
Capacity: 62 Ah
Cold start current: 600 A EN
Number of plates: 14
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 175 x 190 mm
Recommended price: 91 E
Importer: Robert Bosch Co.,Ltd
tel (09) 435 991 www.bosch.fi
Country of origin: Spain
Warranty: 2 years

Pros

- receiving charge
- reserve capacity

Cons

- Big differences between units

Overall grade 8.0 ★★★

Varta

Model: Blue dynamic High
Capacity: 62 Ah
Cold start current: 600 A EN
Number of plates: 14 pc
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 175 x 190 mm
Recommended price: 91 E
Importer: Varta Autonakut
tel (09) 50 501
www.varta-automotive.fi
Country of origin: Spain
Warranty: 2 years

Pros

- reserve capacity

Cons

- starting time

Overall grade 8.0 ★★★

Freedom

Model: BE06220
Capacity: 62 Ah
Cold start current: 540 A EN
Number of plates: 13 pc
Maintenance free: yes
Carrying handles: no
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 175 x 190 mm
Recommended price: 70 E
Importer: HL Group Co.,Ltd
tel 0207 445 200 www.hlgroup.fi
Country of origin: France
Warranty: 2 years

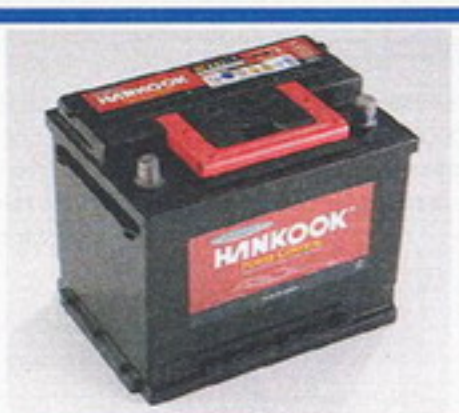
Pros

- cold start voltage
- starting time

Cons

- receiving charge
- no handles

Overall grade 7.8 ★★★



Hankook

Model: Kalsium 936-53219
Capacity: 62 Ah
Cold start current: 480 A EN
Number of plates: 11 pc
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 174 x 190 mm
Recommended price: 64 E
Importer: : Koivunen Co., Ltd.
tel (09) 35 011 www.koivunen.fi
Country of origin: South-Korea
Warranty: 2 years

Pros

- reserve capacity
- receiving charge

Cons

- cold start voltage
- starting time

Overall Grade 7.8 ★★★

Bonn

Model: 562 19
Capacity: 62 Ah
Cold start current: 540 A EN
Number of plates: 12
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 175 x 175 mm
Recommended price: 78 E
Importer: Akro-Jalostus Co.,Ltd
tel 050 430 6800
Country of origin: Italy
Warranty: 1 year

Pros

- receiving charge

Cons

- cold start voltage
- starting time

Overall Grade 7.5 ★★

Zap

Model: Plus Calcium 62Ah
Capacity: 62 Ah
Cold start current: 480 A EN
Number of plates: 13
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: no
Dimensions: (LxWxH)
242 x 175 x 190 mm
Recommended price: Parkanon Autovaraosa Co.,Ltd tel 03 443 11
www.parkanoautovaraosa.fi
Importer: 49 E
Country of origin: Poland
Warranty: 2 years

Pros

- receiving charge

Cons

- starting time
- cold start voltage

Overall Grade 7.3 ★★

Biltema

Model: SMF 80-2621
Capacity: 62 Ah
Cold start current: 480 A EN
Number of plates: 11
Maintenance free: yes
Carrying handles: yes
Display for the state of charge: yes
Dimensions: (LxWxH)
242 x 174 x 190 mm
Recommended price: 59.90 E
Importer: Biltema, Suomi Co.,Ltd
tel 020 760 9609
www.biltema.fi
Country of origin: South-Korea
Warranty: 2 years

Pros

- 2 year Warranty

Cons

- reserve capacity
- receiving charge

Overall Grade 6.8 ★