

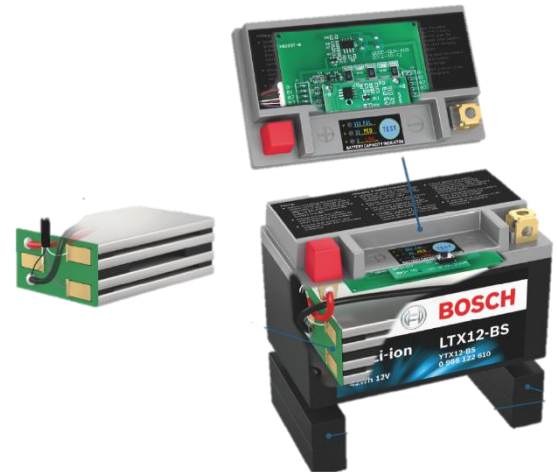
# BOSCH LITHIUM-ION POWERSPORT BATTERY

# FEATURES AND BENEFITS

# Bosch Li-Ion PowerSport Battery Features and Benefits

## Key Features

- ▶ **4-5 times longer life compared to lead acid**
- ▶ **18 month free replacement warranty**
- ▶ **100% maintenance free**
- ▶ **State of charge indicator**
- ▶ Highest reliability under extreme heat
- ▶ Highest vibration resistance
- ▶ 65% less weight compared to lead acid
- ▶ Low self discharge compared to lead acid
- ▶ Faster re-charge compared to lead acid
- ▶ Including battery management system
- ▶ >90% coverage with 1:1 replacement



# MARKET RESEARCH

# Bosch Li-Ion PowerSport Battery

## Survey Results

### Key Facts

- ▶ As the most important decision drivers customers chose
  - ▶ Battery Life (4.4)
  - ▶ Price (3.9)
  - ▶ Warranty (3.9)
  - ▶ Brand (3.2)
  - ▶ Weight (2.9)
- ▶ At \$20 price difference 72% of potential buyers would choose Li-Ion over factory activated AGM



### Which Battery would be preferred?

#### AGM Sealed Battery

##### *Better*

- Long Life- Up 2X Longer
- Extreme heat tolerance
- Spill Proof / leak proof
- Highly vibration resistant

\$59.99

1 Year Free Replacement

#### Lithium Ion Battery

##### *Best*

- 4-5 times longer life
- 100% maintenance free
- More reliable under extreme temperatures
- Highest vibration resistance

\$79.99

18 Month Free Replacement

**28%**

**72%**

# Bosch Li-Ion PowerSport Battery Survey Results

## Questions

- ▶ If all of the following batteries had the same pricing, which battery would you select based on appearance?
- ▶ Please rank the following batteries on how you regard their quality.
- ▶ Please rank the following batteries by label preferences.



### Top Ranked Battery Percentages



### Top Ranked Battery Percentages



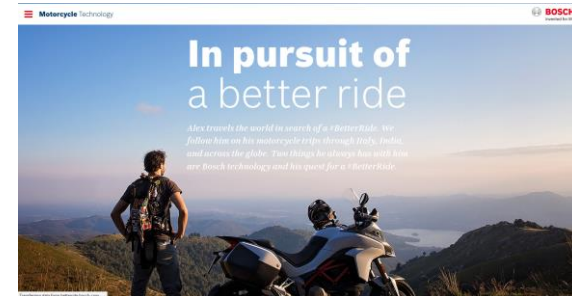
# MARKETING APPROACH

# Bosch Li-Ion PowerSport Battery Marketing Concept

- ▶ Raise Awareness through Motorcycle Campaign and Shelf Banner for Store Test
- ▶ Educate Customers with Shelf Banner and Installation Video
- ▶ Utilize Survey Results to tailor Marketing Material to Customer Demand



YouTube Installation Video



Bosch Group Motorcycle Campaign



Shelf Banner



# SAFETY TESTS

# Bosch Li-Ion PowerSport Battery Abuse Tests

## A3.4. Abuse Tests – Slide 1

For special tests / abuse tests were conducted:

- Overcharging
- Short circuit and
- Impalement

### Section 1: Overcharging

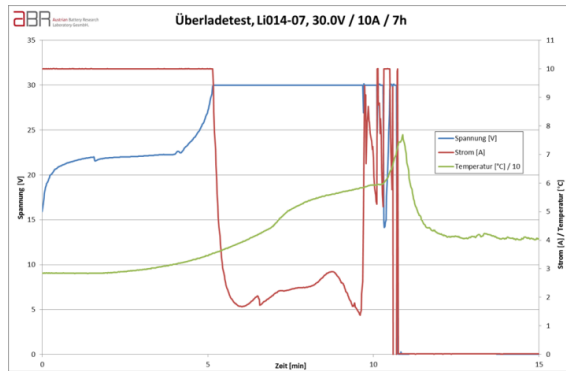


Image 5: Loss of amperage / voltage and temperature characteristic



Image 6: Images tested battery / cell pack (after opening) after overcharging test

Though strong smoke development and mechanic deformation at overcharging of the tested battery following high temperatures, explosions or fire did not appear.

# Bosch Li-Ion PowerSport Battery Abuse Tests

## A3.4. Abuse Tests – Slide 2

### Section 2: Short Circuit

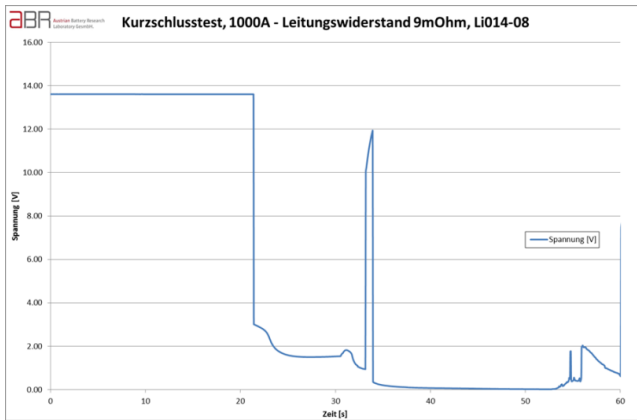


Image 7: Voltage characteristic at short circuit



Image 8: Image of tested battery / cell pack during / after test respectively opening the tested battery



Also here strongly exotherm reactions are shown during the test.  
Explosions or fire did not appear here either.

# Bosch Li-Ion PowerSport Battery Abuse Test

## A3.4. Abuse Tests – Slide 3

### Teil 3: Impalement / Penetration Test

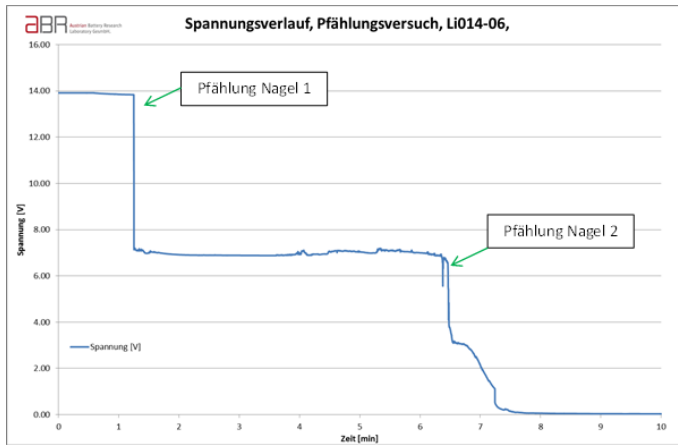


Image 9: Voltage characteristic at impalement

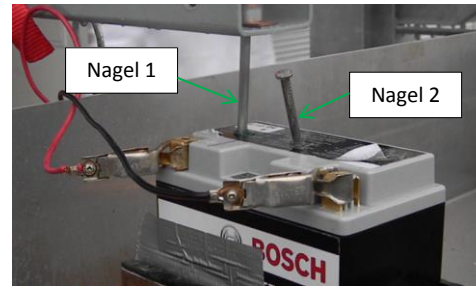
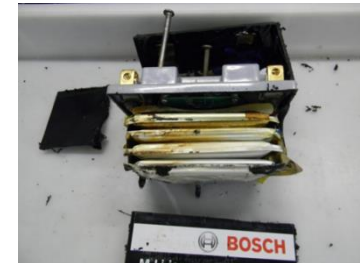


Image 10: Image of tested battery / cell pack during / after test (impalement) respectively opening the tested battery



Conducting the pinching test the tested battery reacts strongly exotherm as well. Also here there was no explosion or fire.

THANK  
YOU