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# Donut Lab's Solid-State Battery Achieves Promising First Test Results

## Description

Finnish company Donut Lab has announced a new battery in Finland. This battery is called a solid-state battery. It can charge much faster than regular batteries.

The VTT Technical Research Centre tested the battery. They found it could charge from 0% to 80% in about 9.5 minutes. In another test, it charged to 80% in about 4.5 minutes. This is much quicker than most lithium-ion batteries.

Solid-state batteries do not use liquid to move energy. This makes them safer and able to hold more energy. This could change how long it takes to charge electric vehicles (EVs).

The VTT team used different methods to keep the battery cool during charging. In one test, the battery got too hot and had to be stopped. The team fixed this by making sure the battery was in better contact with the cooling plate.

Donut Lab's battery can last 100,000 charging cycles. Most lithium-ion batteries last 1,500 to 3,000 cycles. But the test did not answer all questions. The chemistry of the battery is still uncertain.

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## Vocabulary List:

1. **Solid-state** /'sɒlɪd-steɪt/ (adjective): Referring to a type of battery that uses solid electrodes and a solid electrolyte.
2. **Charge** /tʃɑːrdʒ/ (verb): To supply energy to a device.
3. **Cycles** /'saɪkəlz/ (noun): A series of events that are repeated regularly in this context referring to the number of charge and discharge processes a battery can undergo.
4. **Chemistry** /'kɛmɪstri/ (noun): The branch of science that studies the composition structure properties and change of matter.
5. **Energy** /'ɛnədʒi/ (noun): The capacity to do work or produce change; in this context energy refers to the power stored in batteries.
6. **Cooling** /'kuːlɪŋ/ (noun): The process of reducing temperature especially to maintain optimal functioning in a device.

## Comprehension Questions



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## Multiple Choice

1. What type of battery has Donut Lab announced?
  - Option: Lithium-ion battery
  - Option: Solid-state battery
  - Option: Nickel-cadmium battery
  - Option: Lead-acid battery
2. How long did it take for the battery to charge from 0% to 80% in one of the tests?
  - Option: 4.5 minutes
  - Option: 9.5 minutes
  - Option: 15 minutes
  - Option: 10 minutes
3. What is one advantage of solid-state batteries?
  - Option: They are much heavier
  - Option: They use liquid to move energy
  - Option: They can hold more energy
  - Option: They are less safe
4. What method did the VTT team use during testing?
  - Option: Heating the battery
  - Option: Keeping the battery cool
  - Option: Using more liquid
  - Option: Removing the cooling plate
5. How many charging cycles can Donut Lab's battery last?
  - Option: 1,500
  - Option: 3,000
  - Option: 100,000
  - Option: 10,000
6. What is the main drawback mentioned in the testing?
  - Option: The battery is too light
  - Option: The chemistry of the battery is uncertain
  - Option: The battery charges too slowly
  - Option: The battery is too expensive



### True-False

7. Donut Lab's solid-state battery can charge faster than regular batteries.
8. Solid-state batteries use liquid to transfer energy.
9. The VTT Technical Research Centre is based in Sweden.
10. Most lithium-ion batteries last significantly fewer cycles than Donut Lab's battery.
11. The VTT team faced no problems while testing the battery.
12. The battery can charge to 80% in about 4.5 minutes.

### Gap-Fill

13. The battery from Donut Lab is called a solid-state \_\_\_\_\_ .
14. It took about \_\_\_\_\_ minutes to charge from 0% to 80%.
15. Solid-state batteries do not use \_\_\_\_\_ to move energy.
16. Donut Lab's battery can last \_\_\_\_\_ charging cycles.
17. The VTT team adjusted the battery to improve contact with the \_\_\_\_\_ plate.
18. The chemistry of the battery is still \_\_\_\_\_ .

### Answer

**Multiple Choice:** 1. Solid-state battery 2. 9.5 minutes 3. They can hold more energy 4. Keeping the battery cool 5. 100,000 6. The chemistry of the battery is uncertain

**True-False:** 7. True 8. False 9. False 10. True 11. False 12. True

**Gap-Fill:** 13. battery 14. 9.5 15. liquid 16. 100,000 17. cooling 18. uncertain

### Vocabulary quizzes



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**Multiple Choice ( Select the Correct answer for each question. )**

1. What is the term used to describe the unlawful taking of someone else's property?  
Option: Robbery  
Option: Theft  
Option: Burglary  
Option: Fraud
  
2. What are collectible items that often feature characters from sports or games called?  
Option: Posters  
Option: Trading cards  
Option: Comics  
Option: Stickers
  
3. What technology allows customers to scan and pay for their items without cashier assistance?  
Option: Self-service counter  
Option: Cashier checkout  
Option: Self-checkout  
Option: Mobile payment
  
4. Which word describes something that evokes strong feelings?  
Option: Emotional  
Option: Rational  
Option: Logical  
Option: Detached
  
5. What is the act of helping someone or something called?  
Option: Opposition  
Option: Support  
Option: Indifference  
Option: Hostility
  
6. What is the simulation of human intelligence processes by machines especially computer systems referred to as?  
Option: Robotics  
Option: Artificial Intelligence  
Option: Machine Learning  
Option: Automation
  
7. What term is used for the financial gains that exceed the expenditures?  
Option: Losses  
Option: Profits



Option: Investments

Option: Expenses

8. Who are the individuals that purchase goods or services from a business?

Option: Suppliers

Option: Vendors

Option: Customers

Option: Shareholders

9. What is the system of production consumption and trade of goods and services in a given area called?

Option: Market

Option: Society

Option: Economy

Option: Culture

10. What term refers to individuals who are selecting items for purchase in retail environments?

Option: Merchants

Option: Shoppers

Option: Retailers

Option: Wholesalers

**Gap-Fill ( Fill in the blanks with the correct word from the vocabulary list. )**

11. The crime of \_\_\_\_\_ involves taking someone's personal property without permission.

12. Many collectors enjoy assembling a complete set of \_\_\_\_\_ that feature their favorite players.

13. Using \_\_\_\_\_ helps speed up the process of purchasing items at the store.

14. It is important to seek out \_\_\_\_\_ from friends during difficult times.

15. \_\_\_\_\_ has the potential to revolutionize many industries by enabling smarter automation.

16. Companies strive to maximize their \_\_\_\_\_ by reducing costs and increasing revenue.

17. Sources of \_\_\_\_\_ are crucial for powering homes and industries efficiently.



18. During holiday seasons \_\_\_\_\_ flock to stores in search of the best deals.
19. A strong \_\_\_\_\_ can lead to higher employment rates and increased consumer spending.
20. The \_\_\_\_\_ system of the laptop helps prevent it from overheating during heavy usage.

**Matching Sentences ( Match each definition to the correct word from the vocabulary list. )**

21. The police were called in to investigate the theft of several expensive items from the store.
22. Kids often trade their favorite trading cards during recess at school.
23. The self-checkout kiosks have made the shopping experience quicker for many customers.
24. The movie was so emotional that it left many viewers in tears at the end.
25. Friends often offer emotional support during challenging times in life.
26. Artificial intelligence is being increasingly used to enhance customer service experiences.
27. The company reported higher profits this quarter compared to the same period last year.
28. Returning customers are vital for the long-term success of any business.
29. A healthy economy boosts consumer spending and encourages business investments.
30. Effective cooling systems are essential in preventing electronic devices from overheating.

**Answer**

**Multiple Choice:** 1. Theft 2. Trading cards 3. Self-checkout 4. Emotional 5. Support 6. Artificial Intelligence 7. Profits 8. Customers 9. Economy 10. Shoppers

**Gap-Fill:** 11. theft 12. trading cards 13. self-checkout 14. support 15. Artificial Intelligence 16. profits 17. energy 18. shoppers 19. economy 20. cooling

**Matching sentence:** 1. theft 2. trading cards 3. self-checkout 4. emotional 5. support 6. artificial intelligence 7. profits 8. customers 9. economy 10. cooling



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