BUSINESS NEWS LESSONS

EV batteries under scrutiny: the green option that could be greener

1 Warmer

a. Discuss the questions.

- What are consumers' main reasons for purchasing an EV (electric vehicle)?
- Are EVs making a dent in the traditional car market where you live?
- What investments need to be made in infrastructure to increase EV adoption?

2 Reading for gist

a. Skim the article and choose the main idea.

a. Battery recycling rates are in decline in Europe, where there are no regulations regarding the recycling of parts.

b. China has asserted itself as a dominant player in the EV supply chain and will remain the leading battery manufacturer.

c. Start-ups are trying to develop an alternative to current EV battery disposal that is more environmentally and commercially viable.

3 Key words

a. Write the words from the box next to the definitions below. Check your answers and your understanding of the words by using them to complete the example sentence after each definition. Then read the complete article to see how each key word is used in context.

alarm	alloy	anode	behemoth	cathode	commercialise
counterpart	durability	electrode	incentivise	mandate	operational
solvent	spearhead	supply chain	viable		

1. officially order someone to do something _____

   The new law _____ that all new vehicle patent applications include an environmental impact assessment.

2. able to succeed _____

   We are testing how _____ our current European business model is in the Latin American context.

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3. a thing that has the same purpose as another _____

   The Swedish AI tech start-up has announced that they will work in partnership with their Canadian _____ to enter the North American market.

4. the point where an electric current enters or leaves _____

   Scientists have developed a special _____ that targets the ammonia in cow manure to turn it quickly into fertiliser.

5. a metal made by mixing two or more metals or metal and another substance

   _____

   They recently filed a patent for a new aluminium _____ that consists of 50% recycled materials and exhibits great tensile strength.

6. something incredibly large and powerful _____

   Officials from the National Securities and Exchange Commission met with Wall Street _____, XTX to discuss their ETF application.

7. make something available for sale or organise it so it makes a profit _____

   A start-up has raised almost 3.3 million US dollars to _____ its wave-energy technologies.

8. a liquid in which solids dissolve _____

   He stressed the importance of switching to greener _____ and moving away from chemicals damaging the environment.

9. the quality of lasting a long time without becoming damaged _____

   Their latest EV prototype will undergo a 5000-mile _____ test before it goes into production.

10. working or ready to work correctly _____

    According to their team's projections, they will be fully _____ in three cities in just five years.

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11. lead a course of action _____

    Could this new government-funded project attract more investors and _____ a new strategy for carbon-footprint reduction?

12. the system of things and people involved in getting a product from where it is made to the person who buys it _____

    We need to have solutions in place to deal with potential disruptions in the _____ and ensure that we can get our products to our customers without fail.

13. sudden worry and fear, especially that something unpleasant could happen _____

    Several banks have raised _____ over more sophisticated impersonation scams.

14. make someone want to do something by offering rewards _____

    The government is trying to _____ the study of in-demand skills by offering generous scholarships in these areas.

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Tech start-ups race to make EV battery recycling sustainable

INDUSTRY ANTICIPATES SURGE IN DISPOSALS AS FIRST BATCH OF ELECTRIC VEHICLES NEARS END OF 10-YEAR LIFE CYCLE

ELEANOR OLCOTT AND GLORIA LI
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1 Technology start-ups are racing to make recycling electric-vehicle batteries cleaner and more economical, with investors pouring billions of dollars into recycling facilities globally to prepare for a surge in disposed packs and for regulations mandating minimum recycled content in new EV batteries.

2 With the first batch of electric cars nearing the end of their roughly 10-year lifespan, traditional recycling methods for lithium-ion batteries that power EVs are highly energy-intensive and involve burning used batteries at more than 1,400C.

3 A clutch of start-ups, including Hong Kong's GRST and Oregon-based OnTo Technology, as well as larger companies such as German chemicals giant BASF, are working on a water-based technology seen as a commercially viable and environmentally friendly alternative.

4 "Lithium-ion batteries were not developed for recycling. The packs in EV cars are a nightmare," said Wojciech Mrozik, an expert on battery recycling at Newcastle University. "They are not unified and have foams and glue, which require huge manual labour to separate."

5 Water-based binders were "the future", he said, adding that they were "less environmentally aggressive" than their chemical counterparts and required "less aggressive methods to recover the metals".

6 Global investment in battery-related start-ups this year – which reached $9.2bn by September, according to Crunchbase data – is set to exceed the preceding two years, defying a broader downturn in tech investment. Battery-related start-ups collectively raised $7.8bn in 2022, down from $12bn in 2021.

7 Most lithium-ion batteries use toxic chemicals to bind the metals to electrodes. The typical recycling method involves smelting discarded batteries or dissolving them in harsh chemicals to remove the binder and recover metals such as cobalt, nickel and copper as a metal alloy.

8 Under the process developed by Hong Kong's GRST, which is backed by the founder of Taiwanese chipmaker Realtek Semiconductor and Hong Kong garment behemoth TAL Apparel, the used batteries can be dissolved in water to obtain the so-called black mass of valuable metals that make up the cathodes and anodes.

9 GRST, a winner of this year's Earthshot prize for innovations to tackle climate challenges, hopes to raise $50mn in the next two years to increase production at the battery plant it co-owns in Zhejiang province. In the long term, GRST hopes to lease its water-based binder and recycling technology to other battery makers.

10 Past attempts to commercialise water-based binders have failed because of poor battery performance. "In the past water-based solvents have not been as stable as chemical solvents," said GRST co-founder Justin Hung.

11 Studies have shown that water-based binders can cause corrosion, but Hung said GRST had overcome this problem. Its batteries perform well in terms of energy density, safety and durability compared with chemical-based counterparts, according to its own customer tests.

12 OnTo Technology, a recycling start-up in Oregon, has started commercial tests of a water-based binder developed by scientists at Lawrence Berkeley National Laboratory. BASF invested in water-based binder production at two of its factories in China this year.

13 Experts said low recycling rates – less than 5 per cent of used lithium-ion batteries are recycled in the US – were a result of lack of investment and regulation. Most lithium-ion batteries are sent to waste management facilities or landfills, where the toxic chemicals in the binder can cause fires or leak into water systems.

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14 "Recycling hasn't been a top priority for the industry so far. The existing technology for recycling lithium-ion batteries is not operational at scale," said Sarah Montgomery, co-founder and chief executive of Infyos, a battery supply chain technology company.

15 But the tide was beginning to shift, she said, pointing to regulatory changes spearheaded by the European Union to increase battery recycling rates and make the process more sustainable.

16 In July, the European Council adopted the "battery passport", which will introduce a mandatory minimum level of recycled materials for EV and industrial batteries by 2031.

17 The changes come as demand for batteries is rising in line with increasing use of electric vehicles. McKinsey analysts forecast that the value of the entire lithium-ion battery supply chain will increase annually by 30 per cent from 2022 to reach more than $400bn by the end of the decade.

18 Analysts said companies such as GRST could benefit from alarm in western capitals about China's dominance in the EV supply chain. More than three-quarters of the world's lithium-ion batteries come from China, primarily made by CATL and BYD.

19 "Europe in particular is heavily dependent on China. There is a strong push to become more self-sufficient by building a circular supply chain, going from relying on raw materials dug up from the ground to reusing spent batteries," said Montgomery. "There is a tide of regulation coming in that will incentivise the recycling industry to develop."

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4 Understanding the article

a. Are these statements True (T) or False according to the article? Correct any that are false.

1. Lithium-ion batteries are currently hard to recycle because they require much energy (1400C heat) and manual labour.
2. GRST's water-based binders have successfully replaced the industry's traditional, more environmentally aggressive substances.
3. Investment in technology was higher in 2023 than in 2021 and 2022.
4. Cobalt, nickel, and copper can usually be recovered from lithium-ion batteries.
5. GRST plans to make its technology freely available to other battery makers to transform the industry.
6. GRST has tried to take a water-based solvent to market twice before.
7. OnTo Technology uses the same research as GRST for its water-based binder.
8. Sarah Montgomery thinks sustainable battery recycling hasn't been a priority in the past, but it is about to change.
9. The European Council has mandated that a minimum of recycled materials be used in EVs and other batteries in the future.
10. According to McKinsey analysts, the lithium-ion battery industry will grow by 30% yearly.
11. Some people are worried that a single country dominates lithium-ion battery production.

5 Business language – describing trends

a. Choose the correct option to replace each word in bold.

1. Investors expect **a surge** in disposed battery packs.

   a. decrease b. growth c. lull

2. Global investment in battery-related start-ups **reached** $9.2 billion by September.

   a. amounted to b. was just under c. rose to

3. According to Crunchbase data, investment is set to **exceed** the preceding two years.

   a. equal b. fluctuate c. grow more than

4. There has been a broader **downturn** in tech investment.

   a. dip b. hike c. rise

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5. Battery-related start-ups collectively **raised** $7.8bn in 2022, down from $12bn in 2021.

   a. declined to b. fell to c. obtained (investments)

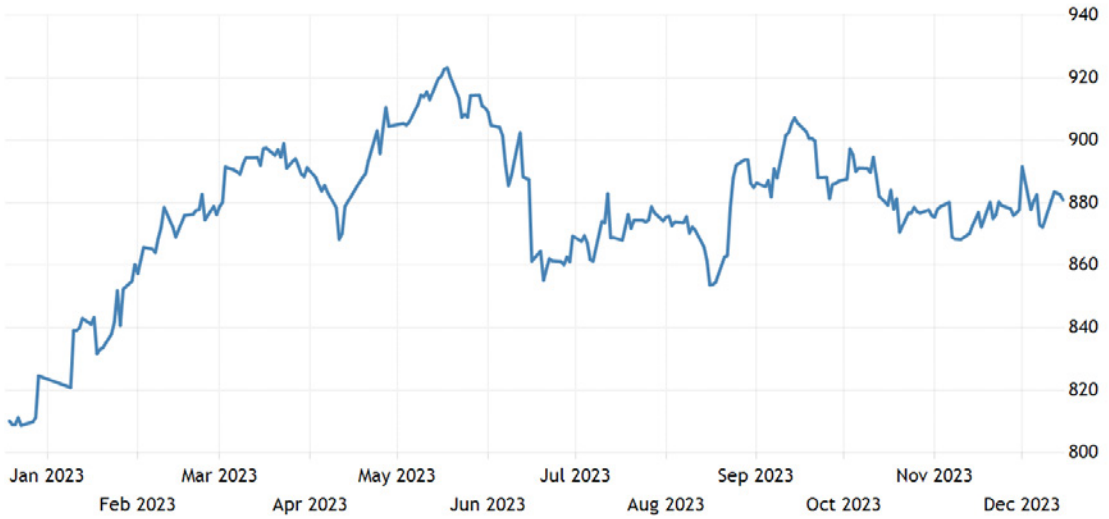
6. Demand for batteries **is rising** in line with increasing use of electric vehicles.

   a. is increasing b. is levelling off c. is remaining steady

7. McKinsey analysts **forecast** that the value of the entire lithium-ion battery supply chain will increase by 30 per cent annually.

   a. anticipate b. avoid c. find it unlikely that

b. The graph shows the share prices of a car technology company. Write at least five sentences that describe the graph. Use some of the words from the previous activity.



6 Discussion

a. Discuss these questions.

- What could your country do to increase the EV adoption rate?
- Should governments subsidise research and development for battery and battery-disposal technology? Or what should they invest in for a more sustainable future?
- Do you think it is more important to make cars greener or to expand public transportation options where you live? How could this be done?

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7 Wider business theme – pitching your product idea

a. Choose one of the situations and complete the three tasks below.

Situation 1

After completing an environmental impact assessment, your company has decided to develop a new eco-friendlier version of one of its products. This challenge is open to all areas of the company. You are going to pitch your idea to management.

Situation 2

You are an entrepreneur who sells an eco-friendly product. You are going to pitch your idea to a potential investor.

Task 1 – Product ideation

Think of a new product or a new version of an existing product. How can you make it more environmentally friendly? Consider the following:

- reducing toxic chemicals or materials in the manufacturing process
- increasing recyclable materials used
- reducing pollution or waste produced
- improving the recycling rate

Useful language

biodegradable
carbon footprint
carbon offsetting
circular economy
compostable
eco-friendly
energy-efficient
ethical investment
microplastics
nature-based solution
recyclable
regeneration
restoration
sustainable design
waste stream
zero waste

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Task 2 – creating your pitch deck

Create a concise presentation to share your business idea with others. Include the following slides:

1. Title
2. Introduction (who you are and why you're here)
3. Problems (2–3 problems the product aims to tackle)
4. Solution (keep it clear and concise)
5. Market size, trends, opportunities (provide numbers)
6. Product comparison (say who your competition is and why you're different)
7. Financial projections (what are your goals?)
8. Sales and marketing strategy (how will you reach your goals?)
9. Call to action (tell them what you need from them and remind them why)

Task 3 – the pitch

Practise and present your pitch.

Useful phrases

My name is (name). I'm the (role) for (company).

We are developing (what) to help (who exactly) (do what) with (your unique offer).

We compete in the (what) market, with a growing value of (number).

Our customers/users are (who exactly).

While we are similar to (competition), we (your unique offer).

Unlike (competition), who (weakness/disadvantage), we (your solution).

At the moment, we (describe where your team/product/company are at).

We are looking for (what you need) to (what you expect to achieve).

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