

Production engineering

with Benedikt Späth

Talking points

Knowledge & Comprehension

1. What is thermal runaway, and why is it important that battery developers model it with computer simulations?

Application

2. What activities or hobbies (at school, college or home) do you do that use an iterative process?
3. Think of three items you own that use batteries. How do you think those batteries could be improved?
4. Think of three electrical items that must be plugged in to get electricity. Do you think they would benefit from being battery powered? If so, how? And if not, why not?
5. What do you think are the most important areas for production engineers to currently focus on? Why?

Analysis

6. Benedikt tests designs using computer simulations and then follows this up by testing real-life physical prototypes. What are the advantages and disadvantages of tests using computer simulations compared to those using prototypes? Why does Benedikt use both in an iterative process?

Evaluation

7. What order of importance do you think the following battery characteristics should be placed in: performance, sustainability, safety, cost? What are the reasons for your decision?
8. How do you think batteries could remove our reliance on fossil fuels? What hurdles do you think are currently in the way?
9. What would you most enjoy about a career in production engineering, and why?

Activity

Using information from Benedikt's article along with your own ideas and other information you find online, prepare a presentation to educate members of the public about the importance of improving battery development processes to meet the needs of a sustainable economy.

Your presentation should cover why batteries are required for a sustainable economy that is transitioning away from fossil fuels, the current challenges in battery development, and how these challenges can be addressed and overcome.

You can choose the format for your presentation. For example, you could prepare a talk to be given to members of the local community when they attend a science fair held at your school, or you could prepare a video to be published on a popular-science YouTube channel.

Consider the following:

- What knowledge will your audience already have about the topic?
- How will you explain complex concepts using clear and simple language?
- How will you ensure your presentation is engaging for your target audience?

Deliver your presentation to your classmates while they play the role of members of the public in your audience, and answer any questions they have.

More resources

- This short video explains why and how lithium-ion batteries were developed: [youtube.com/watch?v=4WKH6mvSGrw](https://www.youtube.com/watch?v=4WKH6mvSGrw)
- Engineering Matters is a podcast that shares stories from around the globe about how innovative engineers are changing the world: [engineeringmatters.reby.media](https://www.engineeringmatters.reby.media)