CHOOSING THE RIGHT BATTERY FOR YOUR IOT DEVICE AND MAKING THE MOST OF IT:

20 RESOURCES YOU CAN'T MISS!

Hi and welcome to Saft Connected Energy Division, we're about to start something exciting! We're glad you have decided to join our community of Smart IoT developers and entrepreneurs.

We have shared a lot of valuable information on our blog to help you get you off the ground and make your onboarding experience free of worry. You'll find below a list of the articles that you may find particularly useful, at each stage of your IoT project.

CONTENTS

1. IF YOU ARE DEFINING YOUR USE CASE
2. IF YOU ARE AT THE DESIGN STAGE
3. IF YOUR DEVICE IS ABOUT TO BE DEPLOYED

01 IF YOU ARE... DEFINING YOUR USE CASE

VIDEO

How does a primary battery work?

In this series of 4 videos, you'll learn the **basic functioning of a primary battery**: its anatomy, how stored chemical energy is converted to electrical energy, the particularities of Lithium Thionyl Chloride systems in terms of operating voltage, and how the battery discharges itself and eventually dies.
We'll also assess two phenomena that can impact the life duration of a Lithium Thionyl Chloride battery: the **self-discharge** and, in the case of a liquid cathode system, the **passivation**. Finally, you'll see how these two phenomena, self-discharge and passivation, impact IoT applications.

saftbatteries.com/energizing-iot/how-does-primary-lithium-battery-work-video

ARTICLE

The 8 most common pitfalls when choosing a battery for your IoT device (and how to avoid them)

As you **evaluate the power needs of your application,** a thoughtful approach will help you avoid common pitfalls. This article intends to help you choose and integrate a battery that best fits your IoT project, from defining the needed space in the device to evaluating the device's lifetime in the field.

saftbatteries.com/energizing-iot/8-most-common-pitfalls-when-choosing-battery-your-iot-device-and-how-avoid-them

VIDEO

5 tips for IoT systems developers at design stage to follow when deciding upon a battery for your connected object

In these videos, Isabel Sourmey, Application Engineer at Saft's Connected Energy Division, provides **5 actionable tips on choosing and integrating the best battery for your IoT device and building a product that delivers on its promise.**

saftbatteries.com/energizing-iot/5-tips-iot-systems-developers-design-stage-follow-when-deciding-upon-battery-your

ARTICLE

How to read and interpret a battery's datasheet?

One way you can find out if a battery matches your application's profile is by carefully **reviewing the datasheet against your design requirements.** This article intends to explain and clarify in plain English the most relevant specifications that you may find in a primary battery datasheet, how to analyze the battery's spec against your use case, and **how to compare battery performance.**

saftbatteries.com/energizing-iot/how-read-and-interpret-battery%E2%80%99s-datasheet

ARTICLE

Lithium batteries in hazardous locations: ATEX and IECEx explained

EU ATEX regulations require that **devices used in these areas are intrinsically safe, including some of their inside components**. Choosing compliant batteries can decrease the certification phase and time-to-market.

saftbatteries.com/energizing-iot/lithium-batteries-hazardous-locations-atex-and-iecex-explained

ARTICLE

Low-power design: what does it mean for battery selection and operation?

Designing for low power places unique demands on IoT developers who must deal with a broad set of new requirements for connectivity, power consumption and robustness. **A number of factors can affect battery operation** and the trade-off between performance, energy and power consumption is often needed which makes the challenge even bigger. We teamed up with our partner, Deutsche Telekom AG, to take a look into **the implications of low-power design in battery selection.**

saftbatteries.com/energizing-iot/low-power-design-what-does-it-mean-battery-selection-and-operation

INFOGRAPHIC

The impact of the temperature on your IoT application's power consumption

Temperature is the main factor impacting your battery's power consumption. Chemical reactions are affected by temperature. A slight degree's change can affect your battery's capacity and service life. Anticipating and planning all possible and unimaginable temperature conditions will help you chose the right battery technology for your device and accurately calculate your device's lifetime.

saftbatteries.com/energizing-iot/impact-temperature-your-iot-application%E2%80%99s-power-consumption

ARTICLE

Price vs. Value - What's behind the price of your IoT battery?

What are the **elements that make a difference in a battery**, and ultimately how do these elements impact the success of your project, the customer's ROI, and the satisfaction of the end user? That's what we'll look at in this article.

saftbatteries.com/energizing-iot/price-vs-value-what%E2%80%99s-behind-price-your-iot-battery

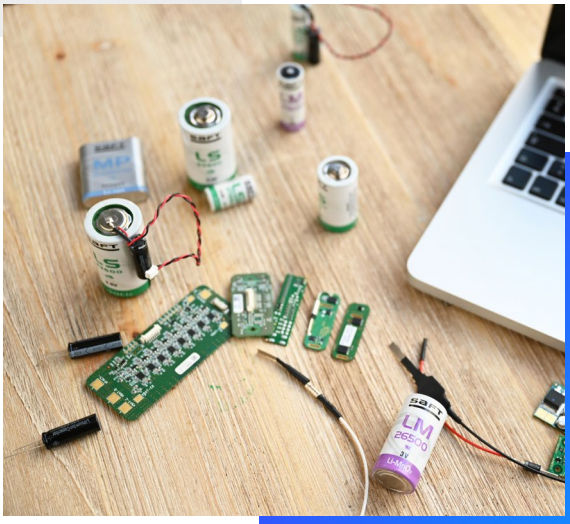
ONLINE SMART APP

Saft's Smart Battery selector, a free tool that lets you explore your battery choice at an early stage of your IoT project

You are at a loss regarding the choice of battery? Saft's Smart Battery selector (https://saft4u.saftbatteries.com/en/iot/simulator) helps you —in just 7 steps— discovering which batteries match your use case, how much space you need to leave in your product design to accommodate them, what is their price point and what average lifetime you can expect from your battery once integrated into your IoT device.

saftbatteries.com/energizing-iot/saft-launches-first-smart-battery-selector-tool-lets-you-explore-your-battery-choice

02
IF YOU ARE...
AT THE DESIGN STAGE



ARTICLE

Which types of batteries for your IoT devices?

Choosing the right battery for your smart device is not an easy task and depends on many parameters. In this article, we look at **the various batteries that are available and their specificities.**

saftbatteries.com/energizing-iot/types-batteries-iot-devices

INFOGRAPHIC

How can primary batteries achieve their expected lifetime?

Battery longevity is key to maximize the total cost of ownership (TCO) of an application. **An understanding of the factors affecting battery life** is therefore vitally important to an IoT designer for managing and optimizing the product performance. Let's take a look at the various elements and parameters that are to take in consideration…

saftbatteries.com/energizing-iot/how-can-primary-batteries-achieve-their-expected-lifetime

ARTICLE

How to best integrate batteries into your smart object

The way to connect the cell to your device depends on the size of the cell, the environmental conditions to which the device is going to be exposed, the need to replace the battery or not during the device's lifetime, the volume to produce and whether it needs to be automatically or manually integrated on the printed circuit board (PCB), and of course, the cost of the equipment. A wrong connection can result in inadequate, less effective devices. In this article, we will give you some recommendations on **how to choose the right connection; a solution that will last as long as your device is operating, without maintenance, thus helping you to maximize your end-users' value and benefits.**

saftbatteries.com/energizing-iot/how-best-integrate-batteries-your-smart-object

ARTICLE

Improving the overall efficiency and cost of your IoT device thanks to Virtual prototyping and testing

Digital twin and virtual prototyping technologies enable IoT developers to reduce their time to market by 1.2 years and avoid 40% of the short and long terms issues that may otherwise have arisen. **They can be used to assess, test and alter the robustness, viability and suitability of a system without having to build it to identify how to optimize its performance and avoid potential future issues through the analysis of data and monitoring.** In this article, we explain the benefits of such systems and the process to apply when testing a design.

saftbatteries.com/energizing-iot/how-create-successful-ecosystem-your-iot-project-episode-9-improving-overall

INFOGRAPHIC

The impact of the communication technology protocol on your IoT application's power consumption

When selecting a wireless technology for your IoT device, a few considerations must be taken into account. **Power consumption is one of them**. Indeed, some technologies can provide larger coverage, but they consume excessive energy. In this article, we study the main communication protocols and their impact on power consumption.

saftbatteries.com/energizing-iot/impact-communication-technology-protocol-your-iot-application%E2%80%99s-power-consumption

ARTICLE

Custom pack-making: designing your IoT batteries to the best standards

Once you know how many batteries you need to power your device as per your lifetime target, the time comes to consider the actual **design of the battery pack**. Transportation restrictions and the environment in which the device will be deployed have an impact on the design of the battery pack, thus on its size and cost. What exactly is **battery assembly** and why you should make sure to submit your design to our Battery Development team…

saftbatteries.com/energizing-iot/custom-pack-making-designing-your-iot-batteries-best-standards

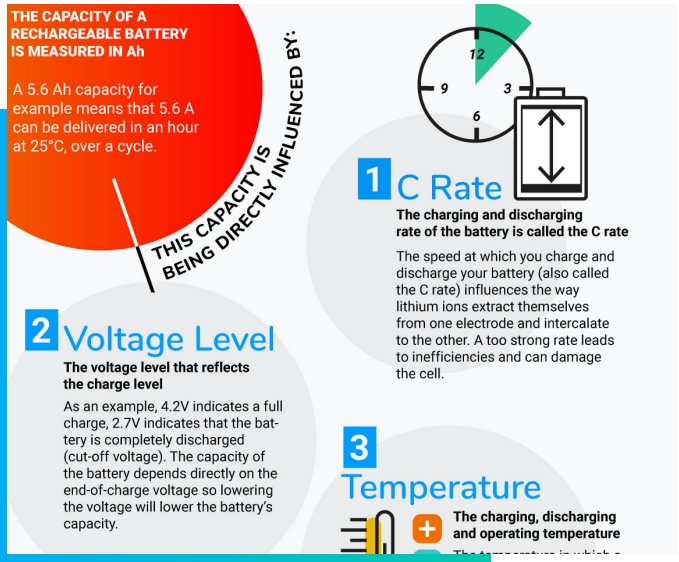
ONLINE SMART APP

Wisebatt for Saft - How does it work?

Wisebatt for Saft is a free virtual prototyping tool that lets you estimate your device's power consumption and battery life and try out software and hardware options to optimize its lifetime. You can try out different hardware and software options before even creating your first physical prototype.

saftbatteries.com/energizing-iot/wisebatt-saft-how-does-it-work

03
IF YOUR DEVICE IS ABOUT TO BE DEPLOYED



ARTICLE

Charging your lithium-ion batteries: 5 expert tips for a longer lifespan

Industrial grade lithium-ion batteries powering your remote or portable devices offer ruggedized design and high energy density for a long lifetime, even under extreme temperatures. **Their longevity is directly related to the way the battery is charged, discharged and the operating temperatures.** In this article, we explain how these batteries work and share our 5 top tips on **how to charge your industrial-grade lithium-ion batteries** to optimize their lifespan. You'll find out how balancing charging speed and rate is key for industrial applications, just as it is for your mobiles, laptops or e-bikes.

saftbatteries.com/energizing-iot/charging-your-lithum-ion-batteries-5-expert-tips-longer-lifespan

INFOGRAPHIC

Things to know before transporting lithium batteries or battery powered IoT devices

Lithium batteries are classed as dangerous goods in transportation. As such, **Lithium batteries or or battery powered IoT devices need to be appropriately declared, labeled, packaged, and stored when shipped by air, sea, rail or road**. So, what do you need to know before shipping lithium batteries?

saftbatteries.com/energizing-iot/things-know-transporting-lithium-batteries-or-battery-powered-iot-devices

INFOGRAPHIC

Lithium-ion batteries in use: 5 more tips for a longer lifespan

Discover the factors influencing the capacity of a Li-ion battery and find out **how to care for your Lithium-ion battery while in use to extend their lifespan.**

saftbatteries.com/energizing-iot/lithium-ion-batteries-use-5-more-tips-longer-lifespan

Feel free to send us an email if you have any questions at any point in time or if you'd like a customized battery proposal and a lifetime estimate from Saft! We look forward to hearing from you!

These articles were published on the Saft Energizing IoT blog.
To gain more insights, please visit: saftbatteries.com/energizing-iot/ or contact energizeiot@saftbatteries.com