PREDICTABLE DESIGNS

11 DESIGN MISTAKES THAT SUCK THE LIFE OUT OF YOUR BATTERY

Mistake #1 Not Using Deep Sleep or Low-Power Modes

- [ ] Did you forget to use deep sleep or standby states?
- [ ] Is your firmware looping instead of waiting for events?
- [ ] Are peripherals left on between tasks?
- [ ] Have you tested wakeup sources for noise/false triggers?

Mistake #2 Using Linear Regulators with Big Voltage Drops

- [ ] Are you dropping from a high Vin to a low Vout with an LDO?
- [ ] Are you ignoring the regulator's quiescent current?
- [ ] Could a switching regulator improve efficiency?

Mistake #3 Frequent or Unnecessary Wakeups

- [ ] Are you polling sensors on a timer instead of using interrupts?
- [ ] Is your display waking up too often or unnecessarily?
- [ ] Are your wake intervals shorter than they need to be?

Mistake #4 Ignoring Temperature Effects

- [ ] Did you account for battery capacity loss at low temps?
- [ ] Did you check leakage current increases at high temps?
- [ ] Can your system still wake under cold-start peak current limits?

Mistake #5 Not Optimizing Power-Hungry Components

- [ ] Is your display staying on longer than necessary?
- [ ] Are you running OLEDs at bright/white UIs?
- [ ] Did you overlook current draw from sensors, LEDs, or idle ICs?

Mistake #6 Using the Wrong MCU or Wireless Tech

- [ ] Are you using an MCU with way more features than needed?
- [ ] Did you pick Wi-Fi when BLE or a leaner radio would do?
- [ ] Are you paying for unused peripherals in standby current?

Mistake #7 Leaking Current Through GPIO Pins

- [ ] Do you have floating pins?
- [ ] Are powered-down peripherals backfeeding through GPIOs?
- [ ] Did you configure all pins explicitly for low-power states?

Mistake #8 Not Measuring or Modeling Power Early

- [ ] Did you wait until late testing to check current draw?
- [ ] Do you lack a power budget spreadsheet?
- [ ] Are you skipping real measurements with a power analyzer?

Mistake #9 Failing to Disable Unused Peripherals

- [ ] Are ADC, SPI, UART, or timers left running by default?
- [ ] Are external ICs/sensors powered when idle?
- [ ] Did you leave indicator LEDs always on?

Mistake #10 Leaving Radios On When Not in Use

- [ ] Are Wi-Fi or BLE radios staying active between transmissions?
- [ ] Are you transmitting data in tiny bursts instead of batching?
- [ ] Is your BLE advertising interval set unnecessarily short?

Mistake #11 Poor Battery Selection or Sizing

- [ ] Did you choose based only on nominal capacity?
- [ ] Did you ignore peak current capability and self-discharge?
- [ ] Are you using unverified/cheap cells without real testing?
- [ ] Did you skip adding protection circuitry where required?

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Meet your guide: John Teel

Hey there, I'm a former microchip design engineer at Texas Instruments and founder of a hardware startup that sold products in hundreds of retail stores. My chip designs are in devices from Apple, Intel, and more.

Now, my full-time focus is helping people like you bring new electronic products to life, without wasting time, money, or risking everything.

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