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Extensive Resource Hub Enriches Your Electronics Education

TI's unique resource collection of designs and circuits can help any engineer, whether you're fresh out of school or have many years of design under your belt, with their project. The range is vast, covering everything from amplifiers to audio to MCUs.

In today's ubiquitous world of high technology, there's tremendous pressure on engineers to design and manufacture things as quickly and efficiently as possible. The adage "on time and under budget" has never been so apropos these days.

We, as engineers and designers, are under constant pressure to do more with less and economically. Yet, facing daily deluges of new, advancing, and emerging technologies, it can be challenging and time-consuming to pull together the best resources.

Most pressing is the issue of keeping up with technology. This places tremendous pressure on the designer to keep abreast and pick the right resources for the job. Wouldn't it be nice if there were a central repository where a vast collection of resources was at your fingertips?

Well, there is—Texas Instruments has addressed this with its new resource hub. This concentration of resources is a one-stop shop for engineers and designers who wish to advance their skills and knowledge.

The Valuable Resource Hub

First, let's look at the educational resources section. It's a one-stop shop for analog and embedded design resources and expert-written content. This resource collection offers written material, video training, training academies, and webinars and seminars. The training academy provides comprehensive and interactive training on a variety of microcontrollers, including TI and Arm-based controllers, radar sensors, and wireless connectivity.

In this repository, one will find respected publications such as the *Analog Design Journal*. The publication is packed with information from data converters to LDOs, from beginning to advanced *(Fig. 1)*.
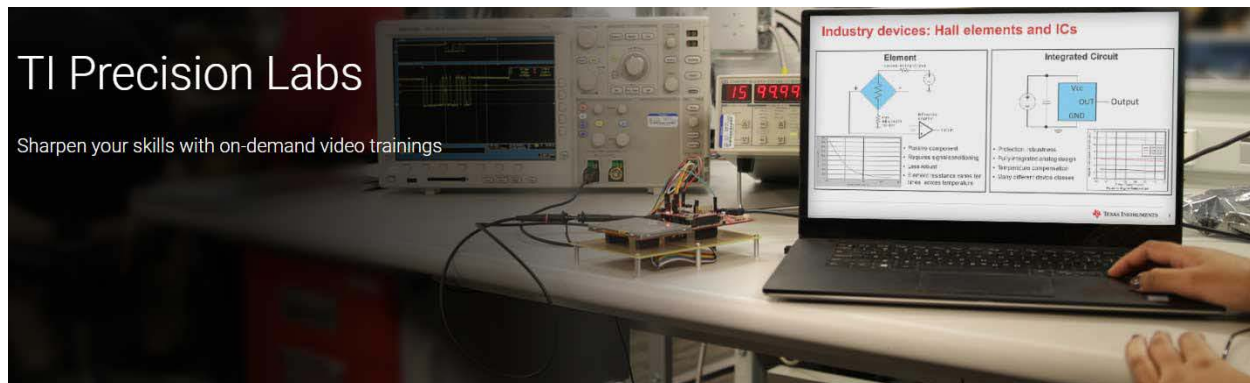
Featured resources include:
- *Analog Engineers Circuit Cookbook: Amplifiers.* This extensive collection of sub-circuit concepts features detailed instructions, fundamental formulas, schematic diagrams, and SPICE simulations to assist designers in

1. A peek at some of the written resources available in the new TI resource hub.

2. The TI Precision Labs video series is essentially an online classroom.

streamlining and accelerating system design. Explore over 60 amplifier and more than 40 data-converter subcircuit designs that can be readily modified to suit your equipment requirements.

- *Analog Engineers Circuit Cookbook: M0+ MCUs*. This resource offers replacement options for analog devices using economical Arm Cortex-M0+ flexible subsystems. Each subsystem example comprises instructions, insights, software, and recommendations for feature improvements.
- One can also find training academies offering a comprehensive and interactive training experience focused on embedded processing product families. This resource includes an in-depth look at Arm-based microcontrollers and processors, C2000 real-time microcontrollers, MSP430 microcontrollers, radar sensors, and wireless connectivity.

Another valuable resource is the eBook titled *Best of Power Tips*. It gathers the most accessed articles from the series *Electronic Design News*.

Experts in power management developed the series to offer valuable insights into common strategies and techniques for tackling power-supply design. They created the Power Tips series to provide insights on common tips and tricks that address specific power-supply design challenges. The eBook includes popular topics such as:

- How to achieve lower quiescent current
- Improving power density
- Designing flyback converters

Completing the collection is TI's Precision Labs (TIPL) *(Fig. 2)*. From first principles to advanced levels, this online classroom presents a methodical approach to teaching. The training series — with videos and downloadable reference materials — will bring experienced engineers up to speed technically and fast-track those who are just starting out. Tune in as TI's experts walk you through an extensive collection of tutorials and hands-on experiments.

This resource uses intuitive and practical approaches to:

- **Amplifiers:** How to design circuits with components such as op amps, comparators, current-sense amplifiers, fully differential amplifiers, instrumentation amplifiers, and special case devices.
- **Audio:** This section covers the world of audio, from audio fundamentals to designing audio data converters and amplifiers.
- **Clocks and timing:** Clocks are a basic component in nearly every design. This series of videos covers clock and timing basics, phase-locked-loop (PLL) fundamentals, noise, network synchronizers, and a variety of other design tips.
- **Data converters:** Gain a fundamental understanding of data converters. Includes drilldowns on analog-to-digital converters (ADCs) and digital-to-analog converters (DACs). Know how these devices function and how to apply them to a variety of designs.
- **DLP Labs:** This section contains an indispensable wealth of knowledge for those working with digital light processing (DLP) technology. Learn how to design with DLP in projection systems, 3D printing, and industrial applications.
- **Interfaces:** This series presents a comprehensive and in-depth look at optimizing communications. Communication interfaces are advancing at breakneck speed with frequent updates, expanded use cases, and cross-application scenarios. Look to this section for the latest design interfaces and information for RS-485 (also known as TIA-485-A or EIA-485), Controller Area Network (CAN), Ethernet, Flat Panel Display (FPD) Link, V^3 Link serializer/deserializer, (Inter-Integrated Circuit, (I2C), PCIe, signal condition, conditioning, video interface, USB, low-voltage differential signaling (LVDS) also known as TIA/EIA-644, and the multi-switch detection interface (MSDI).
- **Isolation:** Drills down on the essential theory of isola-

tion. Principles of design and troubleshooting isolation devices are presented for amplifiers, modulators, and gate drivers.

- **Microcontrollers:** Designing with MCUs is demystified via a series of easy-to-understand tutorials.
- **Motor drivers:** Learn more about motor-driver types, construction, and design. Here you can find a wealth of knowledge on all kinds of motors—brushed/brushless, stepper, etc.—as well as the basics of, and designing with, motor drivers.
- **Switches and multiplexers, sensors, and simulators:** Develop a deep understanding of how switches and multiplexers work. Dive into the pervasive world of sensors, from temperature to ambient light to ultrasonic and more, and gain critical knowledge to help you choose the best solution.
- And finally, learn how Pspice and TI Magnetic Sense Simulator (TIMSS) work.

Conclusion

In the vast universe of technology, it's no longer possible to stand in the middle and touch all around the circumference of the technology circle. However, success today comes more from knowing where to go to hone existing skills and learn new ones. This is the real path to success. The TI educational resources vault is a valuable tool, and astute technologists will have this in their back pockets.

Caption: