

# ADD GRUP USES ADI'S ISOLATED METERING CHIPSET TO ACHIEVE MAGNETIC IMMUNITY AND PREVENT ELECTRICITY THEFT

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Electricity theft is a costly and growing problem for utilities around the world. As theft rates continue to rise, utility operators are establishing stringent smart meter system requirements designed to eliminate tampering and protect revenue.

One common method of stealing electricity involves using an external magnet to tamper with a smart meter so that the meter undercounts or stops working altogether. Many meter designs use current transformers for input sensors. It is relatively easy, however, to saturate the magnetic core of current transformers with an external magnet, effectively distorting the meter readings and making it possible to steal electricity. Now, an integrated solution that incorporates synchronized analog-to-digital conversion and galvanic isolation from Analog Devices is making it possible for smart meter designers to develop metrology solutions that are completely immune to magnetic interference.

## ADD GRUP Leverages ADI's Fully Isolated Metering Solution

ADD GRUP is a leading supplier of smart meters. The company's new ADDAX meter is a multifunction, multitariff, 3-phase, high accuracy (active energy Class-B) electronic meter designed for use in AMI and automated meter reading (AMR) systems that target European residential metering. The ADDAX AMI solution provides meter reading, data collection, data processing, communication, and certain functions of data analysis.

To ensure the ADDAX meter solution is tamper resistant, ADD GRUP designed a metering architecture that leveraged ADI's [ADE7978](#) and [ADE7933](#) isolated metering chipset. Since ADD GRUP supplies meters to



multiple countries with different technical requirements, the company established an aggressive design goal of 500 mT for magnetic immunity. Meeting this goal enabled ADD GRUP to target customers in up to 20 countries using a common platform. Also, because shunt sensor elements replaced larger current transformers, the resulting meter form factor is 25% smaller, easier to handle, and less expensive to manufacture than previous meter designs.

According to Vladimir Culiuc, hardware R&D manager at ADD GRUP, "ADI's isolated metering chipset enabled us to use shunts as sensing elements. As a result, we met the magnetic immunity and flat meter case goals for the project. In addition, we no longer need an isolated power supply in our design because the chipset includes isolated power."

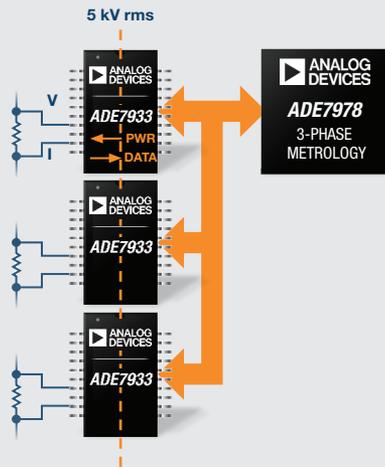
For utilities, smart meters are the first line of defense against electricity theft. ADI's ADE7978 and ADE7933 isolated metering chipset enables meter designers to develop more tamper-resistant smart meters, which are invaluable to utilities as they work to protect revenue.

**"ADI'S ISOLATED METERING CHIPSET ENABLED US TO USE SHUNTS AS SENSING ELEMENTS. AS A RESULT, WE MET THE MAGNETIC IMMUNITY AND FLAT METER CASE GOALS FOR THE PROJECT."**

*Vladimir Culiuc, Hardware R&D Manager*

## About the ADE7978 and ADE7933 Isolated Metering Chipset

ADI's isolated metering chipset includes the **ADE7978** 3-phase metrology IC combined with up to four **ADE7932/ADE7933** fully isolated ADC ICs. The ADCs incorporate Analog Devices' patented *iCoupler*<sup>®</sup> and *isoPower*<sup>®</sup> technologies to implement isolated signal transfer and dc-to-dc power conversion across a 5 kV rated insulation barrier.



This integration enables the use of shunt resistor sensing elements instead of current transformers (CTs), thereby providing immunity to magnetic field interference and tampering. The use of shunts instead of CTs also reduces system cost and size.

## About ADD GRUP

Located in the Republic of Moldova, ADD GRUP is a leading supplier of advanced metering infrastructure (AMI) solutions, which include smart meters, communication infrastructure, and related software. Over the last 16 years, ADD GRUP and its partners have deployed four million AMI meters to 20 countries.

## About Analog Devices

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