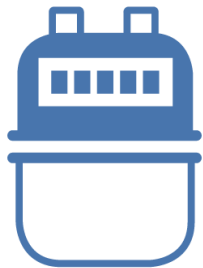


# EU006

*Smart Ultrasonic Flow Meter*



# SALES STRATEGY

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## Pros & Cons

- + No moving parts
- + Detectable flowing speed  $v < 1.57$  m/s (i.e.  $Q < 1/h$  @  $d = DN15$ )
- + Integration of both, metrology + application, on one MCU
- + Flexibility to easily port to other MCU (RX, SYNERGY)
- + System cost reduction due to discrete AFE approach

## Not to pursue if...

## Focus

- Heat + Water (cold & warm) Meters

## We have chances to win if.../in case of...

# ABSTRACT

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In the context of an increasing regulation of the gas and – possibly – water grid, many utilities have decided to move away from the traditional mechanical metrology approach, targeting for **static meters with no moving parts** at all; out of a variety of potential solutions, ultrasonic meters have continuously gained marked share throughout the last couple of years.

Key reasons for this trend would be a **lower sensitivity against dirt** and **magnetic immunity** as well as the capability to implement additional features like **dry, leakage** or **burst alarms**, which could not be implemented using traditional (mechanical) metrology techniques.

Also, as a result of the **current** market requirements, this solution had been implemented using a 16-Bit RL78 MCU core technology; however, in order to address possible future market trends especially with respect to more complex communication schemes, this proposal is flexible enough to be implemented on **any other fit-able RENESAS MCU**

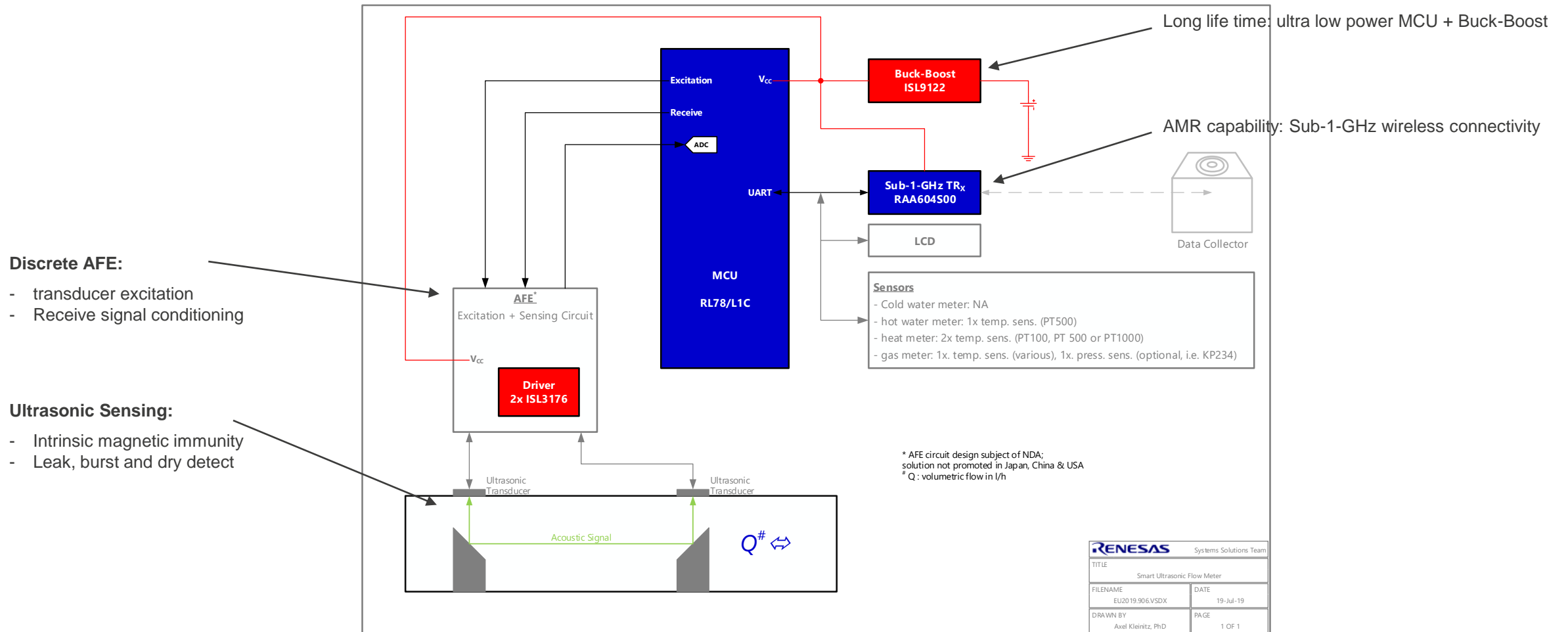
# GENERAL SYSTEM REQUIREMENTS

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- Static, ultrasonic flow detection metrology
- Capability to detect reverse flow
- Leak, burst and dry detection
- Low power (10 – 15 years of life time)
- Magnetic tamper protection



# WC PROPOSAL – „SMART ULTRASONIC FLOW METER“



<b>RENESAS</b> Systems Solutions Team	
TITLE Smart Ultrasonic Flow Meter	
FILENAME EU2019.906.VSDX	DATE 19-Jul-19
DRAWN BY Axel Kleintz, PhD	PAGE 1 OF 1

# SOLUTION BENEFITS

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The designed discrete AFE achieves the **same level of accuracy** as compared to an expensive integrated component at a more attractive cost level (i.e. at  $Q = 1$  l/h and  $d = DN15$ , the **detectable flowing speed** in the tube would be  $v < 1.57$  m/s) ; the same technology can be in principle applied to both, water and gas meters.

The selected RL78/L1C MCU offers the advantage of running both – metrology + application – on one MCU with including the LCD driver at an **attractive cost level**; especially this product family addresses the requirement of long life time offering an ultra low power technology. Nevertheless, other options could be alternatively selected, like a variant of RENESAS' Cortex based SYNERGY portfolio, addressing the recent requirement of CORTEX based MCU core technology, since the developed metrology concept is portable to any MCU out of the RENESAS portfolio.

Implementing the suggested Buck-Boost DC-DC converter provides two key benefits: not only that RF transceiver proper operability is herewith guaranteed, but also a significant **system's lifetime extension** by a more efficient use of the battery's available capacity.

The proposed Sub-1-GHz transceiver provides RF connectivity key to address AMR capability.

# Q & A

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