Unfold the secret of smart metering.

Cutting edge solutions enable proactive value creation for Mitsubishi Engineering-Plastics’s customers.

The metering industry has no more secrets to us. With a demonstrated multiyear track record, Mitsubishi Engineering-Plastics is ideally positioned to offer the necessary engineering materials solutions for every stage of smart meter design.

Whether it involves tailored solutions for water meters, gas meters or electricity meters, our extensive portfolio of for instance XANTAR® and Lupilon® PC & blends, Lupital® POM, and NOVADURAN® PBT, fully meets the already existing requirements, but is also fit to quickly match and adapt to upcoming development wishes and challenges. When it comes to integrated 3D miniaturization and MID possibilities, we are the global leader in high performance Laser Direct Structuring (LDS) materials, enabling key differentiators to smart meter manufacturers.

Our secret to success is that our expert teams partner not only with our customers, but also with partners further along the value chain, in order to deliver the best solutions. By offering sustainable solutions at the design stage, technical support during each step and proactively participating in smart meter developments, Mitsubishi Engineering-Plastics stands out from the competition in this market.

With our global footprint, Mitsubishi Engineering-Plastics has the ability and resources to deliver results and be your global partner for innovative added value along the entire smart metering value chain.

Please contact us to find out what our expert teams can do for you: www.xantar.com or at www.m-ep.co.jp
Continuous monitoring and communication using smart electricity, gas and water meters constitutes an essential part of the currently ongoing global developments of smart grid infrastructures. Despite its global character, the degree of implementation of small and large scale meter replacement projects varies substantially for each region.

Within for instance the European Union, the rationale for smart metering originates from the need for energy supply security, encouraging reliable, safe, affordable and sustainable energy supplies. One of the implications is the encouragement of the use of energy efficient measures and technologies to reduce energy consumption. To this end, end-users should have available individual meters indicating the precise actual consumption at an indicated moment in time.

The transformation of conventional energy meters into smart meters has important consequences and opportunities for utility companies and meter manufacturers. With an estimated figure of for example 240 million smart meters to be installed in 2020 in Europe alone, the sheer size of the logistical process for design, implementation and installation over a number of years will become clear. Furthermore, the individual member states in Europe show different stages of implementation of the smart meter replacement process, based on substantial differences in strategy, legal and regulatory status. Another complication is the observation that requirements of meter designs can vary considerably per country. Aside from important alignment challenges in the communication protocols, the design of smart meter housings can pose a variety of technical demands on the housing materials.

CUSTOMER VALUE ENHANCEMENT
On a generic level, the choice of metering housing materials is generally dictated by the meter’s purpose in the first place. Commonly, engineering plastics such as polycarbonate (PC), polyacetals (POM) and to a lesser extent also polyesters (PBT) and others are used for their easy processing enabling virtually endless lightweight design possibilities, along with dimensional stability, flame retardance if required, high temperature resistance and custom colourability. Other important assets are their outstanding performance both in mechanical strength, impact, low friction and wear when needed as well as long term properties such as weathering and UV stability.

However, the intricate individual country and utility dependent requirements often require a tailored material solution approach beyond the use of so-called common material grades.

Within the wide array of engineering plastic material suppliers, one global supplier particularly stands out for its unique approach in creating customer value in the smart metering segment. With a production portfolio comprising all engineering thermoplastic materials commonly used for conventional and smart meters, such as PC (XANTAR®, Iupilon®), POM (Iupital®), high performance plastics supplier Mitsubishi Engineering-Plastics (MEP) is ideally positioned to offer the necessary solutions for every stage of smart meter design and production process. Moreover, with a demonstrated multiyear track record in developing and supplying enclosure and metering housing materials, the company also brings the necessary experience in this field. However, its strategic approach towards the smart electricity, water and gas meter application area has particularly enabled a streamlining of research and development efforts, leading to the delivery of various innovative and tailored solutions.

An essential discriminating factor in the market is MEP’s intention of partnering not only with its immediate customers, but also with participants further along the value chain, such as smart meter and utility companies, in order to deliver sustainable solutions. MEP is actively involved at the design stage of the meters, enabling the company to understand the exact customer requirements and needs, and to work towards cost optimization with respect to design from the initial stage itself. Interactivity is a key element here, which results in added value to all participants involved. As an example, reduction of the housing wall thickness could be realized through the integrated working approach, which aims at reducing material consumption, without compromising on other properties such as ductility, hydrolytic stability and fire retardance. This differentiating approach has not gone unnoticed, as illustrated for example by the 2011 Frost & Sullivan European Customer Value Enhancement Award in the smart e-meter market to MEP. This recognizes the inordinate focus on implementing strategies that proactively create value for MEP’s customers with a focus on improving the return on the investments that customers make in its services or products.

TAILORED INNOVATIVE MATERIAL SOLUTIONS
With major development and replacement projects ongoing all around the world, it is essential to have a fully compliant material portfolio in place, which can not only meet the already existing metering requirements, but is also fit to quickly match and adapt to upcoming development wishes and challenges.

Especially for water metering, several tailored and proven unreinforced and reinforced Iupital® POM grades are available.
A special glass reinforced polycarbonate XANTAR® G2F 23 R, demonstrates a high HDT temperature level of 145°C, whilst still maintaining its ductile impact performance, which makes it the ideal material of choice for not only meter back covers but also for current carrying parts such as terminal blocks, thus eliminating the need for design and approval of separate materials within a single design.

Within the flame retardant PC range, XANTAR® RX 2125 has recently been developed by MEP to be the world’s first UL94 listed V-0 @ 0.75 mm bromine- and chlorine-free polycarbonate applicable in all colours. This enables customers with a further wall thickness reduction where critical, thus helping to reduce part costs further, at the same time setting no limitations to design options. In line with MEP’s sustainability focus, all materials use eco-friendly flame retardant technologies. On top of that, performance is further fine tuned to match regional complementary requirements such as glow wire requirements or low corrosivity and low smoke evolution upon fire following possible malfunctioning of internal electronics.

Next to PC with its intrinsic flame retardance, high operating temperature, excellent mechanical performance and high dimensional stability, blends such as the PC/ABS XANTAR® C family are also employed for metering housing for their high flow characteristics and further enhanced stress cracking resistance and low temperature impact performance. Agile development in close collaboration with the customer of new tailor-made grades with an emphasis on long term stability and robustness proved to be essential in realizing the stringent approvals in for instance the large scale EDF smart replacement project in France. This gives a clear signal to the market that MEP is able to create added value for customers, by enabling shorter development times and thus providing customers with an important competitive edge.

About the Author:
Hans Wilderbeek holds a PhD degree in Chemical Engineering from Eindhoven University of Technology. He has an extensive materials and applied electronics background, holding over 30 patents and patent applications. He started his professional career in 2001 with Philips, before joining DSM Engineering Plastics in 2008. Since 2010, he has worked as Application Development Manager at Mitsubishi Engineering Plastics Corporation, where he is responsible for smart meter designs. With his global footprint, innovative joint product development, strong technical support at each step and consistent focus on quality and supply reliability, MEP has the ability and resources to deliver results and be the global partner for innovative added value along the entire smart metering value chain.

CONCLUSION
The starting point of MEP’s strategic and proactive approach in the smart metering market has been to understand the diversity among countries and consequently legislation. This has enabled MEP to move a step ahead in the process by laying down a high performance materials technology roadmap to cater to the market quickly. With its global footprint, innovative joint product development, strong technical support at each step and consistent focus on quality and supply reliability, MEP has the ability to deliver results and be the global partner for innovative added value along the entire smart metering value chain.

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