



Towards buildings ready  
for Demand Response

**Newsletter Ed. n°3**  
November 2020

[www.tabede.eu](http://www.tabede.eu)

Enclosed in the TABEDE Newsletter Edition N°3 is:

- **Editorial:** Invitation to TABEDE Webinar from the coordinator
- **Interview:** the BMS-E Hardware
- **Test site:** residential building in CARDIFF, UK
- **Events:** TABEDE at Sustainable Places 2020
- **Webinar:** Real Case Applications of the TABEDE "BMS-Extender" Solution for Demand Response

# EDITORIAL:

*By Andre de Fontaine,  
ENGIE Impact,  
TABEDE Project Coordinator*

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# 01



Dear readers,

I am pleased to share with you through this third edition of our newsletter the important progress we are making through TABEDE to scale demand response across all building types.

First of all, on behalf of the TABEDE team, I would like to invite you to the [TABEDE Webinar](#) on the 20th of November. We will showcase our Pilots: a smart house (in Cardiff, UK), a residential building (in Bergamo – Italy) and an office building (in Grenoble – France) to see how the TABEDE solution of the BMS-Extender is being deployed and to report the first results.

The autumn weather is beginning to bite, days are getting shorter, and the summer holidays now seem a distant memory. But we are keeping our spirits up by focusing on the great potential TABEDE has to unlock building level flexibility, reduce energy costs for building owners, increase the penetration of renewable energy, and relieve pressure on the grid. In this issue, my colleagues Enric Muntane Calvo and Stephan Dasen explain how the BMS-E, the hardware component central to the TABEDE system, will help buildings easily and efficiently plug in to demand response markets.

We are now deep in the deployment phase of TABEDE, with preliminary results from the Cardiff, UK, test site presented here in this newsletter. More preliminary results from the test sites, in terms of anticipated energy cost savings, increased flexibility and renewable energy utilization, will be further elaborated upon in a webinar scheduled for 20th of November. Please [register for the TABEDE webinar](#) and share with friends and colleagues! You can also go back and view our previous webinar, posted on our [refreshed website](#). In a future newsletter and webinar, we plan to share results from the Grenoble, FR, commercial/industrial test site, and our simulated district, which allows us to estimate TABEDE's impact at the neighborhood scale.

Our ability to carefully implement and quantify impacts from our test sites and simulation environment will be aided by a six-month project extension that was recently approved by the European Commission this summer. As a consequence, the new project end date is now the end of April. In addition to ensuring robust results from our test sites, the extension will also allow for more time for increased dissemination activities. In that vein, TABEDE project members were active participants and presenters at the recent Sustainable Places Conference. For those that were unable to attend, we provide a recap in these pages.

To keep up with all project news, don't forget to [join our mailing list](#). Meanwhile, any questions you may have regarding the project results can be sent through our website's [Contact page](#).

Happy reading!

Andre de Fontaine, ENGIE Impact

TABEDE Project Coordinator

## Interview with:

*Stephan Dasen, Project Manager,  
and Enric Muntané Calvo,  
Senior R&D Engineer,  
from CSEM: the BMS-E Hardware  
developed in TABEDE project*

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# 02



**BMS-E automation could eventually become the "Alexa" for energy-related issues: imagine the following one day "Alexa, turn on the washing and drying machine whenever the price is lower, but make sure it is ready by 10pm".**



### *1. What are the benefits of using BMS-E Hardware in a building?*

The BMS-Extender enhances existing Building Management Systems by allowing the 2 main stakeholders (the energy consumer, the energy supplier) to coordinate energy flows better by scheduling consumption thanks to forecasting algorithms while respecting user settings/preferences. Thanks to the 3 days advance forecast, power plants can plan for more or less non-renewable. You get to know how much you will get from renewables, you know the impact on renewables so how much people will use. This way, you can offer different solutions, in schedules and prices, so that not everyone will ask for energy at the same time. The BMS works more efficiently, the network is much less strained, and people can make some economies. You close the loop from forecasting, to generation of energy from renewables, to prediction of consumption of energy.

### *2. How does the demand-response system work?*

According to a foreseen energy consumption profile for the next 24h, the energy supplier will propose a bidding price for the energy (or a limit amount of available energy) for fine grained periods of the whole day to the BMS-E, hence encouraging (or eventually enforcing) the system to take advantage of lower prices at certain times of day if the scheduling is compatible with the preset user system preferences. Demand-response actually refers to this coordination either based on impositions to the energy consumer or simply encouraging the consumers to soften the energy peak.

### 3. Which are the problems solved by the BMS-E?

It tries to solve 2 problems:

1) to mitigate the peak hours caused by everyone consuming energy more or less synchronously.

2) to allow the user to take advantage of better energy prices if his scheduling of energy consumption allows (i.e. if he does not care to use a certain appliance later or earlier in the day than, for instance, peak hours).

In the end, it encourages buildings to adopt renewables since it is becoming more and more efficient and convenient. In addition, BMS-E will encourage different types of tariffs other than the flat ones.

### 4. Why are you sure that the system will be successful?

There is an increasing trend through automation, renewable energy, thanks also to more incentives coming from single governments and the EU. But it is also a result of the deepened sensitivity of people for climate change, combined with a persistent need of reducing costs, especially in pandemic times. Now, we are testing the system at three demonstration sites to ensure it performs adequately and helps building owners and occupants achieve energy cost savings.

### 5. What is the success factor in terms of user-friendliness?

The key to the success is the fact that people don't feel that the machine is taking over, it is not making all the decisions or imposing consumption at certain moments. The BMS-E provides options, it says to the user "If you do this... you save this amount of money or you have lower carbon print of x percentage". It can give you hints on how to improve your energy footprint and how to reduce energy expenses.

### 6. More about CSEM

CSEM, [Centre Suisse d'Electronique et Microtechnique](#), is a private, non-profit Swiss organisation for applied research, with its origins in research for the watch industry. CSEM has the mission of supporting Swiss and European industry with research and innovation, and it excels in technology transfer to small and large companies, focused on generating lasting value for a sustainable world. It also has a large experience and excellent track record in establishing successful start-ups. In the field of sustainable energy, CSEM research activities concentrate on four focus areas: digital grid, mobile harvesters, storage, power electronics (PV) and solar buildings.

**TEST SITE IN CARDIFF, UK:**  
*TABEDE SOLUTION FOR  
ENERGY EFFICIENCY IN  
A RESIDENTIAL BUILDING*

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03





**How do you reduce the costs of energy use, without impacting comfort or convenience? In other words, how do you save money while maintaining your desired level of indoor temperature, lighting and appliance use?**

The technology developed within the TABEDE project is strongly innovative in terms of energy optimization and flexibility for residential, commercial and industrial buildings. Cardiff University, partner of the project, is currently piloting the benefits of TABEDE system.

#### **TABEDE gives more access to demand-response programs for residential customers**

TABEDE enhances Building Management Systems to align the consumption profile of a single customer, with the production profile of the network, and predicted levels of on-site production of renewable energy. The connection of this information allows energy consumption to be optimized, with greater utilization of on-site renewable energy and lower costs for users. All without reducing comfort. As a result, TABEDE offers more possibilities to access to demand-response programs for residential customers and it encourages the adoption of renewables for residential buildings.

#### **Cardiff test site: 2 people residential home**

The TABEDE system was installed by Cardiff University in a pilot case located in Cardiff, UK. Tŷ Smart is a recently-built prototype smart house, representative of contemporary new houses built in the UK. Two people occupy the house, which enables realistic representation and investigation of user behaviour and interaction in demand response. [Read more about it here.](#)



### **The expected benefits of TABEDE for residential buildings**

Preliminary results will be presented at the [TABEDE webinar](#) of the 20th of November

Meanwhile, here is what Cardiff University expects to see in their test site:

1. The TABEDE system increases the consumption of self-produced energy and reduces the consumption of energy purchased from the network. In fact, the system determines the ideal time to use household appliances and adjust heating systems on the basis of electricity price signals and the availability of renewable energy supplies.
2. The TABEDE solution helps the customer to save money consuming energy during off-peak hours, when tariffs are lower. Furthermore, it can shift appliance use to times when renewable power is abundant, leading to reduced costs and lower greenhouse gas emissions.

To be updated about the advancement of the BMS technology follow TABEDE on social media and check [TABEDE website](#)

### **More on Cardiff University**

Cardiff University is one of the ten largest universities in the UK and a member of the Russell Group of research-intensive universities. It is one of Britain's major centers of higher education. In the 2014 UK Research Excellence Framework, Cardiff was ranked 5th out of more than 150 universities (based on "research excellence"). Cardiff University brought in TABEDE its expertise for the establishment of the simulation environment, optimization algorithm and is actively participating in TABEDE validation and dissemination.



# TABEDE AT Sustainable Places 2020

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# 04



From Tuesday 27th - Friday 30th October, R2M Solution organized [Sustainable Places 2020](#) (SP2020), the 8th annual edition of the international conference focused on the built environment at building, district, and urban scales to include our transport and energy infrastructures. Renowned for showcasing results coming out of the EU Horizon 2020 Framework Programme via the participation of cutting-edge research and innovation projects, the scope of Sustainable Places is captured directly in its name. It involves designing, building and retrofitting the places we live and work in a more sustainable way. At SP2020, the TABEDE Project was represented by Emmanuel Onillon of CSEM at the following two of the twenty clustering workshops.

### “Flexibility 2.0” Workshop



The “Flexibility 2.0” workshop - chaired by Zia Lennard of R2M Solution - fostered knowledge transfer between eight innovative H2020 projects, each developing innovative solutions within the field of demand response and energy flexibility. The problems being solved and technologies developed facilitate optimised synergies between actors of the built environment and the power grid. Contributors presented and benchmarked their research on demand response and self-consumption based on the prosumer of Europe's low carbon future. Participating EU projects were: [TABEDE](#), [HOLISDER](#), [eDREAM](#), [DRIVE](#), [DELTA](#), [AmBIENCE](#), [NOVICE](#), and [ebalanceplus](#). A follow-up workshop is now being planned for early 2021 to continue the fruitful collaboration.

## “Smart Buildings” Workshop



The “Smart Buildings” workshop - chaired by Alexis David of ECTP the European Construction Technology Platform - presented the objectives of this new CSA, but also introduced other European projects and initiatives of the European Commission related to the digitalisation and “smartness” of buildings. Thus, the workshop was a first step in the creation of a cooperating and efficient community in Europe. Participants also exchanged their views on common topics, such as the comprehensive definition of what Smart Buildings are and the actual needs of the sector. Questions and comments from the audience were welcome. The EU projects represented: [SmartBuilt4EU](#), [InterConnect](#), [TABEDE](#), [Phoenix](#), and [domOS](#). Participating European Commission representatives were: Ilektra Papadaki, Policy Officer for digital construction and sustainable built environment; and Sylvain Robert, Policy Officer for EASME.

## WEBINAR:

*“Real Case Applications  
of the TABEDE "BMS-  
Extender" Solution  
for Demand Response”*

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05



In the first webinar of TABEDE, we introduced you to demand response and how to implement a DR system, with or without a Building Management System, thanks to the TABEDE BMS-Extender solution. **This time, we will open the doors of our Pilots: a smart house (in Cardiff, UK), a residential building (in Bergamo – Italy) and an office building (in Grenoble – France) to see how the BMS-Extender is being deployed and commenting on the first experiences. You can [REGISTER HERE!](#)**

### **Agenda**

**14h30:** Intro (Eva Coscia, R2M Solution)

**14h35** "BMS-Extender: the TABEDE Toolbox for DR" (Andre de Fontaine, ENGIE Impact)

**14h50:** "Testing and validation in a smart home: preliminary perspectives from the CARDIFF Pilot" (Monjur Mourshed, CU)

**15h10:** "Testing and validation in a residential building: preliminary perspectives from the BERGAMO Pilot" (Francesco Martinelli, SCHN IT)

**15h30:** "Testing and validation in Industrial building: quick introduction to the GRENOBLE Pilot" (Andre de Fontaine , ENGIE Impact)

**15h40:** Questions and answers (all)

**16h00:** Thanks and closure



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