RESPOND
DEMAND RESPONSE FOR ALL

Integrated Demand REsponse SOlution Towards Energy POsitive NeighbourhooDs

WP 2: Use case deployment and follow up

T 2.4: Early deployment at pilot sites

D2.4 Early deployment at pilot sites (Demonstrator)

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EXECUTIVE SUMMARY

This is an overview of the early deployment activities as they have occurred and are occurring at their present state. These deployment activities are being conducted at all three pilot sites in parallel. The idea behind such early deployment is to enable the acquisition of baseline data on time, which will be later used for the validation of the RESPOND solution in the last year of the project. Furthermore, activities in this task will support deployment of the overall RESPOND platform undertaken by Task 2.5. Activities of this task will include deployment of additional monitoring and home automation solutions already performed by the consortium partners. This will provide technical assets and infrastructure for monitoring and performing the control actions necessary to deploy cooperative demand management.

Additional data acquisition systems will be used to control the actions necessary to deploy cooperative demand management. Additional data acquisition system will be used to collect all data necessary for the REPOND system that is not provided by existing monitoring systems (as specified in WP1). In order to achieve an easy integration of the data acquisition system and of wireless sensors and meters in the building environment and to ensure a cost-effective solution, the DR solution will be enhanced by supporting wireless solutions. This task also deals with early configuration of existing energy assets and home automation devices. In this way, it will enable early setup of the overall RESPOND system at all three pilot sites. All monitoring data acquired in this place will be integrated and further processed under the RESPOND platform to support the DR strategy devised for each pilot.

The vast majority of actions which were scheduled are proceeding according to plan any differences are recorded in detail in the document.

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ABBREVIATIONS AND ACRONYMS

AAU	Aalborg Universitet
ALBOA	Almen Boligorganisation Aarhus
API	Application Program Interface
ARAN	Comharchumann Fuinnimh Oileain Arann Teoranta
AURA	Aura Radgivning AS
OGEMA	http://www.ogema.org/Open Gateway Energy Management Alliance
KNX	Konnex
FEN	Fenie Energía
TEK	Fundación Tekniker
CDM	Canonical Data Model
MQTT	Message Queueing Telemetry Transport
CFOAT	Aran Islands Renewable Energy cooperative

1. INTRODUCTION

With the goal of defining a baseline point of reference and initial deployment details, this document presents what has been implemented in each of the three Pilot Sites within the project: namely, in Aarhus (Denmark), in the Aran Islands (Ireland) and in Madrid (Spain).

Therefore, this document explains essentially: what has been implemented at the three pilot sites as of the publication of this document as well as the related back-end systems. In addition, if any part of the implementation has not gone completely according to the plan, those details are discussed on a case by case basis by detailing any blocking elements and suggested resolutions.

This document refers to information from previous respond documents, namely 2.1, 2.3 and the list of data points to be measured.

2. EARLY DEPLOYMENT PLAN UPDATES

The following sections shows the updates between the initial deployment plan at what finally have been carried out explaining the differences and the reasons.

2.1 BACK END SYSTEMS

During the previous months Pupin has been working on the development of the RESPOND cloud server. Some information related to these activities we have provided in D2.1, in section related to Middleware.

See the below overview for reference of where the Middleware fits into the broad scheme:

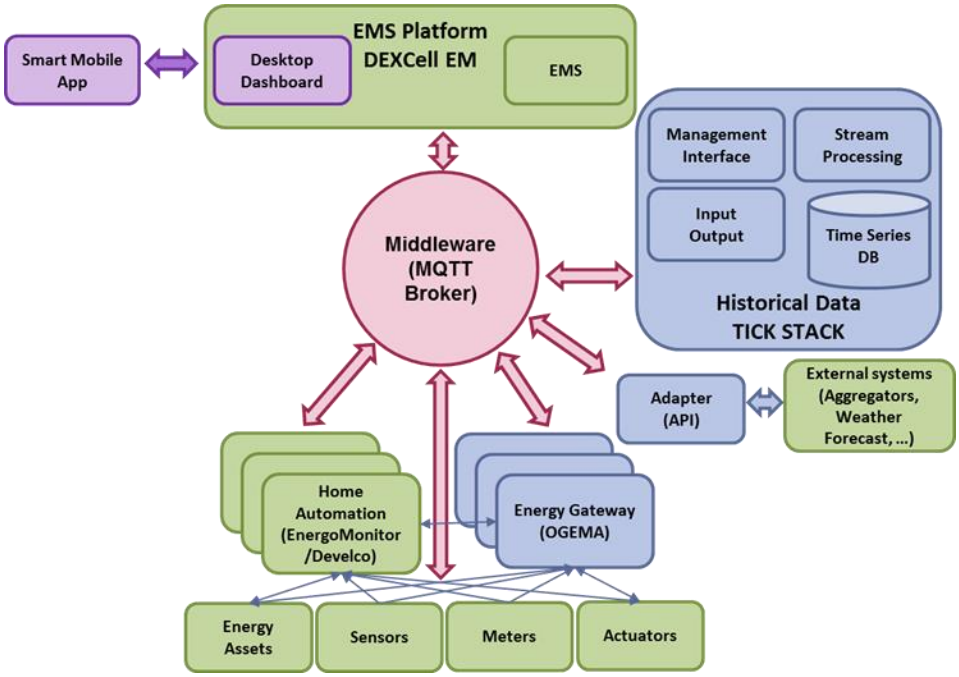

Figure 1: Overview of the RESPOND early deployment architecture

In short, a cloud server was configured that contains an instance of the MQTT broker Mosquito with security over TLS and authentication.

Next an InfluxDB database was configured, and a custom adapter was developed that forwards the data from the MQTT broker to the InfluxDB and parses the messages that are received in the CDM format. One thing of note, is that all the data is periodically saved to an external backup.

Regarding Pupin, everything that was planned, has so far been accomplished on time, and the baseline period for collecting data from Madrid started at the end of August.

2.2 IRELAND

Below are shown the updates from Aran Island pilot site:

- **Overview**

  The pilot site in Ireland is in Árainn, the largest of the Aran Islands on the west coast of Ireland. Although the original plan for deployment consisted of 20-24 houses, at present there are only 5 fully recruited participants, with a total of 11 families interested in joining the project. The plan for early deployment of equipment for RESPOND originally included five houses, and an extensive list of equipment. There have been some significant changes made to this due to circumstances beyond the control of the pilot partner, CFOAT.

- **Deployment Plan**

  The original plan was to install the sensors, meters and other relevant technologies during the summer months. The manufacturer of the equipment, Develco, had issues with suppliers and deliveries which meant they were unable to ship the equipment until late October. The equipment arrived at the pilot site by cargo ferry on the 20th October, which meant that the original goal of installing the equipment in five houses before the end of the same month became unattainable.

- **Technical Delays**

  The first five houses recruited to the project all have existing PV installations and so it was decided to install a prosumer meter in to each of these dwellings as part of the early deployment to monitor PV production and household usage. To install the prosumer meter in the dwellings CFOAT needed to work with an electrician, who must carry out this part of the installation. The electrician immediately found issues with the prosumer meter in that they were not designed to work within the Irish electrical system or within the regulations the electrician must work within. The reason for this was the prosumer meter is 60amps, spread over 3 phases. Irish buildings, with the exception of large business etc., use only a single-phase system, and the main fuse is 63amps. 3 more than the prosumer meter is certified to carry. The electrician, CFOAT, and other partners agreed jointly that it was for the best not to install the prosumer meters at this time and to liaise with Develco to find a solution to this issue.

  The Gateways to be installed in each dwelling require a Wi-Fi/internet connection to transmit data to the server, this is something that is not available in every dwelling participating in the project and so CFOAT will resolve this issue asap. The pilot partner intends to purchase SIM cards which can be installed in the Develco squidlink gateways to transmit data. As there are none available to

buy in the local area, the pilot partner was unable to fully install the gateways before the deadline but will continue to carry out deployment and to seek to resolve any issues that have arisen up to this point.

Of the five houses originally listed for early deployment, CFOAT could only deploy in two. This is mainly due to the short timeframe allowed to carry out installations, and because of the time spent working on issues with the prosumer meters etc.

- **Devices Installed**

In the two houses where deployment has begun, house 1 and 2 of the participant list, the following devices have already been deployed:

Table 1:List of devices installed in Aran pilot site dwellings

Device installed	Function	Location
Develco humidity sensor	Monitoring of humidity	Kitchen, bedroom, sitting room
Develco Smart Plugs	Monitoring of individual appliance consumption with remote access control.	Laundry Room, kitchen and living room

They will also be deployed in the rest of the participating households as soon as possible.

The following equipment will be installed in the above households and in the rest of the participating households very soon, they are;

- 3X Smart cables
- 1X Squidlink gateway

Some equipment which were planned to install but have not arrived are below;

- Develco Smart Relay
- Develco window sensor
- Develco Motion sensor
- Develco External Meter Interface

- **Deployment Timetable**

The smart cables which will be installed on devices in the five houses will also be deployed, but as there is slightly more work involved with the installation of these compared to the smart plugs and

humidity/temperature sensors they were not deployed in time for this deadline. Originally the smart cables were going to be used to monitor the heat pumps in the five houses involved in the deployment, but when the electrician investigated this, he found that they were rated at 16amps, which is lower than the maximum the heat pumps will need. A larger/higher version of this device will be needed to monitor the heat pumps. This action is integral to the project as it is the main consumer of electricity in the households and a solution must be found.

The squidlink gateway will be deployed in all five houses very soon also, and no issues are foreseen regarding its installation. The devices were supplied with an EU plug, and not the Type G plug used in Ireland. All that is required is a simple adaptor, however, due to the location of the site and the lack of time to order these, the gateways were not deployed.

The pilot partner, together with the electrician involved, communicated all of the issues above to Develco who are keen to find a solution and ensure deployment of the equipment in the Aran pilot site as soon as possible.

2.3 DENMARK

The plans for the installation were organized in close cooperation with the janitors in Nyringen/Næringen, the Plumbing Company, Develco Products A/S and AURA Energi.

- **Devices catalogue:**

  In the case of Aarhus Pilot Site, Develco is the manufacturer provider of the equipment. With regards to their product range availability there has not been any changes. All the devices that were planned have been implemented.

- **Deployment plan:**

  The original plan for installations called for registrations of the heat baseline to be started in week 34 and 35 in August. The data registration would consist of heat gauges, Danfoss thermostats, and Develco Products (gateway, Smart meter, temperature/humidity sensor, smart plugs for dishwasher, washer and dryer).

  The installation was slightly delayed and instead completed in weeks 35, 36 and 37. Ultimately it was necessary to make minor changes and adjust certain aspects of the installation. These have made the work more comprehensive and complex than originally assumed. The adjustments and changes that have been made are described in the Deployment section of this document.

2.4 SPAIN

In Spain the project is being tested in Madrid. A neighborhood formed by 3 buildings near the city center are the chosen to perform the trials of RESPOND solution. Regarding the scheduled early deployment activities and equipment detailed in the previous deliverable *D2.3 Initial deployment plan* there have been some slight change due several circumstances as explained below according to each category:

- **Devices catalogue:**

  In the case of Madrid Pilot Site, Energomonitor is the manufacturer provider of the equipment. With regards to their product range availability there has not been any changes. All the devices have been produced and no relevant changes have been introduced so far.

- **Recruitment of participants:**
  The goal was to enroll 24 dwellings for trial purposes. Unfortunately, and despite the efforts carried out by means of general meetings along with bilateral meetings and phone calls the total number of participants arises to 11 houses.

  In addition to the individuals aforementioned, in order to balance the lack of volunteers, additional common areas have been incorporated to RESPOND tests such as central boiler system, 3 building general electricity consumptions (lightning and elevators mainly) and parking electricity consumption (mainly lightning).

- **Devices installed:**
  All the scheduled devices to be installed in the dwellings according to D2.3 have been deployed except relaysense gas and relaysense water.

  It has been found impossible to install relaysense gas and relaysense water due to the current installation situation that doesn't allow to connect other devices along with the gas/water supply company meters. In order to mitigate this problem FEN is in contact with water meters company to get daily data through its webpage. It is intended to try to create a script to daily send this information to RESPOND platform. FEN is also in contact with a company that produces calorimeters to get hot water consumption information in a similar way but, so far, their availability along with water data has not been granted.

  Regarding common areas, all the envisioned equipment will be installed. Energomonitor's sensors are currently deployed while the thermosolar system and its control ancillary equipment are, at the date of submission of this deliverable, almost completely installed as shown in the following sections.

Central boiler gas consumption was intended to be measured but, unfortunately relaysense gas is not going to be installed as the current gas meter is not compatible. By the of 2018 it is scheduled to change the current gas supplier to Fenie Energia and they will try to change the gas meter to a compatible one or (if not possible) one with remote daily measures to be forwarded to the RESPOND platform following a similar approach then with water in the dwellings.

The Energy gateway has been developed based on OGEMA framework. It has been customized to acquire data from Thermosolar panels via KNX protocol and translate it to CDM format and MQTT payload. The next figure shows the software modules developed:

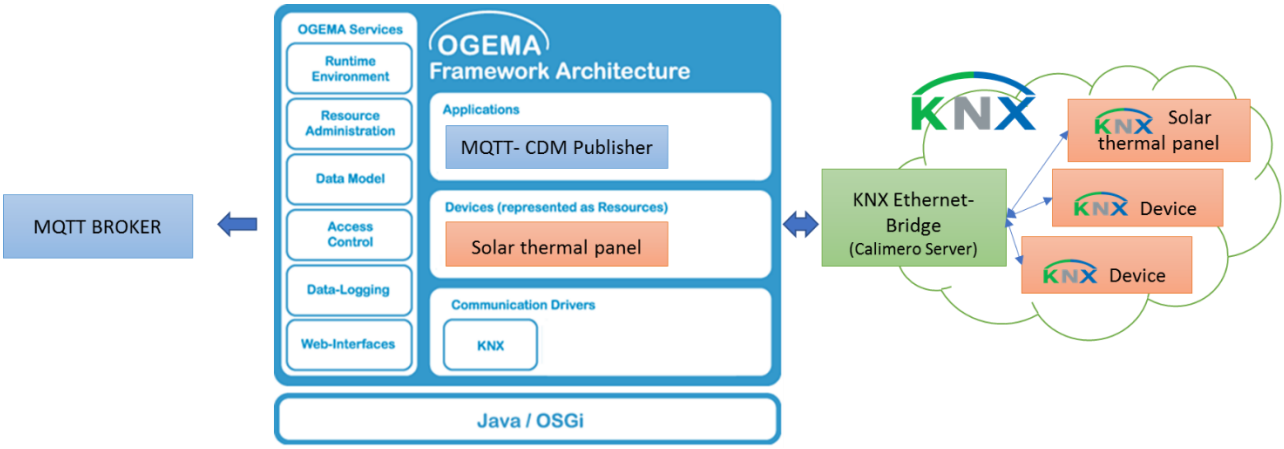

Figure 2: Energy Gateway modules

The energy gateway has not been setup yet as it is necessary to finish first the installation of the Siemens control system attached to the thermosolar system. When the local KNX network will be defined and set up the Energy Gateway will be configured properly and connected to the thermosolar panels for receiving data in the RESPOND MQTT broker.

- **Customization of home automation equipment:**

  In order to connect Energomonitor's servers with RESPOND's servers the bridge service that transforms information into CDM format and forwards them between servers have been deployed as expected.

- **Deployment plan:**

  The early deployment stage encompassed in the deployment schedule designed in deliverable D2.3 have been followed in general terms although a delay has raised ending the early deployment, both in individual dwellings and common areas, one month delayed. All devices finally installed have been located across the buildings as originally planned.

3. EARLY DEPLOYMENT AT PILOT SITES

The below sections are the demonstrator of the real work carried out in the early deployment.

3.1 BACKEND SYSTEMS

The most critical part of the system is the data acquisition done by Energomonitor and Develco devices.

Energomonitor's devices deployed in Madrid are sending data to the broker correctly using CDM format.

Develco devices have been deployed in Aarhus and Aran pilots but they are not sending data to RESPOND MQTT broker as the implementation of CDM format is pending.

It has been created an Excel file for getting information of all devices deployed. This file is very important and useful for follow the state of the deployment, map in the system all devices and it is necessary also to create the topological data structure.

This data will be used to generate the instances of the deployed infrastructure in the semantic repository according to the defined ontology. This information will also be used to define the data structure in DEXCELL system. The complete list can be found here:
https://drive.google.com/open?id=1up5oYsKElNuLwQbqga3PXcrCwwZhInPu

Field description	Unique device id that starts with vendor's prefix and continues with device serial number (e.g. DEV-	Unque ID of the gateway connected to the device (starts with vendor's prefix and continues with gateway serial	Unique address ID of the appartment or common area	Room in the apartment. Choose "whole apartment" the sensors that are	Location in the room where the device is placed	Type of the sensor / actuator	Appliance type (if applicable, e.g. in case of smart plug)	Appliance brand	Appliance model
Field input type	Free input	Free input	Free input	Select from the list	Select from the list	Select from the list	Select from the list	Free input	Free input
				Location				**Appliance**	
Nr.	**Device_id**	**Gateway_id**	**Apartment_id**	**Location in the apartment**	**Location in the room**	**Device_type**	**Type**	**Brand**	**Model**
1	ENE-75A97E556184E76E-0-12	ENE-75A97E556184E76E	Madrid_00	whole apartment	other	meter_demand	N/A	N/A	N/A
2	ENE-75A97E556184E76E-0-12	ENE-75A97E556184E76E	Madrid_00	living_room	other	meter_demand	airconditioner	N/A	N/A
3	ENE-75A97E556184E76E-0-12	ENE-75A97E556184E76E	Madrid_00	kitchen	other	meter_demand	other	N/A	N/A
4	ENE-0F00000B	ENE-75A97E556184E76E	Madrid_00	bedroom_1	other	sensor_temperature	N/A	N/A	N/A
5	ENE-0F00000B	ENE-75A97E556184E76E	Madrid_00	bedroom_1	other	sensor_humidity	N/A	N/A	N/A
6	ENE-0800046B	ENE-75A97E556184E76E	Madrid_00	kitchen	other	sensor_temperature	N/A	N/A	N/A
7	ENE-75A97E556184E76E-3-7	ENE-75A97E556184E76E	Madrid_00	kitchen	other	meter_demand	washing_machine	N/A	N/A
8	ENE-75A97E556184E76E-3-7	ENE-75A97E556184E76E	Madrid_00	kitchen	other	actuator_smart_plug	washing_machine	N/A	N/A
9	ENE-07000325	ENE-75A97E556184E76E	Madrid_00	kitchen	other	meter_demand	dishwasher	N/A	N/A
10	ENE-07000325	ENE-75A97E556184E76E	Madrid_00	kitchen	other	actuator_smart_plug	dishwasher	N/A	N/A

Figure 3: Example of data points list to map Madrid devices

3.2 IRELAND

This section gives a detailed description of the successful installations in House 1 and House 2 in the Aran Pilot. The pilot partner was unable to install these pieces of equipment in the other three dwellings due to the sever time constraints involved but will continue to carry out the deployment of the following devices hereafter.

The smart cables which will be installed on devices in the five houses will also be deployed, but as there is slightly more work involved with the installation of these compared to the smart plugs and humidity/temperature sensors they were not deployed in time for this deadline.

The installation of the smart plugs was very straight forward. They only require the relevant device to be plugged into it before it is plugged into the electrical socket. There is a button on the side of each one which allows it to be activated or deactivated. In house number one they were installed on the washing machine, the tumble dryer and the dishwasher. In house number two they were installed on the washing machine, the tumble dryer and on a portable heater in the yoga room. This room also has 2 storage heaters which will be monitored by smart plugs, thus giving all the heating appliances in the room DR functionality.

The installation of the humidity/temperature sensors was equally straight forward. They are powered by two AA batteries which were included. There is an option to screw or stick them to the wall using the screws or double-sided tape included.

House 1

In house 1, the smart plug devices were installed on the washing machine, the tumble dryer and the dishwasher. The humidity sensors were installed were installed in the kitchen, the living room and in one bedroom.

Figure 4 Smart plugs installed on washing machine and tumble dryer

Figure 5 Smart plug installed on dishwasher

Figure 6 Humidity sensor installed in the kitchen

Figure 7 Humidity sensor installed in bedroom

Figure 8 Humidity sensor installed in sitting room

House 2

In house two, the smart plugs were installed on the washing machine, the tumble dryer and the portable heater in the yoga room. The humidity sensors were installed in the yoga room, the kitchen and the living room.

Figure 9 Smart Plug Installed on Dryer (left plug)

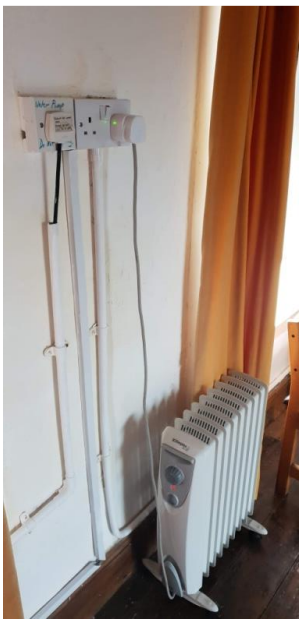

Figure 10 Smart plug installed on the portable heater

Figure 11 Smart plug installed on the washing machine

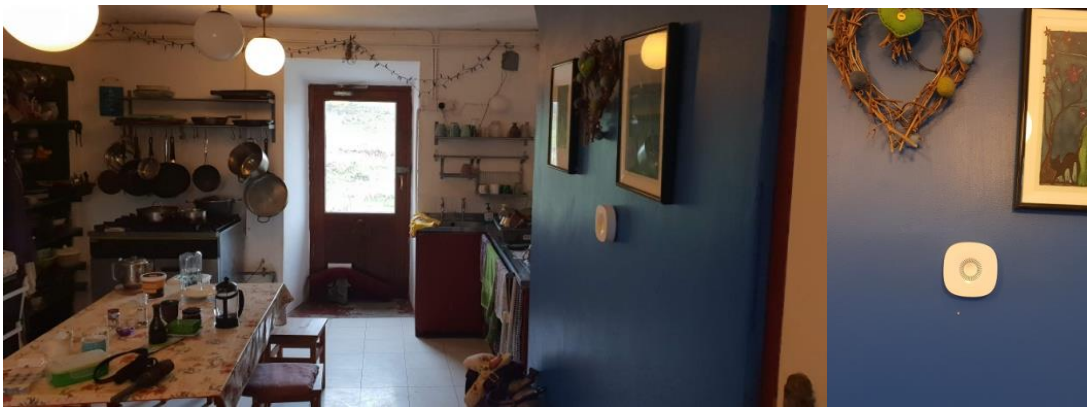

Figure 12 Develco humidity sensor installed in the kitchen

3.3 DENMARK

This section details the installation of the Aarhus pilot hardware and the reasons for the brief delays. In order for them to approve location of Smart Plugs, Sensors, Gateway, etc. it was necessary that the RESPOND families where at home when the installation work was carried out. This has necessitated increased dialogue and coordination efforts.

Two families turned out to be moving and one family we could not be got in touch with. In cooperation with the Janitor, three new RESPOND families have been found, so there are 20 families involved in the Danish pilot.

It has turned out that in some of the Respond homes it is not possible to close off the heating system in order to install the heat meter. Instead, the main heat system in the entire buildings had to be closed. The main connection point is located in homes that are not part of the Respond project. It has thus required increased coordination between the parties involved.

There has been a need to change the existing electrical installation to install Smart Plugs/Smart Cables for dishwashers, washing machines and dryers. This has resulted in increased staffing for AURA, as this work must be performed by persons with authorized L-AUS certification.

In order to ensure sufficient wireless network between the gateway and the installed Develco products, it was necessary to install 2 additional Smart Plugs in each house as the walls and the flooring consists of concrete and thus hinder the wireless connection.

Originally, all products should have been installed in one session and before the start of the heat season in September. The planned thermostat model has expired. It is not yet clear which manufacturer and model should be used instead.

The planned thermostat model has expired. By this moment it is not yet clear which manufacturer and model should be used instead. We have to find out if there is a need for the replacement of the radiator valves, since the current valves are of earlier date and without pre-set (flow regulation). Perhaps we can use an adapter or else these radiator valves are not suitable for the type of thermostat that is desired to

be used in the project by this moment. If it is necessary to make a replacement of radiator valves and installation of thermostats, it requires further visits/installation at the homes as well as coordination between the parties involved and budget for replacement of radiator valves, which must be performed by an authorized plumbing installer.

The VOC sensors are still in production, and it is expected to be installed autumn 2018. Develco products can't deliver the CO2 meter, but are expected to be delivered by the Energomonitor as a replacement.

The above complexity and increased extent of the installation work means that DK is expected to incur additional costs that are not covered by the budget by this moment.

Individual dwellings:

During the early deployment period 20 dwellings in Aarhus have been equipped, all of them, with the following devices:

Table 2: List of devices installed in Aarhus pilot site dwellings

Device installed	Function	Location
Develco Squid.Link	Gateway	Living room
Kamstrup MC403	Monitoring of water consumed	Basement
Develco External Meter	Monitoring of Electricity consumed	Electrical meter in the Basement
Develco Smart Cable – Washing Machine	Monitoring of the electricity consumption of the washing machine	Laundry Room
Develco Temp./Humidity Sensor	Monitoring of the humidity and temperature of the room in which it is installed	Bathroom
Develco Temp./Humidity Sensor	Monitoring of the humidity and temperature of the room in which it is installed	Bedroom
Develco Temp./Humidity Sensor	Monitoring of the humidity and temperature of the room in which it is installed	Kitchen
Develco Temp./Humidity Sensor	Monitoring of the humidity and temperature of the room in which it is installed	Living Room

Below are some images from the Aarhus installation:

Figure 13 Develco Squid.Link Gateway – Living Room

Figure 14 Kamstrup MC403 with WMBus - Basement

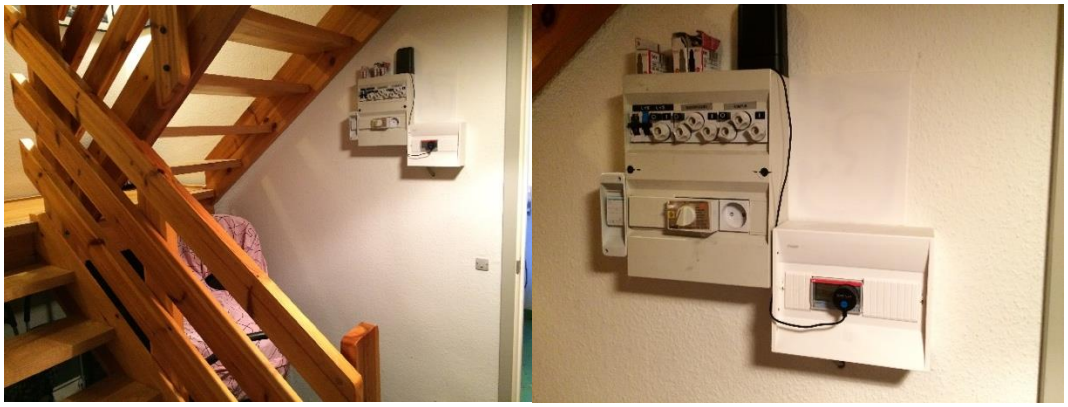

Figure 15 Develco External Meter Interface - Basement

Figure 16 Develco Smart Cable – Washing Machine

Figure 17 Develco Temp./Humidity Sensor – Bathroom

Figure 18 Develco Temp./Humidity Sensor – Bedroom

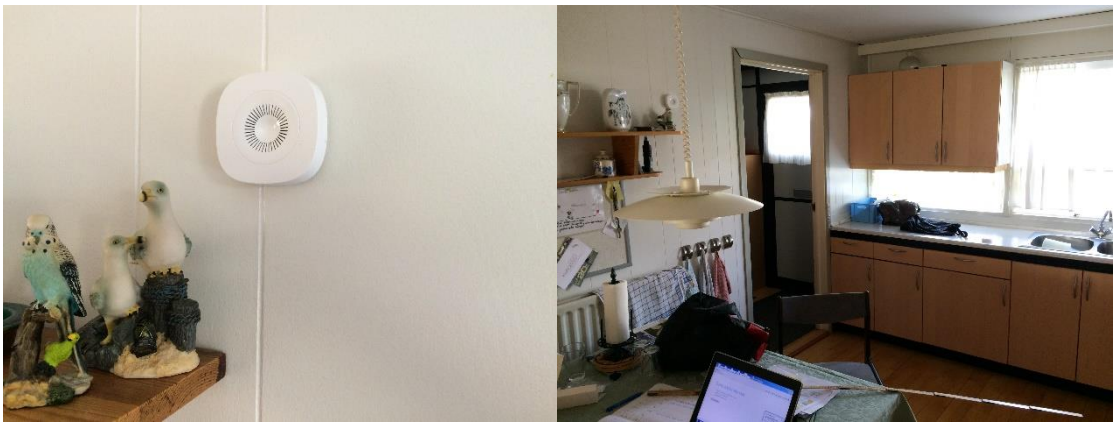

Figure 19 Develco Temp./Humidity Sensor – Kitchen

Figure 20 Develco Temp./Humidity Sensor – Livingroom

3.4 SPAIN

This section encompasses a summary of the early deployment carried out in the Madrid pilot site.

Figure 21: Madrid pilot site aerial view

Individual dwellings:

During the early deployment period 11 dwellings in Madrid have been equipped, all of them, with the following devices:

Table 3: List of Energomonitor's devices installed in Madrid pilot site dwellings

Device installed	Function	Location
Energomonitor Homebase	Gateway	Living room
Energomonitor Optosense	Monitoring of electric energy consumed	Electrical meters room in the building basement
Energomonitor AirSense	Monitoring of the humidity, temperature and CO2 of the room in which it is installed	Living room
Energomonitor Thermosense	Monitoring of the temperature of the room in which it is installed	Bedroom
Energomonitor Portasight	Monitoring of the humidity and temperature of the room in which it is installed	Kitchen
Energomonitor Plugsense 1	Monitoring of the dishwasher's power consumption, and controlling the dishwasher's activation according to DR actions	Kitchen
Energomonitor Plugsense 2	Monitoring of the washing machine's power consumption, and controlling the washing machine's activation according to DR actions	Kitchen
Energomonitor Powersense	Monitoring of the air conditioner's power consumption	Electrical panel

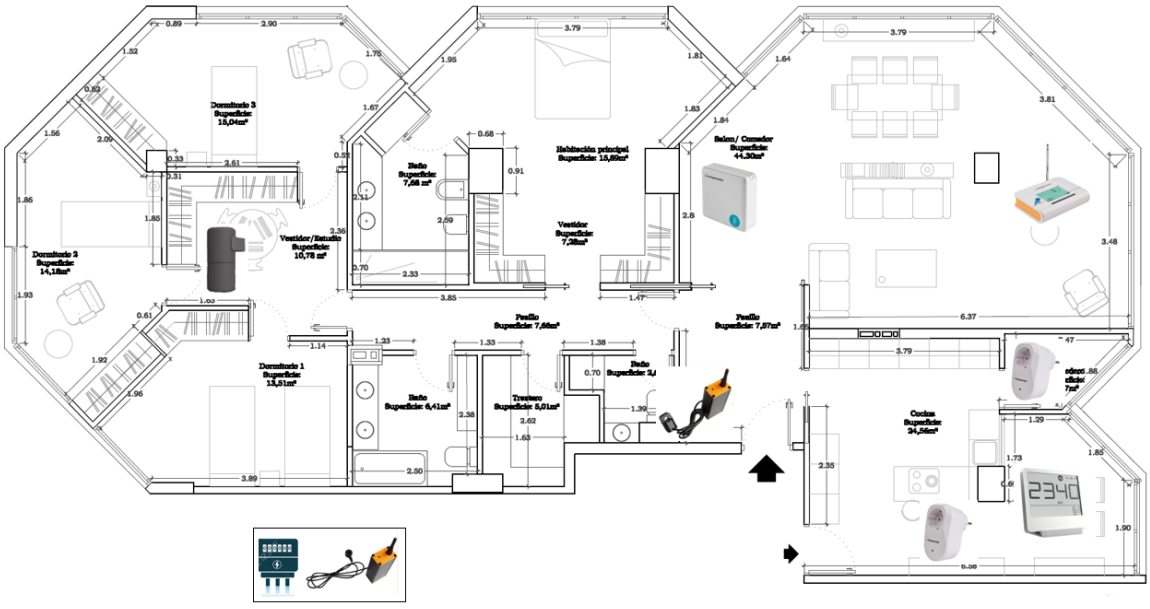

Figure 22: Madrid pilot site dwelling devices location 2D plan

The installation has been carried out house by house during several days after arranging with the tenants the appointment details by phone. Taking advantage of this calls, the questionnaire requested according to deliverable *D3.1 Criteria and framework for participants recruitment* have been also fulfilled. During individual visits all the sensors where explained along with the requested information about the project in general making tenants feel comfortable at all time and thanking their initiative to join the trials.

Below there are shown several photos as a sample of the installed devices:

Figure 23: Energomonitor's CO2 sensor installed

Figure 24: Energomonitor's portasight installed

Figure 25: Energomonitor's powersense installation process

Figure 26: Energomonitor's gateway installed

Common areas:

In the common areas there have been installed the following devises and sensors:

Table 4: List of Energomonitor's devices installed in Madrid pilot site common areas

Device installed	Function	Location
Energomonitor Homebase	Gateway	Electrical meters room in the building basement
Energomonitor Optosense	Monitoring of electric energy consumed	Electrical meters room in the building basement
Thermosolar system	Generate DHW to test habits changes in inhabitants related to solar production	Rooftop and central boiler room

The Energomonitor Optosense sensor has been installed in the electricity supplier company meters to monitors the consumption of common areas such as general lighting, elevators, parking consumptions, etc. As in the basement of the building there is no Wi-Fi or internet access it has been necessary to use 3 routers and 3 USB 4G devices to provide connectivity to Energomonitor's gateways.

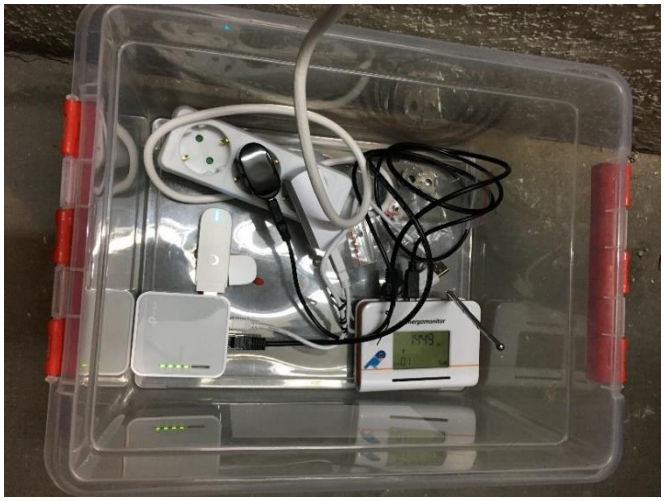

Figure 27: Gateway and 4G router equipment for Madrid

Figure 28: Ene's optosense devices deployed in company meters

The installation of the thermosolar system have been designed and carried out by Flamoil, S.A., an expert company in this kind of installations. Following find some photos of before-after comparisons:

Figure 29: Original rooftop structure exterior view

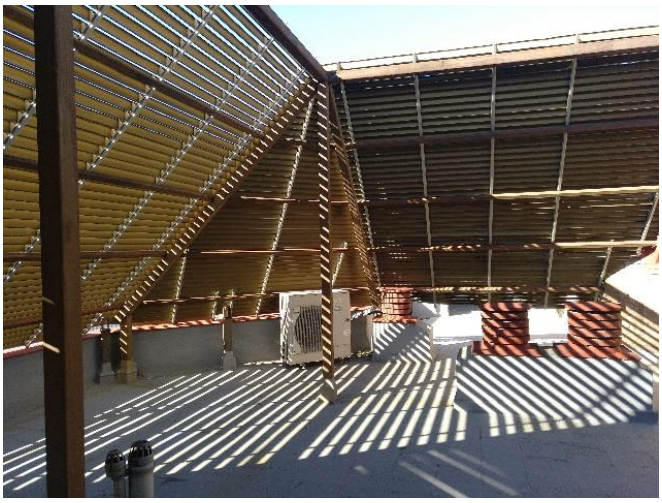

Figure 30: Original rooftop structure interior view

Figure 31: Reuse of the original structure for one

Figure 32: Additional new structure for solar collectors

Figure 33: Vertical hole for thermosolar system pipelines

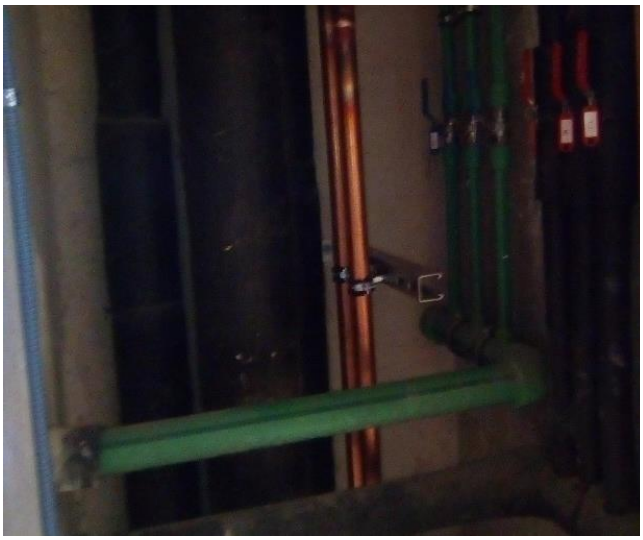

Figure 34: Thermosolar system pipelines

Because of the high altitude of the rooftop where the solar collectors have been installed it was necessary to use a large crane:

Figure 35: Crane lifting solar collectors

Figure 36: Operators with solar collectors near the crane

Figure 37: solar collectors in the rooftop

Figure 38: Front view of solar collectors

Below there is a diagram explaining the new components of the thermosolar system and their connection with the legacy elements of the DHW system:

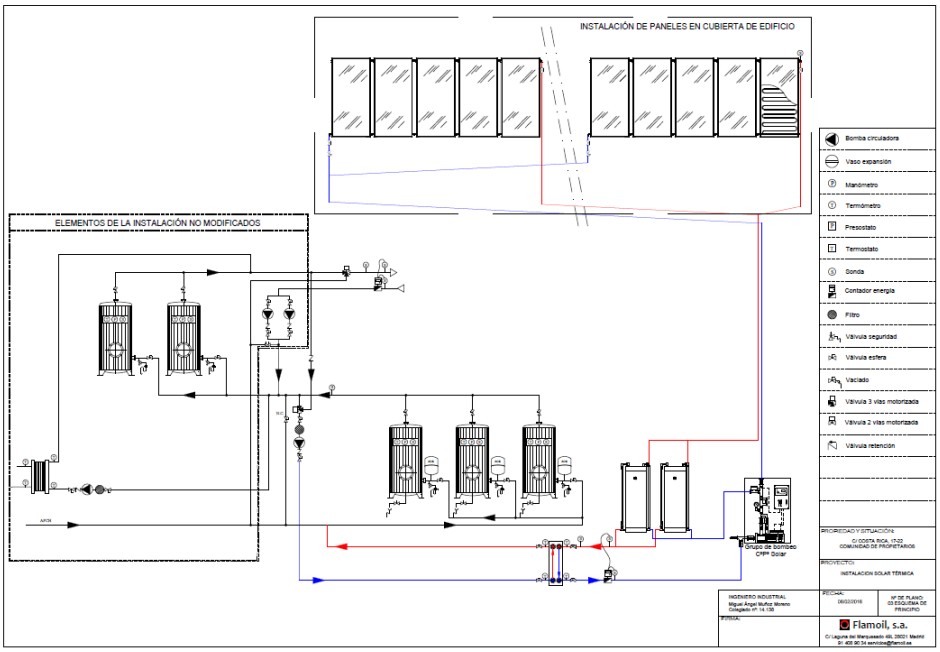

Figure 39: Thermosolar system diagram

Following there are a set of photos of the works carried out so far in the central boiler room to install the new thermosolar system elements:

Figure 40: Original central boiler room surface

Figure 41: New thermosolar system water tanks

Figure 42: Original DHW pipelines

Figure 43: New thermosolar system pipelines

As an example of the intense bureaucratic process carried out for the installation of the thermosolar system below there are shown some documents done:

COMUNIDAD DE PROPIETARIOS COSTA RICA 17-19-21

Solicitud de Licencia:

Obra de: Instalación solar térmica para producción de agua caliente sanitaria

Emplazamiento: C/ Costa Rica, 17-19-21

Fecha de Solicitud: 14 de junio de 2018

Promotor: FENÍE ENERGÍA, S.A.

Empresa instaladora: FLAMOIL, S.A.

fenie energía

Flamoil

Figure 44: Thermosolar start of installation notification

En relación a la solicitud de licencia de obra de una instalación solar térmica para la producción de agua caliente sanitaria en C/ Costa Rica, 17-19-21 del municipio de Madrid, FENIE ENERGÍA, S.A. con C.I.F. ESA85908036, como promotor, DECLARA que ha colocado en el lugar de las obras cartel anunciando la solicitud de licencia y características de la obra que pretende realizar.

En Madrid, a 12 de Junio de 2018

Fdo:

fenie energía
C.I.F.: A-85908036

Figure 45: confirmation of start of installation

In order to compensate the lack of volunteers to host sensors in their houses it is intended to deploy more Energomonitor Optosense devices in the electricity utility meters located in a common room in the building's basement after collecting inhabitant's approval for that. This way just the total consumption will be monitored but without intrusions in the dwellings. The new group of houses with just overall consumptions measures will be used as control group to compare RESPOND solution behaviour changes and savings in the already deployed dwellings.

4. CONCLUSIONS

So far, the vast majority of actions are on schedule and going according to plan. The biggest current blocker was the delay in delivery to Aran islands by Develco. So far only two of the houses on the Aran islands have been installed due to this issue, however ultimately the delay has been minor, and deployment is now progressing fine. There are a few technical blockers that need to be remedied however none of those issues are critical and it is expected that they will be resolved shortly. With regard to Aarhus, there will need to be some budget considerations due to specifics with the installation namely legal requirements and certifications required when dealing with certain types of infrastructure equipment. There are a few other minor delays, such as the delay of gas measurement in Madrid due to incompatible hardware which is expected to be fixed by the end of 2018. So far, have been managed to start collecting baseline data as well as some survey results from the initial installation and other than the issues specified, the project deployment and overall initial stages are running smoothly.

REFERENCES

RESPOND DOCUMENTS

EXTERNAL DOCUMENTS