



LC-EEB-01-2019

Integration of energy smart materials in non-residential buildings

Switch2Save

Lightweight switchable smart solutions for energy saving large windows and glass facades

Starting date of the project: 01/10/2019

Duration: 48 months

= Deliverable D9.1 = Minutes of the GA (Kick-off meeting)

Due date of deliverable: 30/11/2019

Actual submission date: 21/11/2019

Responsible WP: John Fahlteich, FhG FEP

Responsible TL: John Fahlteich, FhG FEP

Revision: V1.0

Dissemination level		
PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	x



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 869929.

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DOCUMENT CONTROL

Document version	Date	Change
V0.1	27/10/2019	Initial version
V0.2	30/10/2019	Revision by the Coordinator
V1.0	21/11/2019	Final version

VALIDATION

Reviewers		Validation date
Work Package Leader	John Fahlteich	N/A
Project Manager	Lenka Bajarová	21/11/2019
Exploitation Manager	Greger Gregard	N/A
Coordinator	John Fahlteich	21/11/2019

DOCUMENT DATA

Keywords	Kick-off meeting, General Assembly, External Advisory Board
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Delivery date	21/11/2019

DISTRIBUTION LIST

Date	Version	Recipients
21/11/2019	V1.0	EC

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Executive Summary

The Switch2Save General Assembly (GA) was established as a consortium body at the strategic level. It is composed of key senior representatives from each partner organisation and performs high level strategic decisions. It meets personally at least once per year and is chaired by the Coordinator who is assisted by the Project Manager.

This document summarises the discussion during the first Switch2Save General Assembly meeting that took place on October 16th, 2019 in Dresden, Germany as part of project's kick-off meeting.

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1. Introduction

The Switch2Save kick-off meeting took place on October 16th, 2019 in Dresden, Germany at Fraunhofer FEP.

2. Agenda

16th October 2019

- 8:30 – 9:00 *Arrival of participants*
9:00 – 9:45 **Welcome, partners & EAB introduction**
FhG, partners, EAB members
9:45 – 10:15 **Switch2save project overview**
John Fahlteich (FhG)

WPs presentation – part 1 (WP1 – WP3)

- 10:30 – 11:00 **WP1: Specification of energy smart component design**
Maria Founti (NTUA)
11:00 – 11:30 **WP2: Electrochromic cells on polymer films**
Alexander Kraft (CMG)
11:30 – 12:00 **WP3: Thermochromic cells on thin glass**
Matthias Fahland (FhG)

WPs presentation – part 2 (WP4 – WP7)

- 12:45 – 13:05 **WP4: Glass lamination and IGU integration technology**
Alexander Kraft (CMG)
13:05 – 13:25 **WP5: Manufacturing of windows and glass facade elements for demonstrators**
Fredrik Bjälkensäter (FGLAS)
13:25 – 13:45 **WP6: Component level long-term performance and durability assessment**
Maria Founti (NTUA)
13:45 – 14:05 **WP7: Building demonstration and pre- and post-installation assessment**
Dimos Kontogeorgos (NHOSP)
14:05 – 14:30 **WP8: Dissemination, clustering and exploitation + logo discussion**
Lenka Bajarová (AMI)

General Assembly

- 14:45 – 15:30 **General Assembly incl. WP9: Project Management and coordination**
John Fahlteich (FhG) + Lenka Bajarová (AMI)

EAB session

- 15:30 – 16:15 **Feedback from the EAB members, Open Discussion**

16:15 – 16:30 **Wrap up and meeting end**
John Fahlteich (FhG)

16:30 – 17:30 **FEP Technical Facility Tour**

3. Minutes

All presentation will be available to partners in OwnCloud (owncloud.fraunhofer.de), the Minutes are noting the discussions taken during the meeting.

Welcome, partners & EAB introduction (John Fahlteich, FhG FEP)

- welcome by John
- roundtable introduction by all the partners

Switch2Save project overview (John Fahlteich, FhG FEP)

- goal: to prepare industry usage afterwards => industry application
- promise 300 € /m² for EC/TC IGU
- intelligent switching => architect to tell the requirement from the user perspective
- virtual building demonstrators to be selected to support advertising/promoting the technology/smart IGU
- ethics DELs – people in the buildings => how they are affected, personal data, harm to environment (linked also to fire testing)

WP1: Specification of energy smart component design (Maria Founti, NTUA)

- WP Leader Presentation:
 - tight timing – 2 reports to be delivered by M6 (drafts ready by February 2020)
 - main concern is how to reach an agreement to collect technical information on the buildings by M2
 - T1.2 – DEL in M12, still first IGU designs must be ready 3 months in advance to allow the development of switching protocols
 - T1.3 – laboratory of lighting NTUA leading this activity
 - lighting systems will be substituted in the hospital – to have the same data before and after the implementation of new windows
 - most challenging – technical specifications
 - clarification of roles of individual partner needs to be done
 - possibility of prolonging WP1 in case of some of the iteration of IGU
- Q&A:
 - VELUX – how to collect the technical specification data => Maria – test sites provide list of technical specs that would be needed for retrofitting (e.g. weight limitation, damage conditions, size, ...), window manufactures to provide technical specs of windows available (what could be delivered)
 - NTUA will create a template with basic things they are aware of and send out to everybody
 - John – regular calls to be organized on WP level; experience from Smart2Go: iterative questionnaire to collect specification: (1) questions collected, (2) answers collected, (3) specs sheet for people to comment => Maria proposes to be more condensed
 - Maria – calculation of U & G values => list of parameters needed from partners in order to run the simulation, difficult task – not only energy savings, but also optimize energy storage; for the simulation, they need data
 - Maria – modelling of switching protocol – what type of the data is needed to initiate the simulations (action to lighting laboratory)?
- EU standards & regulation
 - Sara – literature overview, for Belgium – there are three standards,
 - Which standards to be addressed by Switch2Save for how many countries? => target countries, where this technology can have good penetration should be included
 - Maria - glass facades non-residential buildings, 4 countries (2 real buildings, 2 virtual buildings)
 - countries represented by architects, countries where we have access to the regulations
 - countries to be considered: SE, EL, ES, BE, DE (ISC will help), IT (support from EAB expected)
- virtual demonstrator:
 - Starting point can be a SoA highly energy efficient buildings? => existing glass façade building with existing technology (not already retrofitted)

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- Use of building influences switching protocols! Reflect that by selecting virtual demonstrators of diverse usage! We shall not concentrate on two office buildings, – instead select e.g. one shopping mall, public building, airport => always take into account the use of the building, not only the construction technology
- (call addresses also existing buildings => one virtual demonstrator with a building to be renovated, one as a design of a new building with the project technology included, to see what would be the requirements taking into account the necessity to build BIM file) => one existing from 90s, one new design already build from the beginning done in BIM also defining what will be the installation requirements (when you install, what type of cranes you'll use)
- John – preliminary design of “new building” virtual demonstrator should give example for design contest (in WP8)
- NHOSP: comfort in hospital – very important parameter => UV light to go through the windows, blue light is acceptable or not? => there is no standard, it is very specific
- Decisions and Critical Actions (TODO summarized at the End of This document):
 - NTUA will prepare draft template for technical specs – firstly distributed to sites, then to everybody for completion / additions by the partners
 - regulations and standards reviewed for SE, EL, ES, BE, DE, IT => assessment to be focused on these countries (solar climatic data, ...)
 - NTUA will send to FhG – what will be needed for the g value
 - Lenka to set up doodle for beginning of November to discuss WP1 developments and status

WP2: Electrochromic cells on polymer films (Alexander Kraft, CMG)

- WP leader at CMG: Alexander Kraft.
- T2.3 – availability slot-die coater at CMG could be critical
 - Question: could FEP atmoFlex 1250 used as back up ? – Take care for technical limitation: no IR and no hot air drying available at the atmoFlex. → Earliest possible notification required to assess feasibility at FEP. => 2nd Backup would be commercial subcontracting.
 - CMG have suitable coater in use for their production – they can change that one, needs to be discussed quite early with the production
 - buying of a new slot die coater – up to 1 year (small ones in 4 months)
 - According to DoA: by M18 we need to show that the production process parameters fixed
 - ISC – slot die or slot die coater needed, no budget available for buying a new machine
- EAB: tests of reliability? accelerated ageing? ... - facilities for these tests are available => WP6 characterisation activity on component level
- Matthias – lamination with the product available (1,5 m width)
- ISC – reference parameters from CMG as a starting point (existing product – get all the technical specs and start with this)
- Decisions and Critical Actions (TODO summarized at the End of This document):
 - CMG: recheck usability of 1.5 m slot die! => notification to FhG-FEP at earliest possibility to allow check for backup – to avoid delays

WP3: Thermochromic cells on thin glass (Matthias Fahland, FhG FEP)

- tough timing in T3.1 – required purchases started, but dependence on external partners and fast delivery times:
- technology and material developed at UWB, upscaling will be done at FEP
- decisive points stressed in slide 6
- action plan prepared
- EAB: when will be thermochromic thin glass done on 1.5 m width?: Answer: this is not a part of the Switch2Save project; Instead lamination of multiple thermochromic stripes is foreseen for large windows.

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- EAB: Thermochromic VO₂ is a delicate reactive process – gas inlet is a challenge; Answer: FHG-FEP will build specialized gas inlet system based on UWB technology in order to achieve this
- Decisions and Critical Actions (TODO summarized at the End of This document):
 - FHG-FEP + UWB: Technical Meeting at FEP Machine to finalize specification for gas inlet.
 - FHG-FEP: initiate remaining purchases for process hardware as soon as possible

WP4: Glass lamination and IGU integration technology (Alexander Kraft, CMG)

- ultra-thin glass – how sensitive it is? => FEP sending sheets to test it, as long as it is free standing, it is sensitive, once it is laminated, it is more stable, still sensitive, as soon as it is on glass surface, it is stable => also important for retrofit; handling pure glass or thin glass with some adhesives?
- Question: At which time we will decide the final size (this should be part of WP1 or WP5 – list of window sizes and sizes of samples we need to make): Answer: => generic information to put in D1.1, detailed information in D5.1)
- NHOSP: control loops? => simple control loop now at CMG => all these information can be send out
- Decisions and Critical Actions (TODO summarized at the End of This document):
 - Lamination process for thin glass to be verified (CMG) => FEP will send Samples.

WP5: Manufacturing of windows and glass facade elements for demonstrators (Fredrik Bjälkensäter, FGLAS)

- tricky part – demonstrate high yield and reliability a potential for manufacturing cost increase
- demo site at NHOSP currently uses triple pane REHAU frame => could be base for Switch2Save as well.
- bottleneck – combination of materials
- where to send the order quantity of IGUs? Two options: (1) Integration with window Frame organised by CMG in Sweden or (2) deliver IGUs and integrate locally in Greece? (Note: in DoA is window frame integration included in a subcontract by CMG)
- who is responsible for the measurement of window sizes (raw dimensions of wall recess), is it NHOSP? => communication between FGLAS and NHOSP – dimension, type, open-ability => then the manufacturing of the frame and integration together with CMG, then send to NHOSP
- on-site installation of Switch2Save Windows is scheduled in WP7

WP6: Component level long-term performance and durability assessment (Maria Founti, NTUA)

- all assessment is done from component to large scale
- CMG doing also outdoor testing
- determination of who will be testing what to be done before the WP starts

WP7: Building demonstration and pre- and post-installation assessment (Dimos Kontogeorgos, NHOSP)

- early start to anticipate public procurement delays
- the clinics are not closed during the summer => partial transfer of patients needed
- Question: Is specialized personnel needed to install IGUs to window frames and/or to install windows to Hospital?; Answer: Any window installer can be qualified to do installation of Switch2Save windows; no specialized subcontractor needed
- Assessment of lighting comfort: Camera to be installed to measure the luminance quality in hospital with EC windows: Avoid ethical issue by directing camera to area not frequent by people and by using luminance sensor cameras not suitable for imaging; initially, NTUA will start with lighting study in university lab.
- monitoring of building in Upsala? => monitoring system already installed, new sensors still need to be installed – similar sensors in both buildings? – to discuss it between NTUA and VAS
- for measuring light => optical spectrometer could be the back-up action but measuring absolute luminance is not trivial and requires adaption.
- NTUA: idea is to measure the luminance because of the glare
- FEP: Difference between window blinds and EC Windows: Window blinds block view into building from outside; EC windows do not block the view. Reduced privacy to be taken into account → Answer NHOSP:

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Switch2Save will replace window blinded balcony doors by EC windows. Rooms behind are not privacy sensitive and the balcony is not accessible by unauthorized personnel, privacy is therefore not an issue.

- Decisions and Critical Actions (TODO summarized at the End of This document):
 - If any collection of personal data (including questionnaires on personal comfort level) shall take place, we need to inform John by M6 to be included in the ethics DELs

WP8: Dissemination, clustering and exploitation + logo discussion (Lenka Bajarová, AMI)

- design contest – no monetary prize planned yet
- paper to be prepared by NTUA – energy assessment by using smart windows – peer reviewed – do we want to reveal the approach that we are having? – no chemistry details
- other projects funded in EEB-01-2019: – only two projects funded – POWERSKIN+ (<https://cordis.europa.eu/project/rcn/224842/factsheet/en>) & Switch2Save
- IP submission:
 - fair and transparent procedure for the submission of an abstract, paper or other external publication is necessary
 - the framework is defined in the Consortium Agreement Article 8.4 Dissemination of results and it is in line with Article 29.1 of the Grant Agreement
 - always to be mentioned “This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement n°869929, project Switch2Save“
- open access – cost for open access are eligible
- dissemination recording available in the presentation
- press release – very good visibility
- suggestions for project logos suggested, the final logo chosen

General Assembly incl. WP9: Project Management and Coordination

- pre-financing will be distributed after all bank accounts information are collected by the FhG headquarters
- partners agreed on the inclusion of the new EAB member (Wilma Dewald, Volkswagen)
- partners agreed on the preliminary set-up of upcoming meetings, the next meeting will be organized by UWB in Pilsen in March / April 2020, doodle will be sent out shortly after the meeting
- partners agreed on the set up of monthly PSC telcalls (WP leaders participation is compulsory, all other partners are welcomed to join), the call will take place every third Thursday in the month at 10 am, webex invitation will be provided by AMI

4. Decisions taken

- partners agreed on the inclusion of the new EAB member (Wilma Dewald, VW)
- partners agreed on the preliminary set-up of upcoming meetings, the next meeting will be organized by UWB in Pilsen in March / April 2020, doodle will be sent out shortly after the meeting
- partners agreed on the set up of monthly PSC telcalls (WP leaders participation is compulsory, all other partners are welcomed to join), the call will take place every third Thursday in the month at 10 am

5. To do list

Item	Who	What	When
1	NTUA	To prepare draft template for technical specs – firstly distributed to sites, then to everybody for additional require	End October
2	AMI	To set up doodle for beginning of November to discuss WP1 developments and status	25/10
3	CMG	Recheck usability of 1.5 m slot die and notify FhG-FEP	ASAP
4	All	Information on any collection of personal data to be provided to John	End March
5	All	Those who haven't sent the banking information yet, send it to FhG	Immediately
6	AMI	To send out invitation for first PSC telcall	End October
7	AMI	To prepare templates with new logo included	End October
8	AMI	To prepare Minutes and submit respective DELs	End November

6. List of participants

Name	Institution	Institution
John	Fahlteich	Fraunhofer FEP
Matthias	Fahland	Fraunhofer FEP
Daniel	Dressler	Fraunhofer FEP
Uwe	Posset	Fraunhofer ISC
Marco	Schott	Fraunhofer ISC
Alexander	Kraft	Chromogenics
Greger	Gregard	ChromoGenics
Frangiskos	Topalis	NTUA
Maria	Founti	NTUA
Ioannis	Atsonios	NTUA
Jaroslav	Vlcek	UWB
Fredrik	Bjälkensäter	FASADGLAS
Linus	Moëll	FASADGLAS
Andris	Azens	AGL
Erik	Aronsson	Vasakronan
Asa	Westerlund	Vasakronan
Vasileios	Tsoulkas	NHOSP
Dimos	Kontogeorgos	NHOSP
Sara	Van Rompaey	E2ARC
Eleni	Goni	E2ARC
Elena	Turco	AMIRES
Lenka	Bajarová	AMIRES
Ricardo	Ehrenpfordt	EAB
Renato Juarez	Corso	EAB
Claes-Göran	Granqvist	EAB
Dirk	Jödicke	EAB
Bert	Heijne	EAB
Damien	Hau	EAB
Sverre	Simonsen	EAB

7. Degree of Progress

This is the first issue of the deliverable D9.1. The next Minutes from the GA meeting will be submitted as deliverable D9.2.

8. Dissemination Level

The Deliverable D9.1 is confidential, available only for members of the consortium, including the Commission Services.