



*Cost-effective and sustainable Bio-Renewable  
Indoor Materials with high potential  
customization and creative design in Energy  
Efficient buildings*

# ***INTERNAL INSULATION WALL ASSEMBLY***

## DESCRIPTION

NCC panel will be put between wooden supporting frame, adjusted to the specific dimensions, creating kind of cells for inserting the insulation material. At first, typical wooden frame is erected and fixed to external wall surface. Afterwards insulation panels are put between studs and covered with lining. Final finishing depends on type of lining used in construction.

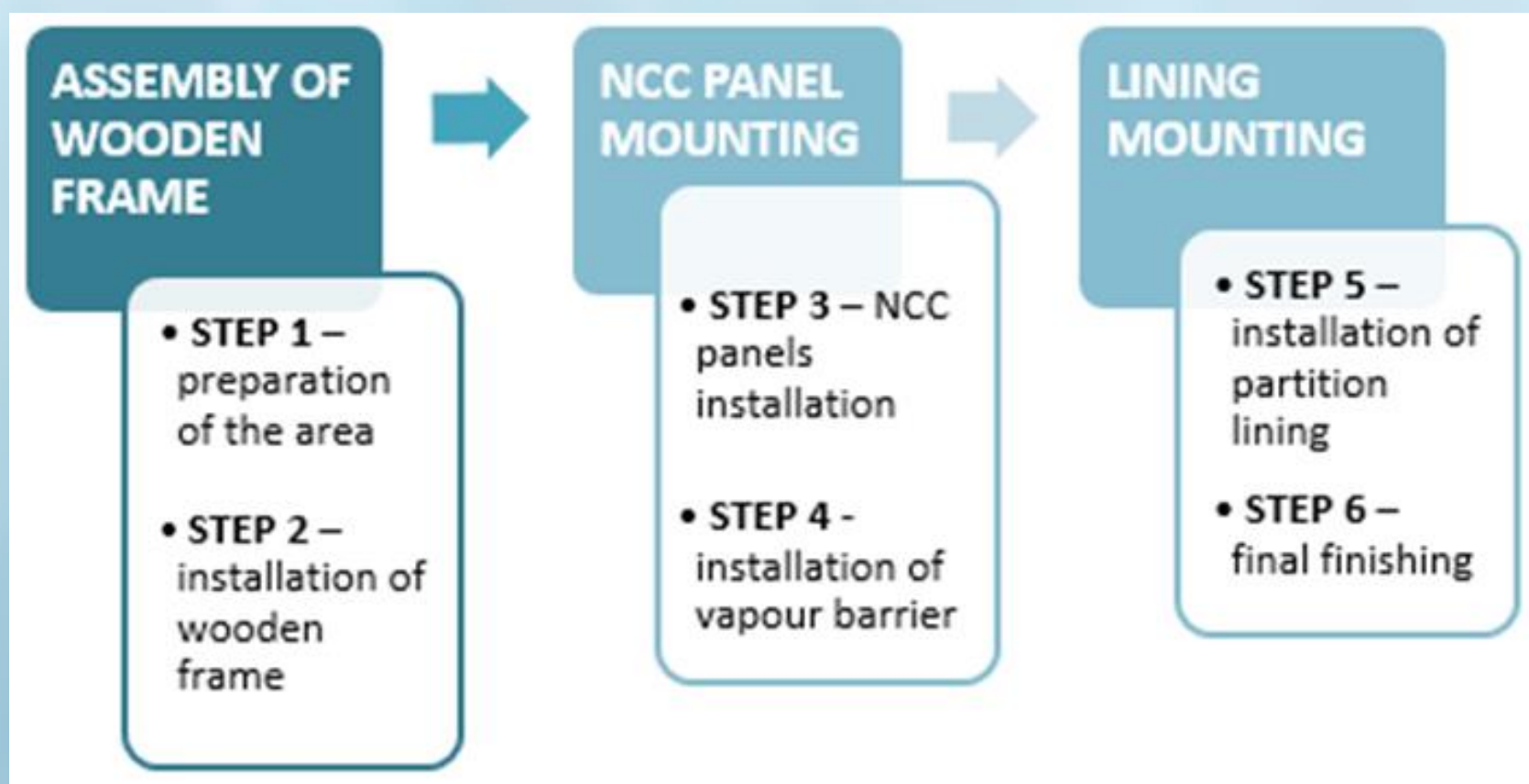
## REQUIREMENTS

- Installation of internal insulation system in which NCC panels will be incorporated do not require any specific devices and can be mounted using typical equipment. The installation process is simple and can be easily performed by no more than two workers. Weight of particular elements allows to carry out installation actions without any additional devices facilitating lifting and mounting.
- Internal insulation system can be installed in all types of accommodations due to usage of vapour barrier, however it should be made with great care especially in places with increased humidity, like toilets or bathrooms as elements from which partition is made are vulnerable to water and humidity (eventual change of lining may be necessary in accommodations with increased level of moisture inside).
- To hang objects heavier than 10 kg additional supporting elements are required. Horizontal wooden elements need to be fixed to external wall which will act as a substrate for installation of hanged objects.
- The system can be mounted to different substrates. It can be fixed to structures made of concrete or brick materials.

## END USERS

Contractors, architects, engineers.

# BLOCK DIAGRAM



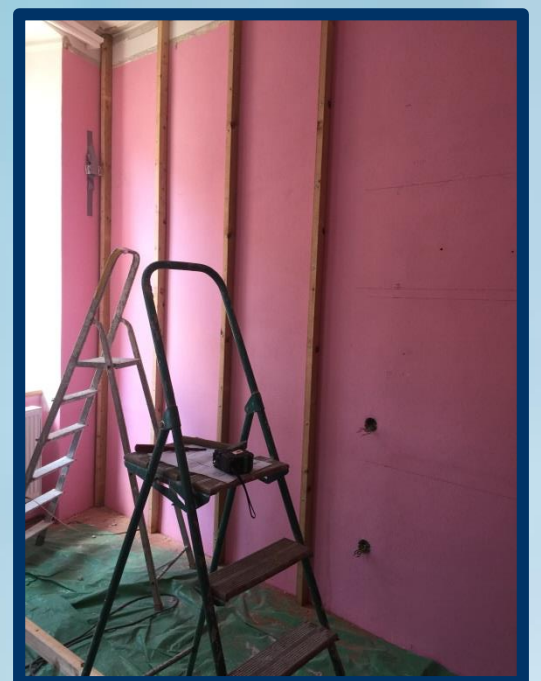
## GUIDELINES FOR INTERNAL INSULATION WALL ASSEMBLY

### Step 1 – Preparation of the area

Use an electronic detector to find any cables and pipes in the wall. Determine the position of wooden studs to avoid damage of eventual services placed inside the wall. Prepare electrical sockets to move them forward and enable their installation to new surface of the wall.

### Step 2 – Installation of wooden frame

Fix bottom wooden profile to the floor right next to the external wall. Cut studs to proper length and place them between bottom profile and ceiling. Fix studs directly to external wall by means of bolts or additional steel angels (depending on thickness of the studs). Remember to adjust thickness of the profiles to used insulation – it should match thickness of used NCC panels. Distance between particular studs should be adjusted to width of used lining, e.g. for width of lining equal to 1200 mm studs should be placed 600 mm one from another.



### **Step 3 – NCC panels installation**

Place NCC panels between wooden studs. Remember that insulation panels should not protrude from wooden frame.

### **Step 4 – Installation of vapour barrier**

After installation of insulation material cover the wall with vapour barrier. Fix the barrier to wooden studs by means of staples. Vapour barrier is very important as NCC material has ability to absorb moisture and loses its abilities when wet.

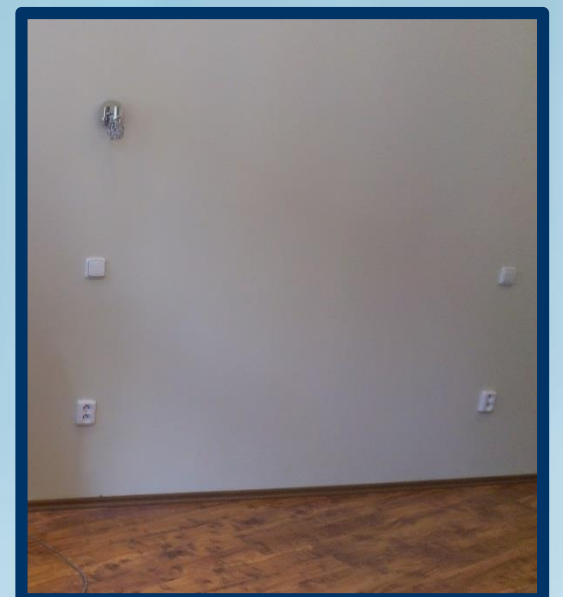


### **Step 5 – Installation of partition lining**

Fix wooden boards/gypsum boards to studs covering two areas between studs. Remember to leave approximate 5 mm of free space between wooden board and ceiling and 5mm between wooden board and floor to enable compensation of ceiling deflection and vibration. Free spaces, then, will be filled with elastic material.

### **Step 6 – Final finishing**

Adjust type of applied finishing to lining covering the wall. For continuous effect use gypsum board, fill space between boards with plaster and afterward cover the surface with special paint. With wooden based boards use the paint firstly and then install aluminium plugs, etc. as a final finishing of the wall.



# TROUBLESHOOTING TABLE

PROBLEMS	POSSIBLE CAUSES	CONTINGENCY
The surface of the external wall is not flat.	The walls could deflect during utilization, their installation or finishing could be of not highest quality or due to the age of retrofitted buildings the surface could get damaged.	During installation of wooden frame workers should pay great attention to create flat and straight surface. If it turns out that during installation studs do not stick to surface of external wall, additional pads should be put between stud and external wall to achieve straight surface and prevent from deflection of studs. Otherwise this can cause problems during further lining installation and final achievement of straight and even surface



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