IKEA MILSBO

Greenhouse Hack w/Living Moss Wall



This write up is split into three different sections, you can skip to each section by clicking on the links on the left side of the screen.

INSPIRATION MATERIAL

This build was based on a few different techniques that I found while I was doing research for the project.

I'll add my comments with each resource to let you know the timestamps of the most relevant parts of the video, although I would recommend watching all of them all the way through to support the creators!

SHOPPING LIST

This is a list of the materials I used for the build. This is fairly flexible and can be altered to suit your needs.

DIY INSTRUCTIONS

I didn't take video throughout the entire build but I have pictures and will also use the Milsbo instructions to add comments about where in the process I did specific actions, since some of it is easier done before the full cabinet is built.

INSPIRATION MATERIAL

Before starting this project, I gathered inspiration from a number of different sources. Most notably, SerpaDesign on YouTube, the Ikea Greenhouse Cabinet Instagram Page, and Denise Brown Tropical Seductions YouTube.

Cabinet Build

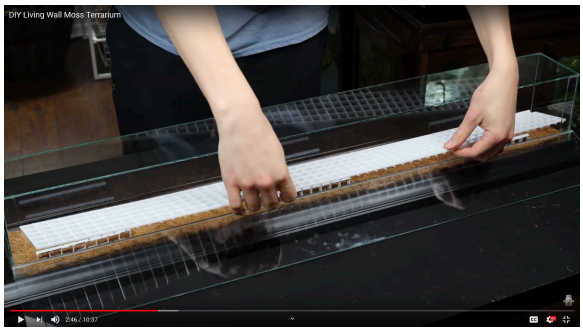
I decided to go with a living wall for this build so I didn't use the background build suggested in Denise Brown's background, but would suggest this is you're going for a preserved moss or similar background.

1:08 - I do ***not*** recommend using her technique for siliconing in the the soil container. I laid down a bead of silicone where the glass sits vertically in the cabinet then added silicon on both sides of the glass where it attaches to the cabinet. Included this just to show the end product of getting the glass in place.



Living Moss Wall Build

I decided to go with a living moss wall for the background. I used the techniques found in this video, just scaled up for the size of the cabinet.



1:40 - Coco Fiber Liner and Egg Crate Risers
2:45 - Sphagnum Moss Wicking Layer
5:30 - Planting the Moss Wall

False Bottom

I used this technique for the false bottom of the cabinet. I believe this is essential to keeping an appropriate amount of water in (and away) from the substrate. The leca rapidly absorbs water and I have found it very helpful. *Note: I did not presoak the clay balls before adding them to the cabinet because the sphagnum moss was dripping water once I sat the cabinet up vertically and I wanted the balls to absorb that water while I was working on the cabinet.*

9:39 - False Bottom Materials and Process

Substrate

I used this substrate mix for the planting area in the bottom of the cabinet and in the planter pots.

0:24 - Substrate Mix

SHOPPING LIST

I bought a number of items that I needed for the project on Amazon and a local hardware store. I had some items around the house, but I'll add that to the shopping list as well.

None of these items linked here are affiliate links, I do not have any promotional affiliations with any of the vendors mentioned on this shopping list. Feel free to use what works best for you and your budget!

IKEA

First and foremost, you'll need the cabinet. I used this one. In the same line, there are two other sizes available. I know a lot of other people have used the Detolf line for a greenhouse solution, but I am not familiar with this line and do not know much about the construction.

Amazon/Hardware Store

General Construction Materials

1 ⅜ " Step Drill Bit - comes in handy for drilling holes for plumbing and wiring.

Krylon Rust Protector - used this on all of the metal pieces, not sure if it is required or not since all of the metal is finished and painted, but better safe than sorry!

Great Stuff Pond & Stone x3 - used this for affixing pots to the wall and as an extra layer of sealant over the dried silicon.

GE All Purpose Silicone x5 - used for adhering coir mats to back wall, wall supports and waterproofing. If you don't have one already, would definitely recommend a caulking gun.

Grommets - used for wiring and plumbing penetrations.

Window Weatherstripping: I bought this from a hardware store. Just used white foam ¼" thick.

Substrate/False Bottom:

Indoor Potting Soil x1
Orchid Potting Mix x2
Play Sand x1 (could have gone with something MUCH smaller but use this for other projects)
Sphagnum Moss x2
Activated Carbon x1
Clay Pebbles x1
Geotextile fabric x1

Moss Wall

Repti Zoo Reptile Mister, 4 extra spray nozzles and tubing. Optional, I use this for irrigation of the living moss wall. For the price, I haven't been super impressed and I am sure there are better options out there.

Coconut Coir Mats x1

Light Diffuser Egg Crate x2: you could easily get away with one but I did use pieces of the second to build the risers.

Ventilation

Plug-in Fans: Note that these are USB powered, meaning you'll need a USB plug for the wall, if you don't have one already

Lighting

A number of different lights could be used for this particular project. I used a light I had from an aquarium project that didn't come to fruition but it's quite pricey for a project like this.

In my other IKEA Milsbo cabinets use these lights. They come with a number of mounting options but I ***do not*** recommend using their adhesive pads, I've had about 40% fail rate with them. For those that use these types of lights, I would recommend making a bracket to hold 3-4 of these lights and then suspend the bracket from the top of the cabinet. I only use the shades on the frontmost and rearmost lights.

DIY Instructions

Drilling Holes for Plumbing, Lighting and Ventilation

Using a step drill I drilled holes for plumbing through the bottom of the base. ***Note***: there are 2 pieces for the base, you'll want to drill both of these pieces before construction. If you haven't built one of these cabinets before, I would recommend reading the instructions and doing a dry run to see how everything lines up before drilling.

I drilled holes in the top piece of the cabinet to allow for hanging and wiring of the light.

What I wish I would have done: While I had all of these pieces dissembled, I wish I would have drilled larger ventilation holes during this step.



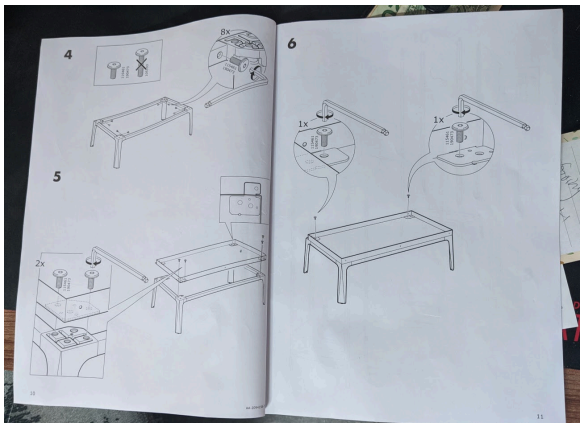
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Waterproofing the Metals

I'm not a 100% expert on metal construction (finished vs. unfinished). Therefore, I started the project by spraying 3-6 (depending where the piece is on the cabinet) coats of Rustoleum on the metal pieces.

Building the Cabinet

After the Rustoleum dries, start to build the cabinet by the IKEA instructions.



What I wish I would have done: After Step 6, I would recommend using silicone to seal the edges on the top and bottom of the base, making sure to not cover the holes for the vertical supports.

Build the cabinet through step 21 of the IKEA instructions. I used the shelf perches included with the cabinet. Just make sure when using them, not to put the perches on the front bottom half at this point (you'll need the space for the glass to hold the substrate).

Building the Moss Wall and Irrigation System

With the cabinet laying down, using masking tape, mark where the substrate will go up to on the back wall.

Measure and cut down the coir mats.

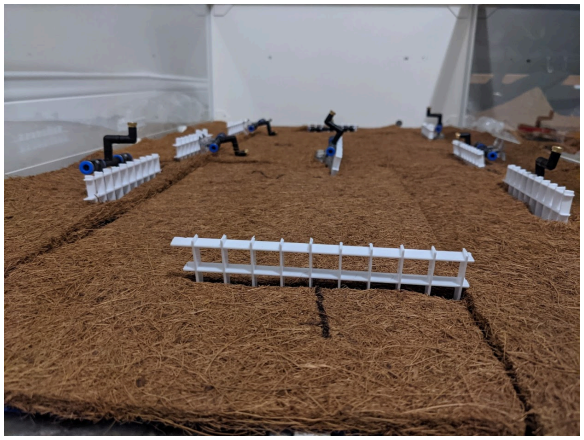
Cut out risers for the light crate and mark/cut the coir. *Optional, I decided to attach my irrigation system to the risers, this is when I decided to cut my tubing for the system.* ***If I had to do this again, I would have left one or two nozzles exposed to water the plants in pots.***

LEARNING LESSON: After standing up the cabinet I had some moss fall. Later, I went back to add a bottom support out of the egg crate to hold in the moss. I siliconed it to the glass. I made it a little taller than the rest of the risers.









Learning lesson: do all of the silconing at this stage to save a lot of time. I did the siliconing at different stages and it caused me a headache, if you do it all during this stage I think it would go much smoother.

Silicone all of the seams of the back of the cabinet (where the glass meets the metal) then add silicone all over the glass and press in the coir pad on the back of the cabinet then silicone in the risers.

If you do this early in the day, you can wait a few hours then stand the cabinet up and install the glass shelf. Add a bead of silicone to all places where the

glass will touch the metal. Add beads of silicone on both sides of the glass where it touches the metal, taking extra precautions around the bottom corners (since they are not at right angles). *Optional: silicone the front vertical supports where the glass meets the vertical posts.*

Once all of the silicone has had time to cure (24 hours), plumb the irrigation system - if you're using one - then add rehydrated sphagnum moss on top of the coir padding. Again, if I had to do this again, I would leave one or two nozzles at the top completely uncovered to spray the entire system.

Once you're done placing the moss, add zip ties to the risers (at this point, I also added a bottom to hold in the moss).

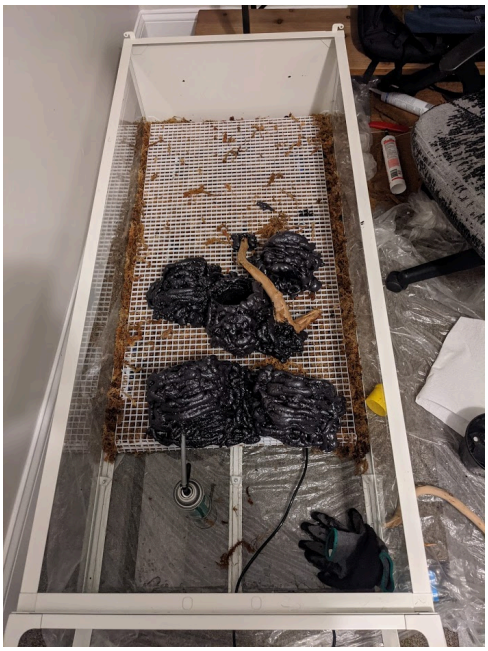




Place the egg crate over the moss and attach using the zip ties. I used aquascaping tweezers for this part, but you could just as easily use a pair of needle nose pliers.



After finishing this part, I realized I wanted to add some planting pots, so I threw down some pots and and a piece of hardscape wood I had laying around and stuck it to the egg crate structure using Great Stuff Pond and Stone. I also filled the bottom egg crate to reduce spill out of the moss.





Once cured, I shaved off the shiny parts of the foam to create a more natural shape with a serrated knife and drilled holes into the foam and the pots to allow for drainage.

Planting the Moss Wall

I used three different types of moss for the moss wall to give variation in color and texture. I ordered 25 sq ft of each type of moss from Tennessee Wholesale Nursery. I purchased the Carpet Moss, Rock Cap Moss, and Sphagnum Peat Moss.

What I wish I would have known: I ordered the moss as soon as I thought about this project and it came in super quick. Since I was working on this project sparingly and am sometimes forgetful, I didn't take the greatest care of it while in the bags they came in so I did experience some moisture and color loss from the moss. I do want to be completely transparent here and I do not want this to reflect poorly on the company that sent the moss, it came in excellent condition, I just waited a little too long to get in a proper habitat.

I split up the moss into smaller pieces and planted the living moss into the sphagnum moss behind the egg crate using aquascaping tweezers, again, needle nose pliers would work just as well.





After completing a section, I would stand the cabinet up to see if there was any loose moss or areas that needed to be filled.



To attach the moss to the foam and in other tricky places, I used hooks made of garden staples that we had laying around (using two pairs of needle nose pliers to bend and cut the wire). You can use any number of other options, but this worked well for me, using what I had available. I also used this opportunity to drill out more holes into the sides of the pots to let excess moisture be wicked out to the moss on the pots.



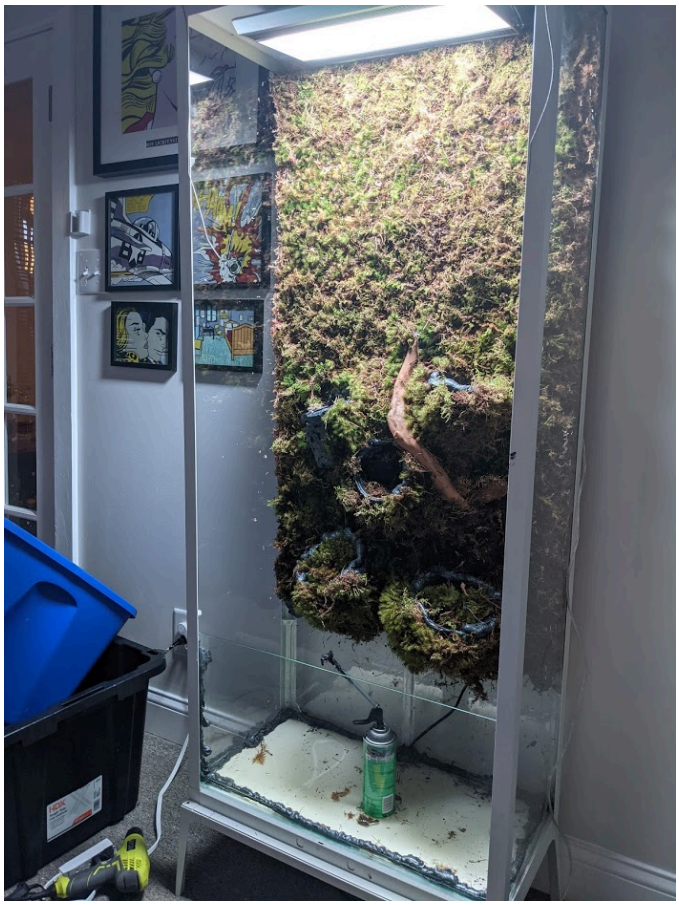
This process takes a while so be patient!

Something I wish I would have done: keep your moss moist if you're working in a lower humidity environment. I lost a lot of coloring during this process.





Since I was paranoid about water, I added more spray foam around the edges of the bottom of the cabinet and after it dried did a test run to ensure it held water.



Next I added the clay pebbles to the bottom of the cabinet (I used about 2.5 inches here) then cut the geotextile fabric and placed that down. I added the substrate mix mentioned in the Serpa Design video linked at in the inspiration section up to where the moss wall ended and then started planting.

For plants, I mostly just used what we had cuttings of laying around taking up space. I think this is a great opportunity to show off your creativity. Having a variety of plants adds texture and interest to the piece. I'm still not final on the plants that I have in there right now but I wanted to test this system before fully planting.

After planting, I covered all of the substrate in the bottom of the cabinet and planter pots with moss.