



# OMNICRETE INTERNATIONAL, INC.

## TECHNICAL QUESTIONS & ANSWERS

### **Technical Question # 2 - What if I want to add a plug or switch after the home is completed?**

**Answer:** Not a problem at all; in fact, adding high or low voltage electrical outlets after construction is much easier to install than conventional construction applications.

**Reason:** A brief description of the wall system is needed to understand how electrical and plumbing are installed during and after construction. Omnicrete is a “tri-wall” construction system; some think of it as a “sandwiched” wall system. The center component is a solid monolithic, poured in place concrete core which is the structural component of the entire wall system. This solid core is “sandwiched” between two Autoclaved Aerated Concrete (AAC) walls on either side of the core. The “means and methods” of actual assembly on the job site is delineated elsewhere in our reports and not covered here since it is not the focus of this question. Suffice it to say, the finished wall system incorporates 4 inches AAC on either side. That being said, let’s now understand the basic facts about this amazing material called Autoclaved Aerated Concrete commonly known as AAC.

During its manufacturing, Autoclaved Aerated Concrete is mixed and cast in forms; several chemical reactions take place that give AAC its light weight (*20% - 30% of the weight of concrete*) and thermal properties. Aluminum powder reacts with [calcium hydroxide](#) and water to form [hydrogen](#). The hydrogen gas foams and doubles the volume of the raw mix (*creating gas bubbles up to 3mm [ $\frac{1}{8}$  inch] in diameter*). At the end of the foaming process, the hydrogen escapes into the atmosphere and is replaced by air.

When the forms are removed from the material, it is solid but still soft. It is then cut into either blocks or panels, and placed in an [autoclave](#) chamber for 12 hours under steam pressure. During this steam pressure hardening process, when the temperature reaches 190° Celsius (374° Fahrenheit) and the pressure reaches 8 to 12 [bars](#), quartz sand reacts with [calcium hydroxide](#) to form [calcium silica hydrate](#), which gives AAC its high strength (*but not as strong as regular concrete*) and other unique properties. After the autoclaving process, the material is ready for immediate use on the construction site. Depending on its [density](#), up to 80% of the volume of an AAC block is air. AAC's low density also accounts for its **low structural compression strength**. It can carry loads of up to 8 MPa (1,160 PSI), approximately 40% to 50% of the compressive strength of regular concrete. However, when AAC is used as a component of the Omnicrete wall system its deficient structural strength is irrelevant, since the Omnicrete system relies on the solid monolithic center core as the main structural component of the entire wall system. The center core of the Omnicrete wall system alone is stronger than any other wall system currently being used due to its monolithic nature. All other walls systems



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have a web type of design or breaks in the solid components of its wall. But again, that is not the focus of this question so more on the structural abilities of this system later.

### Advantages of AAC:

- Improved thermal efficiency reduces the heating and cooling load in buildings.
- Porous structure allows for superior fire resistance.
- Workability allows accurate cutting, which minimizes the generation of solid waste during use.
- Same workability as wood, but far more superior than wood. AAC cuts, nails, and drills like wood but does not rot, decay, warp, prone to attract wood destroying insects and burn like wood. AAC has **ALL** of the *positive attributes of wood* with **NONE** of the *negative attributes of wood* plus it is far more eco-friendly than wood
- Resource efficiency gives it lower environmental impact in all phases of its life cycle, from processing of raw materials to the disposal of waste.
- Light weight saves cost & energy in transportation.
- Light weight saves labor expenses.
- Light weight increases chances of survival during seismic activity.

### Disadvantages of AAC:

- Low compressive strength – Should not be used as a wall system but is excellent when used in conjunction with the Omnicrete system. When AAC is used as a wall system, steel is typically placed either in manufacturing or on the jobsite. Either way steel reduces the workability and hence increases the cost of labor.
- Due to its tiny air pockets (breathability), the product “weeps” moisture and has a tendency to mold behind drywall inside the home when weather conditions are right. When used in the Omnicrete system moisture penetration if any is blocked on the back side of the exterior AAC forming wall. Therefore, we take advantage of the weeping to allow the outward AAC portion of the Omnicrete wall to dry out in the event of moisture penetration. We took a negative attribute of the AAC product and turned it into a positive to enhance the performance of the tri-wall Omnicrete system.
- Since the large block (cake) of AAC is cut with tiny wires on large machines when the product is still soft (see above) the thickness of each piece varies slightly. This inconsistency in the thickness shows up as a very rough and wavy finish on the interior and exterior walls when building only with AAC as a building system. To correct this wavy and roughness, the interior of the wall must be furred-out (furring strips) and



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drywall applied. Omnocrete puts all of the imperfect width sizes facing in toward the core so as to keep the interior wall and outside wall perfectly smooth. In fact, smooth enough we just plaster the interior wall saving money on drywall and drywall labor and eliminating Gypsum (in drywall) thereby yielding cleaner air quality in the interior of the home. If you're now thinking this is a genius system, you would be correct! There is much more you need to discover as you study the answers to the many questions we receive. In fact, by the time you completely understand this system you will think that a person would be down-right stupid for building any other way. Absent of any political, personal and business agendas, everyone will eventually build with Omnocrete once we find a way to deliver this message to a population that has been blinded by builder's expert designers and their fancy paint, tile, moldings, trim, furnishings and eye candy. Quality of buildings lay far from what you see with your eyes.

The Omnocrete wall system contains all the positive attributes as AAC plus it is massively more structural and resists wind pressure far beyond any other system due to its solid 5-inch concrete steel reinforced core. The "protective blanket" of AAC surrounding the center core yields massive superiority of fire protection and energy efficient than any other system worldwide.

**Conclusion:** Routing-out the Autoclaved Aerated Concrete (inside or outside the home) for adding additional plugs and switches after construction is completed is as easy as "cutting butter with a hot knife"; with the proper tools, of course. Once the AAC is routed-out and electrical box and conduit is placed, the wall area is plastered, sanded and painted. However, on a wood, block, ICF or other systems, the drywall must be taken out (on outside walls insulation and fire brakes prohibits "fishing" wires) and replaced which is by far more difficult than our system. So even though on the surface it appears that a "concrete" built home could never have outlets and plugs added after the home is complete it is not only far from the truth it is in fact easier than conventional methods and far easier than ICF, Formed concrete structures and Tilt Wall Structures. Knowing what we know now, it almost seems like the question itself was not an intelligent one. However, we know that our system is easy to install but could appear complicated from a novice and some building professionals view without knowing all the facts. Keep in mind, that the only stupid question is one not asked. Through knowing relevant questions and answers you will become well-grounded in the most sophisticated and protective system ever created with its beginnings outside of human experience and intellect.