**The Simmons Custom House Project**

***Describe the objectives for this installation, what were the client’s expectations of this project?***

 Sustainability was the objective, with **ease of use** being the second directive. Having scheduled lighting and A/V with manual one-button touch was paramount. The client wanted an audio video system with A/V signals distributed anywhere on the premises. This was achieved with full matrix switching. To remain “green,” the power to all surround sound zones and unnecessary electronics disconnects when armed *to away.* For high efficiency, announcements amplifiers, were Class D. A single button shuts down all electronics and lighting. Family safety, security, and comfort were all considered in programming the system. Specific temperatures, alerts, and announcements the clients wanted were added so their personal needs and wants could be anticipated. The integrator worked with the clients, architect, and contractor in planning what was wanted and needed from the house (i.e. safe, secure. efficient, energy-saving, and easy to use). The clients lived in the house for a few weeks, then asked for adjustments to their initial choices in the programming. (The integrator came back several times to change programming code.)

 Each client has had their individual preferences and security addressed and accessed with programming of touch screens, iOS/android devices, and wand remotes. And as for the aesthetic quality of the system, the sensors and various detectors are either hidden in the home's framework, or if out in the open, painted to match the wall to which it is attached. Because of this detailed trim-out, automation equipment isn’t obvious to the casual visitor; this home appears as a well-appointed modern dwelling with all the creature comforts.

***Describe the overall scope of the system***

Initially, whole house surge suppression was achieved with a grounding ring, and conductive flooring in the control room was installed.

All cables have been color-coded with matching heat shrink, Velcro strapping, cable labels, and cat-6 boots.

Sensor wires were individually run to achieve individual names for doors, windows and all other sensors

Temperature of refrigerators, freezers, control room, and greenhouse is monitored.

The pool system is integrated into Control4.

 *Audio and Video Integration*

All the televisions use fiber optic HDMI cables connected to an HDMI matrix switch.

The audio is also matrix-switched. The distributed audio/video system is controlled by Control 4 interfaces, personal mobile devices, and in-wall touch screens. There are nine zones which include 3 surround zones

With the Onkyo receiver’s up-converting feature, the clients can view any video source on any or all televisions via HDMI, VGA, Composite, or Component connections. Broadcast RF signals from an outdoor antenna are routed to all TV tuners as backup during a power outage .

The automation system has many audio signals that play on system speakers at different volume levels:

 \*doorbell on all speakers

 \*phone ringing for outside speakers

 \*zone violations i.e. doors left open and other alarm announcements

 \*driveway alerts

 \*warnings of specific temperature failure

 \*separate smoke detector, which is *not* part of fire alarm, to detect and announce

 “Smoke in the Kitchen”

 \*outdoor warnings (to intruders)”Warning! You have been detected-- leave

 immediately!”

 \*sensor on the living room television triggers the fan to turn off when the TV is pulled

 out.

 \*the TV in the kitchen, and all touch screens automatically switch to camera view when the driveway or doorbell sensors are triggered.

A four-camera surveillance system is installed, with remote accessibility by iPhone, iPad, touch screens, and TV’s.

 *Security integration*

 There are motion sensors in halls, flex sensors under steps, and a driveway sensor. Driveway and doorbell sensors alert the residents to visitors, while the camera views automatically come up on the kitchen TV and the Control4 touch screens. The security system, using an ASCO solenoid valve at the supply inlet to the house, shuts off the natural gas if gas or fire is detected.

 Vital to the clients is the ability to monitor the refrigerators and freezers for failure. Control room temperature, greenhouse temperature, and outdoor temperature and humidity sensors display on the iPhone/iPad. In-wall and mobile devices.

All bare circuit boards are interconnected at two OnQ panels located in the control room. All wires from contacts, sensors, and other devices are individualized.

The security system also turns off the gas fireplace when armed for "away."

 A sensor was installed on the living room television when its position is out, to prevent fan blades from hitting the TV, including the announcement, “The fan has been overridden while the TV is pulled out.”

 *Lighting* (All LED)

 Sixty-eight circuits, the fireplace, the pool lights, and landscape lighting are included in the integration of the master house scenes. Programming of lighting scenes changes according to security system status: e.g. an "an at home looking" scene is programmed for *vacation*, while other sets of lights are on/off for *away*. When arriving, lighting features begin with the driveway sensor triggering the outdoor lights. Ascending the stairs triggers a flex sensor under the first step, turning on the stairwell lights; descending does the same.

Use of the fireplace, landscape lights, and pool lights together creates an inviting atmosphere. And of course a double tap on a Control 4 keypad on the way out turns off lighting, fireplace and A/V. And if they forget to hit the button, arming the security system to “away” does the same thing.

***What decisions did you make to compensate for the rooms layout, interior design, or other challenges, in the requirements of this job?***

Many empty conduit pathways were installed in the walls and ceilings to allow for future expansion or upgrades. Because of poor performance in the back of the house, a Wilson cell phone booster and a WAP were installed. An automated switch for the attic light was also installed to prevent being accidentally left on. All vent fans and bath heaters are programmed with timeouts. Every circuit upstairs can be turned off by the system with a custom button, or when armed for “away.”

***Please discuss the specific audio and video calibrations performed and their results. What calibration was done? What equipment was used to calibrate? What standards were you aiming to achieve?***

All the TV’s were calibrated through the HDMI matrix using Sencore , VP 403, and Color Pro gear. Pluge, contrast, color, tint, sharpness were achieved with great results, as well as color balance d6500. Right in the middle of the vector scope. The client chose not to have an audio calibration; however we did adjust all audio controls to his preferences and satisfaction.

***Discuss your accomplishments integrating and automating this project***

Sustainability was the objective, with **ease of use**  being the second directive. Having scheduled lighting and A/V with manual one-button touch was paramount. Integrating a residence using industrial methods i.e. grounding ring, advanced surge suppression, conductive flooring, cable duct, and shutdown of gas supply was a personal accomplishment.

Additionally:

\*All sensors individually cabled-- “no zones“

\*Fiber Optic video distribution

\* Outdoor intruder alerts

\*Phantom load disconnect

 \*Pool integration

\*Driveway sensor

\*Flex sensors in the stair treads,

\*Refrigerator/freezer monitoring

\*Smoke detector in kitchen to detect burning in oven, yet not trigger the fire alarm

\*Detection of water in the attic appliance pans

\*Shutting down the fan in the living room when the TV is pulled out.

\*Conduit everywhere

\*Design and integration of solar system-(Everything connected to the solar system is connected to an Uninterruptible Power Supply, and the switching to batteries is instantaneous upon power loss.)

Backup power from solar system feeds:

 control room and equipment rack

 all lighting circuits

 all A/V, networking, automation,

 all refrigerators and freezers,

 certain outlets in every room for window ac units, in the event of long term power

 outages.

 \* Beautifully and artistically finished project (All cables have been color-coded with matching heat shrink, Velcro strapping, cable labeling, and cat-6 boots.)

***Please discuss any deviations you had to make from CEDIA standards in design due to client or construction restrictions.***

 The client chose not to pay for advanced documentation, schematics, block diagrams,

room layouts, and professional audio calibration; we provided as much of these on our own, as possible. We sat down with the client and adjusted each audio zone (EQ) to the client’s preferences.

No patch panel was used due to space considerations There is 10’ of slack (stored in the cable duct) in each cable coming in to the control room to compensate for this

Also HVAC was not integrated as it is a geothermal system and the temperature is never adjusted and the client didn’t want it.