Project Name: Raju Bhai Shah

Residential - Independent Villa

Location: Surat

Architect: TATHASTU ARCHITECTS, Ar.Ajit Jariwala

Project Type: Residential - Independent House / Villa

Project size: Residence large villa area of 31,304 sq.ft. with three floors.

The approximate costing in INR for the entire smart home integration : 93,81,000/- INR

Project Brief:

Rajubhai Shah Residence is a project one integrator gets once in a lifetime. It's one thing to have a client who can spend and it's a completely different thing to have someone who is discerning enough to spend wisely and use every single thing meticulously.

The performance objective of the project was crystal clear from day one. To deploy smart technologies that can make human life simple, smart, convenient, user-friendly, safe, and sustainable.

All technologies ranging from Smart Lighting with On/Off, Dali2 Dimmable-Tuneable, and timed sequences to HVAC Integration, AV Zones and control, Security, Audio Systems, Home Theatre Control, Office with Audio & Video Conference solutions etc were deployed in a very harmonious and meticulous way and all seamlessly integrated on the platform of Control4 combined with KNX Lighting Controls and Shading solutions.

Provide centralized control and management interfaces that allow homeowners to monitor and control all aspects of the automation system from a single location, simplifying operation and ensuring consistency across the entire villa area.

By now, it must be fairly clear to assume that the project is no less than a fantasy Hollywood Sci-fi movie and the home owner surely had a vision delivery by our team at Autocon Solutions.

We have a lot of good images and videos recorded for anyone to get an idea of what this project is all about. We urge you to please use the link below to get access to the curated images and videos to get an idea of this project. We already uploaded a few in the sections ahead, but of course we couldn't upload everything.

Following smart home/automation products integrated by us in this Project and why?

1. Lighting Control:
   a. 8 Channel On-Off Relay by Hager-Berker / eelectron : 30 Nos
   b. 4 Channel Phase Cut Dimmer eelectron: 4 Nos
   c. 64 channel Dali2 for Tuneable & Dimmable Relay by eelectron : 4 Nos

2. Shades Control 4 Channel Shades Control by Theben : 6 Nos
   a. 8 Channel On-Off Relay by Hager-Berker (Germany) : 20 Nos

3. HVAC Control : Cool Master 3 Nos

4. Automation Keypad by Schneider : 90 Nos

5. Neeo Media Control remote : 5 Nos

6. Lutron Wireless Pico Remote : 38 Nos

7. Automation Sensor by Control4 : 20 Nos

8. Audio Integration : B&O Soundbar 8 Nos

9. Video Distribution and Tv integration : 10 Nos

10. Tata sky Ip Integration : 10 Nos

11. Networking by Aruba aceess pointy and Firewall : 22 Nos Access Point

12. Intercom by Grandstream : 15 nos

13. Video Surveillance : 30 Nos

14. Indoor wireless Security by Texecom
    a. Control Panel & Expander : 17 Nos
    b. Sensor (Magnetic contact, Glass Break, PIR) : 47 Nos
    c. Panic Button : 10 Nos
    d. Keypad and Sounder : 8 Nos

15. Outdoor Periphery wired Laser Beam Security by Optex:
    a. Red scan Pro: 1 Nos
    b. Quad Photo Beam for 60m range : 4 Nos

16. Video Door Phone by Panasonic : 2 Nos

17. Door Locking Integration by Yale : 11 Nos

18. Multiple Motorized parking gate integration : 1 Nos

19. Wicked gate access and motor integration : 1 Nos

20. Office Audio and Video Conference Solutions : 1 Nos

21. Pantry Management system : 1 Nos

Please find below each subsystem's basic characteristics and uniqueness.

This project is special using the diverse solutions and integrations deployed in this Villa. I feel we haven't left anything behind as far as a smart home is concerned.
- **Lighting Control: Mood Lighting -** Entire home lighting is on automation control which comprises of all direct and technical illumination, decorative lighting, focus lighting, facade and landscape lighting as well as emergency lighting and its all a part of room scenes as well as global scenes. We have used KNX as backend protocol for lighting control and as user

interface as we have used advanced state of art Keypad from schneider, Germany and we installed 90 keypads for this villa.

- **Dimming -** All the technical lighting in the project are from Plus Lighting (inspired by German designers) and its all controlled on phase cut and dali dimming platform, again on KNX. Sensor controls - Lighting control sensors have been deployed across the house for easy navigation at night and easy of use without really worrying about energy wastage. Stand-alone sensors from Schneider Electric have been installed in all rest rooms to control dual load of lighting and exhaust with different lux triggers and delay timings. Also deployed are Schneider wall mount foot sensor for staircase illumination at night.

- **Shades Control -** Motorised Shading solutions in all rooms - Somfy Motor system make the curtains and blinds smooth, and noise-free and offers seamless control of automation on KNX keypads as well as Control4.

- **HVAC Integration & scheduling -** Centralized Air-conditioning system integrated with cool master pro controls for all AC units and the same has been integrated on KNX also, to make user control through keypads as convenient as smartphone control.

- **Audio Integration** - All audio sources and distributing them to multiple zones or rooms within a home, typically controlled from a central location. For living room & all Bedroom client consider a Bang & Olufsen (B&O) audio system, outdoor garden music etc. controlled by Control4 application.

- **Video Distribution -** 4K UHD Video Distribution with 9 TV and 1 4KProjectors - All the display devices in the house are switched to diverse sources using Control4 Leaf UHD Video Matrix switchers that offer HDBaseT transmission.

- **Network** - Complete Wifi and networking solutions deployed by us, covering every inch of the Villa with state of art. Every device with an onboard LAN port, has been connected on Ethernet, to ensure better throughput and connectivity.

- **Security -** Video Surveillance, Access Gate/Door, Alarms: Surveillance of the entire periphery and indoor areas planned and executed and integrated on Texecom wireless security & Outdoor Periphery wired Laser Beam Security by Optex. Control4 for smart alert on control4 via notifications as well integration to lighting to scare the ones with malafide intentions away from the property during vacations mode.

- **Door Control and Locking Integration -** The Main Door of the house is obviously keyless and operated by Digital Lock from YALE and controlled on automation. All other entry points of the house and each bedroom entry is secured by Yale digital locks, eliminating the need to carry any physical keys across the house.

- **Motorized parking gate integration -** A very interesting solution, considering the space limitation and opening span.

- **5 NEEO remotes, in the house -** Diverse User interface for every age group. Parents love the Button based pico Remote, kids love the application and clients embrace the new NEEO Remotes from Control4 and the APP is handy for all. KNX Keypads, are a default in every room and make the space control more intuitive, immediate and simple.

- **NAS Storage as Media Server -** QNAP Solution works best with control4 for desired media centre application and plex server makes the experience flawless and controllable on OS Platform

- Lift integration on Automation and smart use of Drop bolt locks to ensure safety while lift is in motion and smart lighting triggered by lift motion to illuminate the shaft and indicate the motion.

Below we have described all automation events that do not require user interaction which happen within and between the integrated subsystems.

- **Scheduling**: Foremost, for most of these schedules, we have created two home modes. Home mode and away/ vacation mode. While most of the below mentioned work during home mode, few security features get activated during away mode.

- **Garden Lights:** All Garden and Facade Lights are programmed to turn on at sunset and turn off by midnight, post which only select few lights stay on for the entire night and are switched off by sunrise.
- **Parking Lights:** They are automated by timings as well as by sensors. For example, on a cloudy day, if a car parks in, sensors trigger based on Lux and motion, to tune on the parking lights.
- **Step Lights:** In the main entrance and triggered ON by Motorized Sliding Gate Operator, if the time is between 7 PM-6 AM.
- **Foot Lights:** All foot lights of the entire house are turned on post sunset and turned off the next day, 30 mins after sunrise.
- **Curtain Scheduling:** All the curtains are managed by multiple schedules. Staircase sandwich blinds are shut during the night times when there is internal illumination within the house. All the drapes are opened during sunrise, closed at noon, sheers are opened during evenings and again shut at night. Further, they are also a part of user scenes or macros.
- **Server AC**: Needless to say, Server room AC has been kept on schedule to keep the unit turned on for the duration, as per external temperature conditions. This also has been smooth to quite an extent.
- **Parking gate:** Has been automated to open based on proximity achieved via geo-fencing, delivered through IFTTT. However, client couldn't find it much convenient and currently, being operated through remotes and may be in future, by vehicle identification.

Macros have been created and assigned across multiple platform and interfaces:

- House has on/off macros for every room, triggered by the last rocker of the keypad and represented by a graphic icon on the display. The OFF button makes sure everything in the room - Lights, blinds, media, HVAC are all turned off one by one.
- House has Scene macros for every room, triggered within the scene page in the last display page of the Keypad. Scenes have been created for Movie Scene, Good Night scene, Relax Scene, Evening scene, etc which comprises of lighting, curtain control, AC, etc..
- Scenario buttons has been assigned macros and these buttons have been creatively display on the user interface of Control4 application. Few of them are Fireplace Macro, Fountain Motor macro, Terrace Heat Pump macro, etc.
- Also initiated a sequence to reboot the server rack equipments via a custom scenario button on the control4 platform.
- Alexa integration has been achieved and using macros, certain scenes have been delivered on the voice platform, to be triggered via control4, involving multiple subsystems like Lighting, ac, curtains, etc.
- a Smart button has been assigned on schneider KNX Keypad, which is further linked to control4 platform as a KNX keypad and helps to trigger macros on OS via KNX Button like Pooja music, Gate open, Gate Close, AC On, AC Off, etc
- Interesting feature is a soft button on control4 application OS which helps to trigger a physical relay on KNX Actuators to trigger the servant bell kept near the servant quarters. This makes intercom feature redundant and gives client flexibility to generate call from wherever he is.
- Home Theatre Scene - this is by far the best macro, helps to prepare the room for an immersive movie experience triggering the AV system to gear up, lighting to dim down, AC to generate the right temperature and blinds to roll down, pop corn machine to pop out corns, for an ideal movie experience. At this time, client can also choose to secure the house for an engaging movie experience without worrying about any security hazard.

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Technical details and calculations made for this system's power management.

- Power management was given utmost importance, considering the extent of automation controls. Although Ahmedabad enjoys the most stable and clear power source in the entire country, precautions was taken to handle outages.
- Server rack was supplied through an Online UPS to take care of backup and fluctuations.
- All the cameras, drop bolt locks, finger scanner devices were supplied power through Online UPS Backup, with atleast 30-mins of backup.
- Separate UPS was deployed for Home Theatre gadgets to ensure backup and clean sinusoidal supply to AV Receivers as well as other gadgets.
- Effective use of circuit breakers and contractors was done, to control heavy utilities like garden irrigation pumps, heat pumps, foundation pumps, jacuzzi, geysers etc and appropriate labelling was done to maintain all the utilities.'
- Further, a separate phase was cabled to every switch board and selective lighting circuits for an emergency use, if needed at a later point in time. In case of natural calamity or unforeseen event, this provision can come in handy.