IREM® From the Front Lines Podcast

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Case Study: Ultra-fast EV charging

Todd:
Welcome to another edition of From the Front Lines, where we discuss both the day-to-day, and one-of-a-kind issues facing real estate managers. In this episode, we talk to George Barriere with FirstService Residential, AMO® and Michael Spurr with ADS-TEC Energy about the ultra-fast EV chargers at the Marina Palms Yacht Club & Residences, a 470-unit condominium complex in North Miami Beach, Florida. Welcome to the podcast, George and Michael.

George:
Thank you, great to be here, Todd.

Michael:
Thank you for having us! Excited to be here.

Todd:
Can you each introduce yourself and your company? George, why don't we start with you?

George:
Thank you. George Barriere, as you stated. I came to FirstService from the business world, and I am currently the general manager for Marina Palms Yacht Club & Residences. I have been with FirstService for quite a while. I was a regional director prior to this position, and have overseen, in one way or another, a total of 67 properties. FirstService is the largest residential property management company in North America.

Todd:
Michael, how about you?

Michael:
Sure, yeah. Hi, my name is Michael Spurr. I am Public Affairs Manager with ADS-TEC Energy which means that I deal with the regulatory requirements of our products and services, as well as new laws, regulations and funding programs. And I've been with the company for almost two years now, and in the e-mobility industry for more than five years. And at ADS-TEC Energy, we develop and produce battery-based platform solutions for the energy industry of the future, and more specifically, that means that these are battery energy storage systems, as well as battery buffer DC, ultra-fast charging stations for electric vehicles. So our competency really revolves around the

battery module and providing intelligence solutions for a variety of different use cases. We're headquartered out of Germany, and US operations are based out of Auburn, Alabama.

Todd:
Now George, what prompted FirstService to install EV chargers at the Marina Palms Yacht Club & Residences?

George:
Well, primarily the exponential growth of EVs in our area, which is South Florida, and our property in particular. We already had three Level 2 chargers installed in each garage. But based on the usage and the time those chargers take to charge a vehicle, we realized that we would not be able to support the growth. So I researched all the options available, and for us, the ADS-TEC Energy ChargeBox was a clear choice. Now there are two main challenges for multifamily dwellings and in particular high-rise buildings. Those are shortage of parking spaces and limitations of the power grid. The parking space is never enough parking for residents, guests, staff, contractors, etc. Once you have a set number of parking spaces, there's not much you can do other than manage the use. We just distributed a survey a couple of months prior to installing the ultra-fast chargers, and found that we already had 50 EVs on property. To help you understand the parking challenge itself, it would take approximately 20 parking spaces with Level 2 chargers to support 100 EVs. It takes two parking spaces to support the same 100 EVs. With the ChargeBox we installed, we already have three parking spaces with Level 2 chargers in each garage, so we can reduce the number of parking spaces used by two-thirds from six to two, and increase the charging capacity by 70 vehicles. As far as the power grid, all properties have a limited amount of power coming into the property itself. Once you get close to capacity, there are a number of very expensive upgrades that need to be performed. We're almost to capacity when I was researching the alternative. Again, using the same 100 vehicle example, the ADS-TEC charger is battery buffered and will use two-thirds less power than the 20 Level 2 chargers we'll use. Michael, can expand on this, but as you can see, this ultra-fast charger addresses both challenges better than any other option.

Todd:
And Michael, can you define ultra-fast EV charging for us and talk a little bit more about how it compares to those other charger options?

Michael:
So ultra-fast EV charging really represents the peak performance of EV charging. And in principle, it charges the vehicle in minutes compared to other low-powered solutions, which require hours, or if not even days, to fully charge an electric vehicle. And in principle, if we look at the charging options there are, and that a condo or multifamily building may want to use, there's three levels that are being distinguished: Level 1 charging, Level 2, and then Level 3 charging, which is also called DC fast charging in the industry. And so with a Level 1 charger, that provides charging for a common residential AC outlet. And here it's really important which vehicle you're driving, what's the battery size, but a Level 1 charger will charge your vehicle to 80% in around 40 to 50 hours, so taking quite a long time. A Level 2 charger, which is the next level up, is slightly higher powered, also AC charging at around seven kilowatts, and in most cases, that will charge your EV to 80% in six to ten hours, again, depending on the vehicle battery size. And so, with what a Level 3 charger

does, a DC fast charges that. It charges your vehicle in minutes compared to two hours. And you can reach 80% in, if you have a very high-powered vehicle, 15 minutes. With more mass markets vehicles, it's 40 to 50 minutes and are almost fully charged again. And that equates to a charging power of around 300 kilowatts. So really, the peak level. And what makes our solution special, the ChargeBox solution, is that it's a battery buffered DC fast charger, which means that it combines low power input from the grid with battery power to combined offer high power Level 3 charging. And if you compare that to a conventional, standard Level 3 charger, it's the same on the output side, so high power output charging, but on the input side, we take a relatively low power grid connection of 100 kilowatt or 50 kilowatt depending on the solution setup, and that's really a grid power that's available at many locations, and fundamentally doesn't require a grid upgrade by the utility. And what that also adds as a benefit to the owner, operator of that system is that we save on utility cost demand charges, which can be very expensive in many different areas. We don't have the additional costs and timelines for transformers and additional switch here, and so it's a much more flexible installation setup that you gain by installing such a battery buffer system.

Todd:
George, can you tell us about the EV charger installation project and its results? What was the insulation like? What process do your owners follow to use the chargers and how have they been received?

George:
That's a really good question, and very important for us in our industry, obviously. So I was kept informed, well-informed during the entire process, both by ADS-TEC Energy and MasTec, which were the installers. Because of where we installed, the ChargeBox and dispenser, the property configuration and the proximity to power, 98% of the installation did not interfere with normal operations or the residents' daily life. There was half a day where we rerouted traffic flow out of a garage to place a ChargeBox where it belonged. But that was it, and as far as the use of the charger, that is another reason for the selection of the ChargeBox. Residents download an app, register through the app, plug in their vehicle and press the charge button on their device. Pretty simple. They can also do the same with an RFID card on the dispenser's touch screen. In general, the residents are pleased since they do not have to continuously monitor Level 2 chargers for a slot or an opportunity. They have also gotten used to what I call the gas station effect, where they just stop for 10 or 15 minutes and top off their vehicle like they would at a gas station. We also have a 24/7 valet, and we provide a service where the overnight valet can take your vehicle from your parking space, charge it, and park it back in your space, so when you get up in the morning, your vehicle is fully charged.

Todd:
Michael, what about from your perspective? What were some of the logistical issues in the installation of EV chargers at the Marina Palms?

Michael:
Yeah, great question. I think here it's, and to best answer this question, it's really insightful to look at the different options a condo or a multifamily building may have when providing EV charging and to also think about the future. So really that question that we are trying to answer with our

solution is, how you provide EV charging for the fleet of electric vehicles, not just a day, but looking into five, seven years time, when they're, depending on where the building is, 50, 100 or maybe even more, EVs. And in principle, there are sort of four options that you can pursue when installing or offering EV charging. So one is that at resident-dedicated parking spots, you install slower Level 2 chargers, which in on the one hand, yeah, adds some convenience for residents, but doesn't match the realities of the grid power availability and the space requirement that George alluded to earlier. So if you think about 100 parking spots, each with seven kilowatts, that's 700 kilowatts of grid power availability that's necessary, and that's not available at buildings, and also is not easily upgradeable by the utility. So it adds a lot of cost and time to be able to install such a solution. Also, you have to consider the additional wiring at each parking spot. So the next option that you might think about is, you stay with Level 2 chargers, but at shared parking spaces. So not everybody has their own charger at their own parking spot, but a number of different spots are shared. And here the issue with slower Level 2 chargers is that you have this six to ten hour time window to charge your vehicles to 10 to 80%, and that's really diminishing the convenience of EV charging, in a way, if you continuously have to monitor that. And additionally to that the limitation that you have on the parking space availability and the costs that are required for adding additional parking spaces and the wiring for the chargers. So thinking about the Level 2 side, there are some clear limitations. Then, if you think about a Level 3, so a fast charger, ultra-fast charger as a community charger shared by residents, you can either go for a direct-to-grid solution or a battery buffer solution. And with a direct-to-grid solution, you still have the issue that you most likely will need to upgrade the grid, since that's not available at the location, just for a small comparison, like a 300 kilowatt charger compared to 1.2, 1.4 kilowatt. Single family home requires an average power demand. So really it's a whole different level of demand required for this type of charging. And the issue that you have with a direct-to-grid solution is that you're being charged from the utility based on the peak power demand in terms of the demand charges. So this can get very expensive if your utility charges a high demand charge. So really, when looking at all the different options. A battery buffer solution is the only really viable long-term solution, we think, as you do not require a power upgrade from the utility. It can be served with the existing power already at the site. It requires much less parking spaces. There's no high utility costs, as the power demand is much lower, and therefore really best answers the specific challenges and realities of EV charging at condos and multifamily buildings.

Todd:
What about operating the chargers, George? What services do they require, and who bears those expenses?

George:
So, all the data is collected and managed by ADS-TEC Energy, including any fees as per the information provided by the residents. They then provide us with the relevant data for us to perform our assessments and reimburse the property for the power usage. In our agreement, they are responsible for all the maintenance and repairs, and we have no financial obligation in that respect.

Todd:
George, where do you think EV charging is headed in the real estate market, and why should property managers pay attention?

George:
So the growth of EVs in South Florida is at a frantic pace. In 2021 when I purchased my EV, I would see maybe one or two on my 45-minute drive to work. Currently, I see three or four of them at every traffic light I stop at. Three weeks ago, I parked at the far end of my garage on the first floor, and while walking to the building, counted 13 Teslas, not to mention the other makes of EVs parked on the first floor as well. I'm sure that different markets are growing at different rates, but if we continue to provide the types of charging options that we have here at Marina Palms, coupled with the lower cost of EVs, I would venture to say that if you are a property manager and you are just now looking into EV charging options, you are well behind the curve, your property values may suffer due to residents not being able to charge at home, and that convenience is huge.

Todd:
And Michael, what should we expect as charging technology develops and EVs become more common?

Michael:
Yeah, I think the industry is, it's a really exciting time to be in this industry, as there's so many new developments occurring. And I think as we see the industry grow more and more, and more electric vehicles coming to our roads, we'll only see the importance and also the necessity of battery-based solutions to EV charging increasing, because ultimately, what a battery does, it provides flexibility to the energy system as a whole, but also locally. We think about improving energy consumption at a building site. So we see charging infrastructure becoming part of building infrastructure, and the added element of the battery really providing additional benefit that we think about in terms of multi-revenue streams for the people investing in our solutions as the battery system. One, for example, is able to integrate renewable energy generation locally, such as photovoltaics. It can provide energy back to the building in times of high demand. But also the battery can be used to take part in demand response programs by utilities, which then adds an additional revenue stream. So really, this flexibility that batteries are able to provide will become more and more important, and the limitations that we'll see in building out the grid infrastructure will only make that need more pressing over the next years to come.

Todd:
Thanks for joining us, George and Michael.

George:
Thank you, Todd. My pleasure.

Michael:
Thank you.

Todd:
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