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MERGING POWER WITH KNOWLEDGE¹

“Knowledge is power. Sharing knowledge is the key to unlocking that power.”
– Martin Uzochukwu Ugwu

Lightning tore through the sky, and the house quivered beneath its fury. John Kroeker's electricity faltered, yet his peace of mind remained intact. As the head of Schneider Electric's Surge Division, he knew his home was safeguarded from electrical surges by an unsung hero: a surge protector. His ambition was to see Schneider Electric surge protectors installed in countless homes.

In a saturated market, Kroeker conceived an ingenious fusion of smart home technology with surge protection. This pioneering approach would enable the surge protector to communicate its unwavering protection to homeowners, setting Schneider Electric apart.

Coincidentally, the government had recently mandated surge protective devices in new constructions and major renovations. As a key player in the surge protector and smart home markets, Schneider Electric was primed for success. Integrating the surge protector device (SPD) with their "Wiser" app would result in a groundbreaking innovation.

However, Kroeker recognized potential challenges. Would the average homeowner be willing to pay a premium for the extra information? The costs of such a revolutionary investment were substantial, demanding significant technical development. Schneider Electric's smart home and surge divisions had never collaborated, leaving the path to success uncharted.

In the storm's aftermath, Kroeker navigated a rain-soaked puddle en route to his car. Eager to present his idea to the executive team, he pondered the future. Would this trailblazing technology distinguish Schneider Electric in the expanding market? Could the various divisions unite to achieve a triumphant outcome? Lightning's fierce display ignited a spark of inspiration, but whether that flash of brilliance would lead to success or vanish remained uncertain.

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The Homeowner

Homeowners were becoming more tech-savvy and wanted information at their fingertips. Schneider Electric had another product in the homeowner sector that communicated to them via an App what was going on in their electrical environment. Schneider Electric had a product called “Wiser” that offered homeowners the ability to monitor their energy usage within their homes right on their mobile phones. It provided them with data to make decisions about their carbon footprint. People were building new homes or retrofitting their current homes to become Smart Homes. These homes allowed them to control lighting fixtures, appliances, and many other electrical devices from their smartphones. Schneider Electric was a leader in the Smart Home field. But this high-end electrical equipment was exposed to the surge world. The Surge Division within Schneider Electric Home & Distribution group wanted to create an offering that no one else within the industry offered to these types of homeowners, a Surge Protective Device (SPD) that would proactively tell the homeowner what is going on with the SPD and surges. Kroeker projected that Schneider Electric can offer an SPD and communicate to the homeowner through the Wiser App. This idea would separate Schneider Electric from the competition in this space. If the SPD could proactively inform the homeowner that a Surge happened, when it happened, what impact it had on their electric system, and what (if any) action they need to take would be a significant premium offer for any savvy homeowner.

The simplicity of the use of an SPD created a market that was viewed as just a commodity or an “add-on”. Homeowners, especially, only see the value of protecting their electronic equipment after something terrible has happened. At this point, it was too late. It’s a common reactive approach. Products like refrigerators, TVs, etc., were not as robust as they used to be. The equipment plugged in then just could not handle the harsh electrical environments caused by lightning strikes, utility switches, and many other pieces of electrical equipment that switch off and on. Billions of dollars were lost on damaged electronics every year. It caused downtime, frustration, as well as increased insurance claims. And it was not getting any better!

These concerns were also recognized by governing bodies in the electrical and safety of the National Electrical Codes (NEC) in the United States. The NEC 2020 meant that the electrical service for any residential dwelling of any kind must have surge protection. NEC 2023 took that code one step further and stated that any electrical panel feeding any dwelling must have a dedicated surge suppressor (Exhibit 1). This included all multi-family, dormitory, assisted living facility, hotel/motel, etc. across the United States. These codes were created to enforce the need for homeowners to implement surge protection into their homes during new construction or for any permitted retrofits. Local inspectors did not approve inspections that did not meet this regulatory requirement.

Delivering Value: Enhanced Surge Protection for Homeowners

According to NEMA (National Electrical Manufacturers Association), the average home had \$15,000 worth of equipment that could be damaged by transients. Installing surge protective devices to protect against downtime, improved system, and data reliability, and reduced electrical failures in a home.

Power surges, or transients, are brief, microsecond voltage and current spikes or disturbances on a power waveform that could damage, degrade, or destroy electrical equipment within any home. Most electrical equipment is designed to handle minor variations in their standard operating voltages. However, transients could be very damaging to nearly all equipment. Most transients, 60 to 80%, are caused by internal sources, such as faulty wiring or loose connections, overloaded circuits, short circuits, or ground faults. External sources include lightning, power recovery, and utility power grid switching.

As electrification and the digitization of equipment became more commonplace, so did occurrences of failure or mis-operation due to transient voltages. Surge protective devices protect expensive electrical equipment from the damaging effects of power surges. These devices were also required by the National Electrical Code in homes.

Code enforcement for NEC 2020 and NEC 2023 went into effect and each State adopted it when they moved into the new code changes. Homeowners had no alternatives to meeting the codes as they were forced to add surge protection to their dwellings to meet the Authority Having Jurisdiction's (AHJ) requirements. Surge protections by themselves only protected the homeowner from the surge anomalies. They did not provide any other data. Adding the Wiser option to the surge protector, which the homeowner must use, gave homeowners valuable data to help them manage their electrical use and improve their carbon footprint.

The combination of this product also offered the homeowner the ability to know when their SPD functioned in protecting their electrical environment as well as the life expectancy, or service needed, of the surge protector itself. Homeowners did not check their electrical box frequently to see if the SPD was still functioning. Adding an SPD, allowed the homeowner to be notified of any issues or damage that they could have incurred.

The Surge Industry

Schneider Electric embraced innovative technologies and business models to lead the market in efforts to improve sustainability and efficiency. Its mission was straightforward: to optimize its clients' operations to achieve sustainability and efficiency. To accomplish this mission, the company had to upgrade its technological solutions and completely transform its business model and operations. The business introduced new services during the pandemic, like remote factory testing, and enhanced current ones, like cybersecurity protocols. Schneider Electric was more focused on utilizing their resources and energy efficiently and aimed to be a partner in their customers' digital efficiency and sustainability. There was a significant mindset shift in Schneider Electric's clients because of the pandemic, which accelerated digital transformation initiatives and changing priorities.

The surge market was a billion-dollar industry that consisted of both public and privately owned organizations competing for market share. Projects were designed by Electrical Engineers and released out to bid markets for quoting and implementation. Engineers would specify their preferred brands on their projects. Schneider Electric had great success in being the typical manufacturer of choice by fostering relationships with these engineers as well as maintaining their brand reliability and functionality. The more projects Schneider Electric is specified on, the more projects Schneider Electric would win, thus increasing market share.

New electrical codes and standards were serious driving forces in safety standards and requirements for new single and multi-family homes. Schneider Electric could benefit from the new regulations by driving the market down to the homeowner level. Until recently, homeowners were unaware of the need for surge protection and were reluctant to invest in this level of protection. The NFPA (National Fire Protection Association), the electrical industry's governing body, recognized the homeowner's reluctance to invest proactively in protecting their investments. Because of this behavior, the governing body had implemented code changes in new home construction and permitted retrofits. The code's implementation would impact single-family homes, multi-family, dormitories, hotels/motels, and Assisted Living Facilities. These code enforcements would contribute to a more secure and stable electrical environment.

It would also cause the SPD industry to grow at least 35% year over year, with up to 60% in incremental revenues (Housing, August 15, 2022).

Who is Schneider Electric?

Schneider Electric, a French multinational corporation in the Electrical & Electronic Manufacturing sector, specialized in building automation, home automation, switches and sockets, industrial safety systems, industrial control systems, and electric power distribution. It addressed homes, buildings, data centers, infrastructure, and industries by merging energy technology, real-time automation, software, and services. Schneider Electric's United States' headquarters was located in Andover, Massachusetts, and their strapline was "Accelerating Sustainability for All," further solidifying their investment in sustainable energy.

Schneider Electric was founded in 1836 (by Schneider et Cie). Schneider et Cie, often known as Schneider-Creusot after its beginnings in the French town of Le Creusot, was a historic French iron and steel-mill enterprise that grew into a prominent armaments manufacturer. It was acquired by the Belgian Empain business in the 1960s and merged with it in 1969 to establish Empain-Schneider. It was renamed Schneider SA in 1980 and Schneider Electric in 1999 following extensive reorganization. Since 2000, Schneider Electric has had its headquarters at the Trianon site in Rueil-Malmaison, France. Schneider subsidiary Télémécanique was based initially in the present headquarters, which was also in Rueil-Malmaison, although the primary firm was based in Boulogne-Billancourt.

As of 2019, Schneider Electric operated business units, including Energy Management, Industrial Automation, and Services. The energy management business offered energy management products for medium voltage and grid automation, low voltage and building automation, and secure power and cooling applications. The Services business was divided into Global Field Services, Energy and Sustainability Services, and Smart grid Services.

Schneider Electric had a market capitalization of \$65.69 billion as of Sept 2022. According to our statistics, this placed Schneider Electric as the 202nd most valuable business in the world by market capitalization. Schneider Electric's top competitors included Siemens Energy, Mitsubishi Hitachi Power Systems, Emerson, ABB, Eaton, and Siemens. The other competitors were Atlas Copco, ASSA ABLOY AB, Ashtead Group, Techtronic Industries, Sandvik AB, Epiroc AB, Illinois Tool Works (ITW), and Siemens Aktiengesellschaft. ABB Ltd., Siemens, and Emerson Electric were the top 3 companies that competed with Schneider Electric for the same group of clients in the market.

Schneider Electric's strengths focused on the critical areas of its business that provided a competitive edge in the market. A brand's strengths includes its' financial position, experienced personnel, product originality, and intangible assets such as brand value. Schneider Electric's "Grid-to-Plug" approach was unique to the industry. It was a "one-stop-shop" offering to their targeted customers. This comprehensive strategy caters to clients' needs by addressing every aspect of power distribution from the power grid to the end devices, simplifying their experience and enhancing efficiency. This offered a competitive advantage over the major competitors listed in Exhibit 2.

Schneider Electric's SWOT Analysis Strengths are presented here:

- Global presence with 31 production units scattered in numerous nations
- As a pioneer in green energy, it had expanded into the green energy area

- Schneider Electric benefitted from its scale, which reduced its risks. Because of its scale, Schneider Electric had more resources to explore new markets and protect itself
- Significant expenditures in R&D and superior technology enabled Schneider Electric to better satisfy the demands of its customers in ways that competitors could not replicate

Technology Exploration

The typical residential wall outlet delivers 120 volts of power. While the power company that services a residence attempts to provide uniform delivery of that power, several factors can cause that power to deviate from the intended standard. A temporary and substantial increase in that power, while only lasting a few millionths of a second, is referred to as a surge. This unintended influx of power could damage or destroy appliances and other electronics.

While a lightning strike can undoubtedly create a surge of electricity within a residence, according to Schneider Electric's promotional literature, 80% of residential surges are caused by everyday devices. When a hair dryer, air conditioning unit, or any other "high-powered device" is turned on, it forms a "mini-surge" within the electrical circuitry in a home. This surge in electricity reduces the life span of appliances and other electronics. Unbeknownst to homeowners, these surges can happen hundreds of times within a month. Over time, these continued surges will cause devices to fail, costing the homeowners thousands of dollars.

Schneider Electric and their competitors developed and manufactured whole house surge protectors to protect homeowners from damaging electrical surges. These devices were installed on a residential electrical panel to block voltage spikes and provide protection for all connected devices (Exhibit 3). Once these surge protectors were installed, the only indication to the homeowner that they were working and functional was one or more small lights on the device itself. This minimal design was often confusing or of little comfort to the homeowner.

As technology advanced, increased consumer devices were manufactured to be connected to the internet, allowing homeowners the convenience of accessing and controlling their connected devices with a mobile phone or tablet from anywhere in the world. As a result, demand for this type of home automation was proliferating in the market. In fact, according to the "Smart Home Automation" report, the global market size for this type of technology was expected to expand at a CAGR of 11.93% through 2027, reaching more than \$207B annually.

As a market leader, in addition to producing surge protectors, Schneider Electric developed home automation technology to monitor and share electrical usage with homeowners. The Wisier Energy™ system was a connected device that allowed consumers to manage power usage and solar generation (see Exhibit 4). The Wisier Energy™ system read the electrical current generated from appliances and electronics. Homeowners could then monitor and obtain a visual representation of energy usage directly through Sense, a mobile application developed and maintained by Schneider Electric. The device leveraged machine learning to evaluate all the power flowing through the home. As a result, the Wisier Energy™ system could identify individual devices and notifying the homeowner whether the device is powered on or off.

Benefits to consumers of the Wisier Energy™ system, combined with the Sense application, were significant (Exhibit 5). Like never before, homeowners could identify inefficiencies within their electrical usage and make modifications to everyday use to reduce energy bills. The Wisier Energy™ system allowed homeowners to analyze the impact of off-peak power usage of their appliances and be alerted to items that may have been left running unintentionally and need to be turned off.

The SPD Project

Eric Marshall, Kroeker's Offer Manager, was with the company for over a decade. Over the years, Eric was part of many different teams, from sales and marketing to product management & development. He was the one person Kroeker could rely on when it came to bringing his idea to life. Eric was aware of the Wiser module and the Wiser app. He was responsible for over \$8M in incremental revenues by streamlining the product offering and combining existing technologies to create a more cost-effective and desirable offering. Eric was an excellent asset for seeing the opportunity to combine the Wiser and an SPD offered to the marketplace.

When the Wiser module was first launched, Kroeker ensured his team understood the product in detail. Eric was also supportive of this product. With this technology, he knew that Schneider Electric was the only one in the market, giving them a competitive edge in the untapped residential market. There were other players in the industry with similar technology. However, their technology focused on commercial buildings with different voltage requirements (e.g., 120v/208v, 220v/408v, etc.)

To bring this idea to life, Schneider Electric needed to invest \$250k to \$500k in the project with a 4-month timeline. Getting the Wiser module to communicate with the SPD required significant application development effort, projected costs was approximately \$120k for the initial investment. In the development stage, the marketing team would utilize the product-to-market fit strategy to identify the target customer, underserved needs, value proposition, feature set, and the user's in-app experience (see Exhibit 6). With ongoing priorities on other high-value R&D projects like the New Residential surge product design and the integrated rebranding of SPDs from a recent acquisition, ASCO, the Wiser to SPD project was likely to face challenges in the development stage.

Complicating matters further was Kroeker's delicate relationship with the head of R&D, Michael Mahan, who prioritized working on tasks in descending order of importance. Mahan's strategy involved cutting costs wherever possible while catering to the broader industry needs. As a result, residential projects often took a backseat to commercial and industrial projects, which generated substantially higher revenue in the electrical sector. On the other hand, Eric had a good rapport with Michael, and Kroeker hoped to use that to his advantage to push his dream project through. If the R&D team completes the application per the requirements captured in the product-to-market fit exercise, the next step would be to start selling the product. Schneider Electric already had well-established distribution channels for its other products. However, combining the Wiser App with an SPD install in a residential home would be new for the company. Kroeker had received feedback from some large utility companies across the United States about some "smart SPD," so Kroeker knew that there was an opportunity here.

Kroeker worked with the Finance team to calculate rough financial projections for this product and service combo. Projected sales in the first year would be at a minimum of \$1M, with growth projections of 35% year over year for the next three years. With an average cost per unit of \$400, Schneider Electric was looking at a 65% profit per unit. To keep costs low, it was planned to use current distribution channels for marketing the new product-service combo. Along with using their established relationships with home builders to bundle this premium product-service combo with a 5-year commitment to new homeowners. To incentivize the home builder, Schneider Electric would pay a flat amount of \$50 per unit sold.

A week later, in a product development kick-off meeting, Michael had made a snarky comment, "I can't believe we are about to blow up \$500k on a device that's only a couple of years old!" He was not wrong; Wiser was a reasonably new product; it had only been on the market for a couple of years. Over the last

few months, Schneider Electric had been learning and supporting the Wiser app, which had gone through two updates and over ten bug fixes. The Wiser app was good but not as robust as it should have been. Would the new development make the app better or break the app altogether?

The Decision

The demand for residential surge protectors was about to explode with the new legislation. Schneider Electric was a force in the market, but Kroeker saw the current circumstance as the perfect storm. If he strikes now, this could be an opportunity for his surge division to take the entire company to the next level. As he drove to work for his early morning meeting, he pondered the pros and cons of his options.

Status Quo – Schneider Electric is already doing well in this market. The demand is about to go up. If all else stays the same, their market share will stay constant, and their volume will rise as demand increases. This is a safe option. There is no scenario where this strategy would result in a tangible loss. Low (essentially no) risk, but low reward. There is, however, a potential lost opportunity to seize this opportunity to be a leader in the industry. Not investing time and money into this project will allow Schneider Electric to focus on business growth based on the enforced codes. The downside will be that the SPD product will be viewed as a commodity and not hold a competitive advantage.

A La Carte for Homeowners– Not everyone sees this innovative technology as necessary, but there is certainly a subset of customers who would find it intriguing. What if Schneider Electric were to offer a premium option that homeowners can purchase from their local DIY? Compared to the option of “going all in,” this would be a far cheaper option for Schneider Electric, as they would only produce what is needed based on demand for the premium surge protector. This would also mitigate the risk of substantial monetary losses if the project belly flops, as production will not have shifted entirely to innovative technology. It would be easier to pivot back to their original business model if needed. The big positive is the number of homeowners within the United States. But the hard part is educating and promoting homeowners to invest in a product they do not know much about.

Homebuilder Offer – What if Schneider Electric were to offer a premium option that builders could leverage with their projects? Homebuilders can gain a competitive advantage by providing a premium surge protector. With smart homes being all the rage and people waiting to be more tied to their technology, this offer would provide the Homebuilders' customers with the highest level of products they desired. Home building was growing 35% year-over-year. Offering them a premium product to gain as much of this growth could lead to impressive results for Schneider Electric. But the problem could be that homebuilders are already trying to be competitive and keep their budgets in check. Adding additional costs could hurt their chances of winning the business.

Go All In – Schneider Electric sees this premium surge protector as a substantial competitive advantage when customers compare them to their competitors in the widget market. This innovative technology could be a game changer in allowing them to stand out. What if builders and homeowners see this option, and everyone starts clamoring for this newest smart surge protector? Going all in would be a smashing success! Every successful project will heed higher revenues and margins. But what if everyone sees this as an unnecessary addition to the basic surge protector, and the added cost turns customers to their cheaper competitors?

Competition Offer – Schneider Electric sees this premium surge protector as a huge demand in the industry. It could be offered to win the Wiser/SPD portion with top competition. If Schneider Electric is

not involved with other aspects of the project, why not still get some piece of it with this proprietary product? Competitors would help to increase brand recognition in the marketplace. This could help drive other Schneider Electric product offerings with new customers. As competitors standardize with this offer and continue to grow their business, it will increase Schneider Electric's market share in this space. However, giving a competitor access to your propriety technology can open the chance to reverse engineer it to build their own.

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Exhibit 1: Typical Surge Protected Devices



Source: <https://www.se.com/us/en/work/products/explore/home-surge-protection/>

Exhibit 2: Key Competitors of Schneider Electric



Source: <https://craft.co/schneider-electric/competitors>

Exhibit 3: The Schneider Whole House Surge Protector



Source: <https://www.homedepot.com/p/Square-D-Wiser-Energy-Smart-Home-Monitor-WISEREM/309169110>

Exhibit 4: The Schneider Wiser Energy™ system



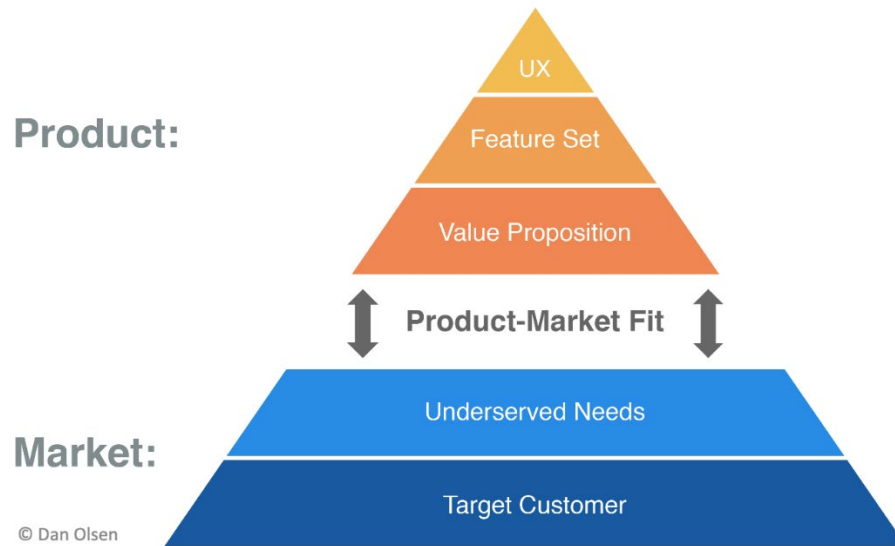
Source: <https://www.homedepot.com/p/Square-D-Wiser-Energy-Smart-Home-Monitor-WISEREM/309169110>

Exhibit 5: The Schneider Sense Application



Source: <https://www.homedepot.com/p/Square-D-Wiser-Energy-Smart-Home-Monitor-WISEREM/309169110>

Exhibit 6: Product-Market Fit Strategy



Source: <https://www.productplan.com/glossary/product-market-fit/>

Acknowledgements

This case was researched, discussed, and completed by this team of EMBA students in the MUMA College of Business at the University of South Florida with support and contributions from John Kroeker, Senior Sales Manager, Schneider Electric | H&D Surge Division.

Biography



Rahil Ismail is an integral part of a team that brings novel therapies to help those who have lost hope with standard treatment options. She is a Clinical Team Manager in Pharmaceutical Product Development, a company that fosters health care research. Ismail oversees clinical trials on behalf of pharmaceutical companies and is critical in monitoring trials. She puts the patient's well-being first while being involved in cutting-edge research on treatments of diseases ranging from gastrointestinal to malignant hematology. She has a bachelor's degree, cum laude, from USF and a bachelor's degree in zoology from Bihar National College, Patna University, India. She is certified as a SOCRA Clinical Research Professional.



Naomi Kent is a creative, authentic, and visionary leader with an exemplary record of building businesses and growing divisions within the software as a service (SaaS) companies. A talented self-starter with B2B and B2C experience, Kent, president of North American Operations for In Touch US, implements winning strategies in competitive environments. A seasoned adviser and leader, she has a background in sales and customer retention across various industries. Kent received a bachelor's degree in international business and languages (French and Spanish) from London South Bank University.



Todd McNally is an accomplished sales and relationship executive who has consistently achieved goals throughout his career in the financial services industry. He is currently vice president of issuer sales, North America, with Mastercard. He and his team drive revenue growth through accelerating market penetration of industry-leading cyber and intelligence solutions to financial institutions and FinTechs. He has expertise in sales, account management, and creating strategic partnerships. McNally received a bachelor's degree in criminal justice and a minor in sociology from Appalachian State University.



Krunal Patel is a decisive, action-oriented, results-focused professional with ten years of experience in the healthcare industry. He currently serves as a director with FTI Consulting, overseeing the business development of CMS STARS project and Quality Improvement initiatives. Previously, he was the Senior Project Manager with Anthem and was a critical driver of the company's ongoing quality improvement programs. He develops short-term and long-term strategies to engage appropriate stakeholders to ensure the success of the organizational goals. Patel received a bachelor's degree in management and sustainable business practices from University of South Florida.



Christopher Purcell, as a physician, works as a clinician in the Tampa General Emergency Department. As an administrative fellow, he works with department and hospital leadership to gain an in-depth understanding of hospital administration. Over the past pandemic-plagued year, he served as chief resident in the Department of Emergency Medicine at UF Health, leading an emergency department during COVID-19, in an unprecedented and challenging experience. Purcell earned an MD from the Virginia Commonwealth University's School of Medicine and a bachelor's degree in biology from the University of Florida.



Robert Stanley is the director within home and distribution at Schneider Electric. He has six direct reports consisting of 30 team members of sales engineers, marketing, and inside and outside sales reps across the United States. His team is responsible for more than \$100 million in revenues from electrical equipment within the commercial, industrial, residential, and retail markets. While he is knowledgeable in what he does professionally, the deep relationships he has built over the decades set him apart from colleagues and competitors. Stanley received a bachelor's degree in applied science with a concentration in management and organizational leadership from St. Petersburg College.