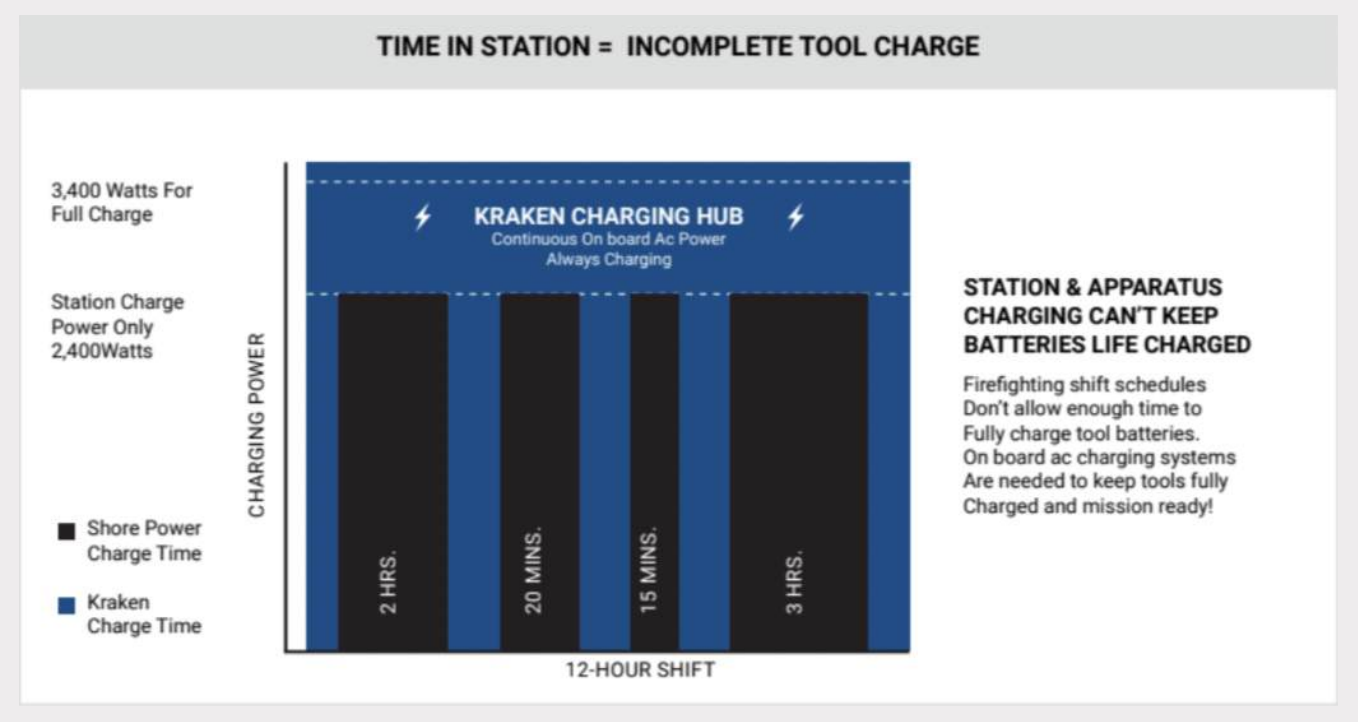
CASE STUDY:

Kraken Charging Hub Provides Continuous Onboard AC Power on the Fire Department Coffee Emergency Response Apparatus.

Background

Fire departments play a crucial role in responding to emergencies, often in remote locations or extended deployments where access to power is limited. In such situations, having reliable and efficient power sources for the various tools and equipment used by firefighters is vital. Fire trucks are typically equipped with essential gear for both emergency response and support tasks, but they often face a significant challenge in powering and charging a multitude of devices required during deployment.

One of the most critical requirements is to ensure the fire truck can provide a continuous, stable power supply for all the necessary equipment, without the disruption or noise caused by traditional generators. The Kraken Charging Hub was introduced as a solution to this problem, offering onboard AC power to meet the power needs of essential tools and equipment during deployment.



Problem

Fire trucks are frequently deployed in environments where reliable power is necessary, yet access to external power sources can be either scarce or non-existent. Some of the key issues the fire department faced prior to the installation of the Kraken Charging Hub included:

Insufficient power to support new battery-powered tools.

1. **Starter batteries are being overused, leading to premature failure.**
2. **Tool batteries require up to 4 hours to charge.**
3. **Apparatuses have only low voltage 12VDC power.**
4. **AC power only available when plugged in to shore power at the station.**

1. **Limited Power Availability:** Fire trucks were previously unable to efficiently power multiple pieces of equipment simultaneously, such as chainsaws, fans, rescue tools, battery chargers, and other devices needed for rescue operations or scene management.
2. **Noise Pollution:** Traditional power solutions like generators emit significant noise, which can be disruptive, especially in urban areas or in situations where maintaining operational silence is critical.
3. **Equipment Battery Life:** The equipment used during deployments, such as rescue tools and ventilation fans, require frequent recharging, which was difficult to manage effectively while the truck was on the move or not spending enough time in the station between calls, on shore power, to fully charge tool batteries.
4. **Essential Functions at Risk:** With the absence of a reliable onboard AC power source, important devices used in rescue and support missions on the Fire Department Coffee truck, like refrigerators, washers, dryers, and heating systems for the fire crew and victims, could go without power, affecting the overall performance and readiness of the crew.

Solution

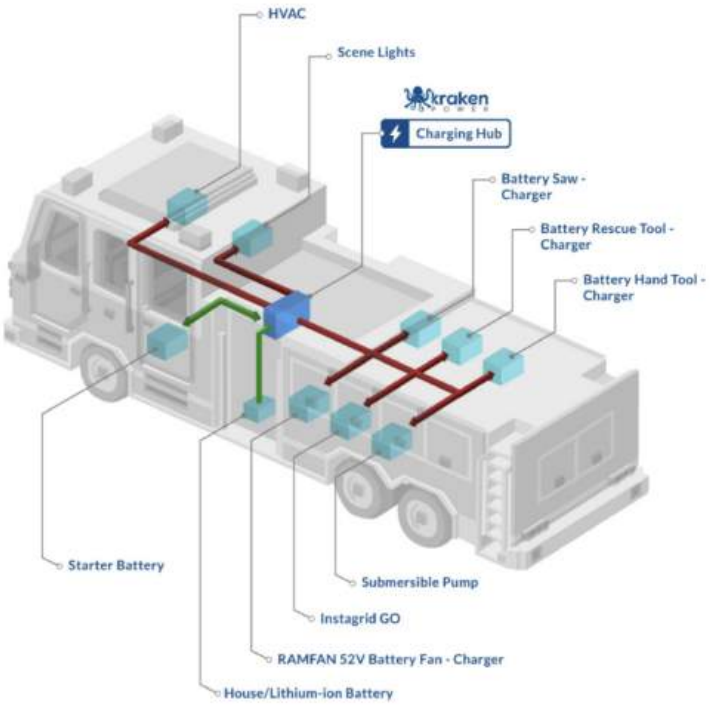
The Kraken Charging Hub was installed on the Fire Department Coffee disaster response fire truck to address these power issues. It was designed to provide a continuous, noise-free AC power source capable of running multiple high-demand devices simultaneously during deployment. The Kraken Charging Hub met the specific power needs with the following key capabilities:

1. **Continuous AC Power for Equipment:** The Kraken Charging Hub provided a stable and reliable onboard AC power source, ensuring the truck could power a wide array of essential 110V equipment without external power sources. This included fans, lighting, coffee machines, and refrigeration systems.
2. **Silent Operation:** Unlike traditional generators, the Kraken Charging Hub operates quietly, allowing for uninterrupted focus and communication during emergency operations. This silent power source is particularly important in environments where discretion and noise reduction are necessary.
3. **Charging of Batteries:** The Charging Hub enabled the efficient recharging of batteries for vital equipment, such as tools and communication devices. It also ensured that apparatus batteries were charged and ready to go, improving overall preparedness.
4. **Supporting Crew Comfort and Operations:** The Kraken Charging Hub made it possible to power a variety of other equipment necessary to support disaster response missions. It supported the operation of the fire truck's washer and dryer, hot water heater, and refrigerator, providing essential services to maintain the crew's readiness during long deployments.
5. **Lighting and Power for Emergency Operations:** The hub also powered lighting for the truck's boxes and surrounding area, ensuring visibility during night-time operations or in dark environments.

Outcome

With the Kraken Charging Hub now installed, the fire department saw significant improvements in their deployment efficiency and operational readiness:

- **Increased Operational Efficiency:** The fire truck could now run all necessary equipment simultaneously without running out of power or needing to rely on noisy generators.
- **Enhanced Mission Capabilities**: The reliable power supply for heating, hot water, and refrigeration allowed the crew to remain comfortable and focused during extended deployments, leading to higher morale and improved performance.
- **Reliable Equipment Functionality:** With the ability to recharge tools like fans, lights phones, and apparatus batteries without leaving the deployment area, the team was able to maintain their equipment at full capacity, ensuring continuous operations.
- **Noise Reduction:** The Kraken Charging Hub allowed for silent power generation, which was a crucial improvement, especially in urban or sensitive environments where noise reduction was a priority.



In conclusion, the installation of the Kraken Charging Hub has been a game-changer for the Fire Department Coffee disaster response apparatus, providing a reliable, noise-free, and efficient continuous onboard AC power source that supports a wide range of essential equipment during emergency deployments. The solution has enhanced the fire truck's functionality and significantly contributed to the safety and ability to provide critical emergency support.

Technical Specifications of the Kraken Charging Hub:

- **Dimensions (H x W x D):** 25.0" x 15.0" x 11.0" (64 x 38 x 28 cm)
- **Weight:** 62 lbs (28 kg)
- **Inverter:**
  - **AC Output Power:** 3,000 W Pure Sinewave
  - **AC Output Current:** 25 A
  - **AC Surge Power (Peak):** 6,000 W
  - **Output Voltage Frequency:** 120 VAC / 60 Hz
  - **Nominal Input Voltage:** 12.8 VDC
- **AC Transfer Switch:**
  - **Transfer Time:** <30 ms
  - **AC Input Source Setting:** 15/20/30A
  - **AC Output:** 30A Max
- **Battery Charging:**
  - **Shore Power:** 100 A Max
  - **Alternator:** 50 A
  - **Configurable for:** Flooded, Gel, AGM, LiFePO4
- **Onboard Protection:**
  - Under Voltage Alarm
  - Under Voltage Shutdown
  - 120 VAC Main + 2 Positions
- **System Monitoring:**
  - Battery Charge Monitor
  - Battery Disconnect Switch
  - PRO//connect Bluetooth Connectivity for Diagnostics