

Improved Power Delivery and Portability for Sewage Sampling Equipment

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Abstract

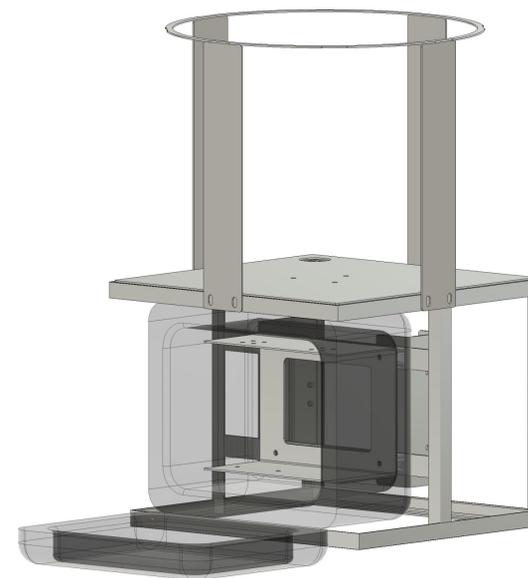
KWRD requires the ability to quickly and efficiently deploy sampling equipment. This project aims to simplify the deployment process of existing sampling equipment through an improved mounting system and a more efficient power delivery system.

Introduction

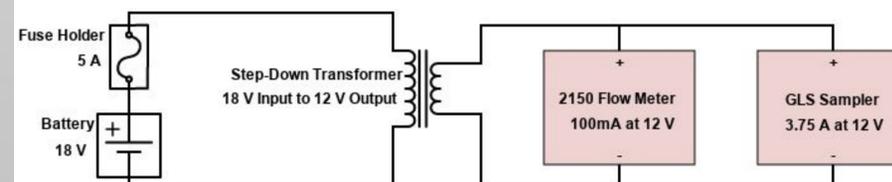
Sewage has begun to be tested around the country as an indicator of the presence of COVID-19 in a community. Flow-paced composite sampling is necessary to provide the most representative sample for testing because of the large variance in volume flow rate within a sewage system. In addition to the sampling device, flow-paced sampling requires the use of a flow meter device capable of measuring the volume flow rate of fluid passing through a section of pipe. With this added equipment, deploying the sampling setup becomes increasingly complex. To simplify the deployment process, this design uses a corrosion-resistant stainless steel mounting system to combine the sampler and flow meter into a single unit. Efficiency is improved through a unified power delivery system created around the Milwaukee M18 Lithium-Ion battery pack. This increases runtime and reduces weight.

Methods and Materials

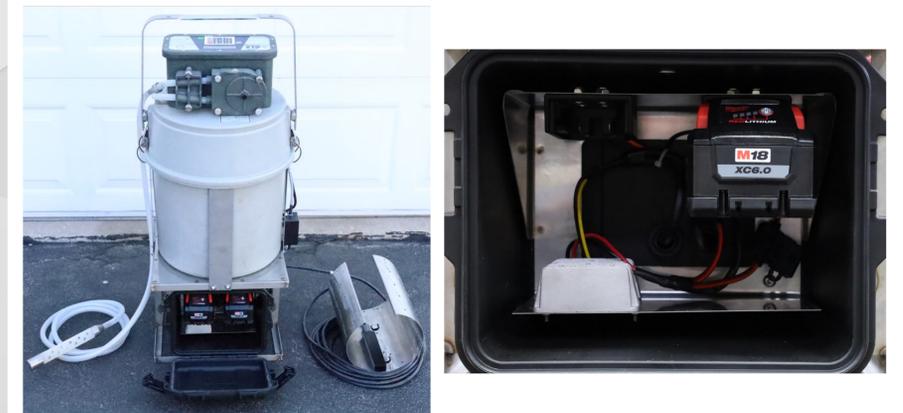
Mounting System: The corrosion-resistant 316 stainless steel mounting system is designed to keep all equipment secured in place, while remaining portable and allowing for easy access to the contained equipment.



Power System: The power delivery system is designed to act as a unified power source for the flow meter and sampler, replacing their original separate power sources. For power delivery, the system makes use of a detachable Milwaukee 'M18' Lithium-ion battery pack.



Deployment



Conclusions

The mounting system dramatically improves the ease of deployment for flow-paced composite sampling by combining a flow meter and sampler into a single unit. Having a single unit allows the technician to make fewer trips into the manhole while setting up sampling. The power delivery system allows both the flow meter and sampler to run off a single M18 6Ah Lithium-Ion battery pack which reduces weight, saves space and provides more than double the runtime of the original batteries.

Acknowledgements

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