
➤ HOW WE DID IT



DISCOVERY WORKSHOP

iBot works with the client to create a comprehensive requirements document through a discovery process.

1

THE BRIEF



Diesel Generators (gensets) are key assets from operations perspective, and ensuring it stays in good health is important for maintaining business continuity.

IOT helps Diesel Generator OEM's to offer preventive maintenance as a service and innovate on their revenue model at a time where market share is static or dropping.

This was the objective with which a major DG manufacturer in India initiated

MACHINE INTERFACE DEVELOPMENT



The heart of the connected machine is the revolutionary iQu tech, which was retro-fitted into this machine.

2

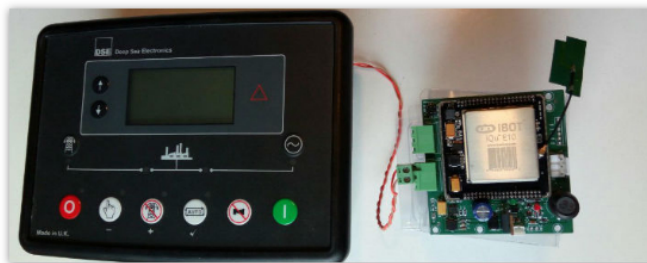
MACHINE INTERFACE DEVELOPMENT

Gensets are complex machines with sometime 10s or 100s of sensors and an involved logic for operations. Typically, the DGs are operated by a controller installed on it, and the controller in turn provides an user the mechanism to interact with the machine – this is termed as the Human Machine Interface (HMI). The genset can be started, stopped, or operated at a variable level by leveraging the HMI.

The controllers also can be interfaced with external systems by leveraging industrial communications protocols and interfaces. In the context of the gensets, the controllers used were from DeepSea, an UK company. These controllers require a module to be able to interface with an external system.

iBot worked with the genset manufacturer's R&D team to design a solution which interacted with the DG using MODBUS protocol over RS485 interface. In this case, the iQu E10 from iBot plays the role of MODBUS master, and the controller is the MODBUS slave.

2 a



APP DEVELOPMENT



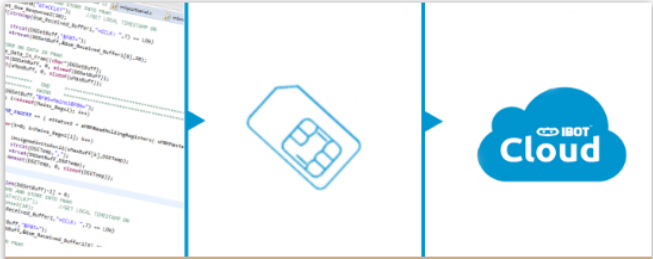
IBOT's software engineers and designers create efficient and beautiful interfaces for the machine, user, and machine manufactures to talk to each other, securely.

3

WRITING THE SOFTWARE

iBot's engineers developed firmware on iQu E10 to interface with cloud on the one hand, and interact with the genset using MODBUS. The firmware manages communication with the genset controller, and receives operating data at defined intervals, which is then transmitted to the cloud.

3 a



The controller of the genset also generates several messages such as warnings and alarms. These events are transmitted to the cloud at a higher priority, without waiting for the next planned transmission window. This helps the users of the system react to these alarms proactively, before the situation actually emerges.

The firmware also supports Firmware Over The Air (FOTA) functionality, so any upgrades or bug fixes to it can be deployed on the iQu remotely from cloud, without having to visit the genset for this purpose.

MOBILE AND WEB DEVELOPMENT

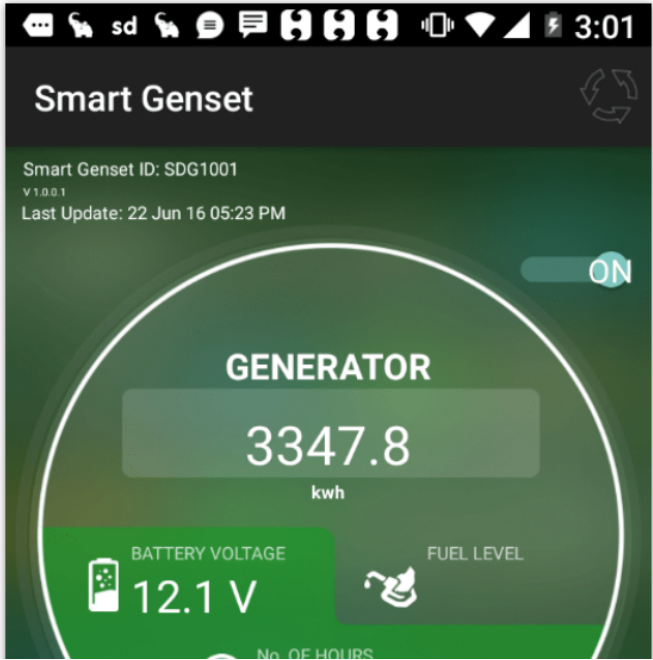


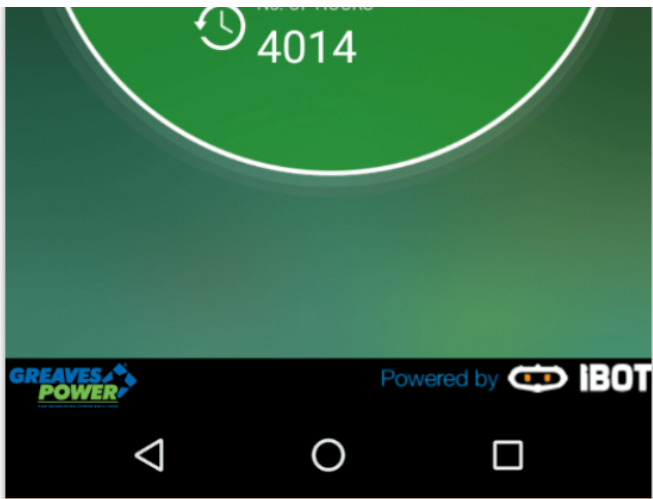
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MOBILE AND WEB DEVELOPMENT

iBot developed a mobile app for end-customer, and web app for use by operations and service teams of the customer.

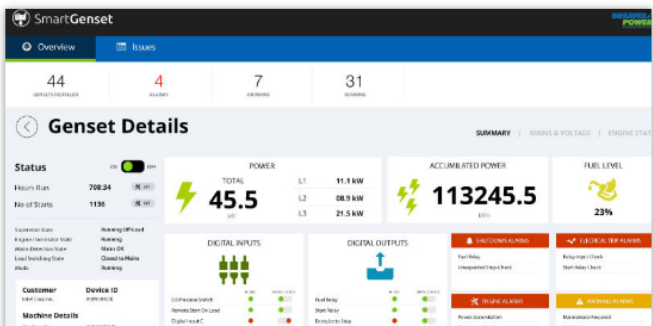
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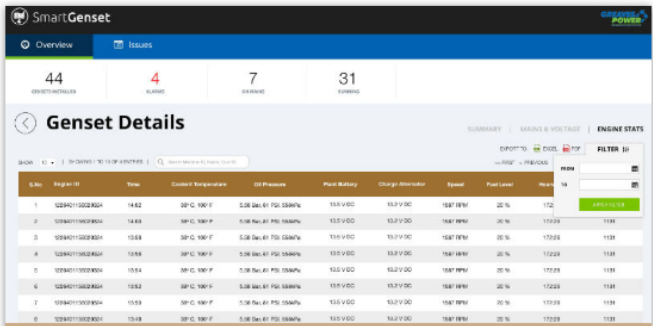
Mobile app enables the consumer to track status of the genset, and also start and stop it remotely. The specific items of interest are ON/OFF status, power generated, fuel level, and hours of operation of the genset. The app allows the genset to be started/stopped remotely.

4 b



The objective of the web app is to provide complete visibility to operations and service teams in all installations, and their status. If there are any alarms or alerts that require attention, the services teams will get in touch with the customers and advise the appropriate actions be taken.

4 c



The data is available in the cloud, and advanced analytics tools are used to generate insights out of the data to improve product design and operations.

4 d

The web-based app provides significant detail on the health of the machine including alerts, recharge history and an ability switch on/off the vending machine.

TESTING & GO LIVE

5

OFFER PREVENTIVE MAINTENANCE-AS-A-SERVICE TO YOUR CUSTOMERS!

iQu Connected Processor-enabled gensets undergo testing at various levels – hardware, firmware and software. The solution has been tested extensively for several months before being put into production. The customer has aggressive plans for scale-up in OEM as well as services business.