OnWatch disaster preparedness

The solution to the new normal

In recent years, it has become clear that devastating storms and other natural disasters are becoming more frequent and their impacts more severe. But while you can't control Mother Nature, you can control how these events affect your operations.

OnWatch solution

OnWatch from GE Healthcare gives healthcare providers a way to help prevent costly MR problems when power is lost during a disaster. Using OnWatch, GE Healthcare's service personnel can remotely monitor and control the MR's magnet cooling system so that a loss of power doesn't lead to a critical magnet failure.

With OnWatch, imaging providers can pivot from a reactive approach — manually checking helium levels and sourcing more helium in response to an imminent critical failure — to a proactive approach in which advanced data and algorithmic rules allow for emerging issues to be diagnosed and doesn't necessarily lead to a catastrophic failure.

Cool under pressure

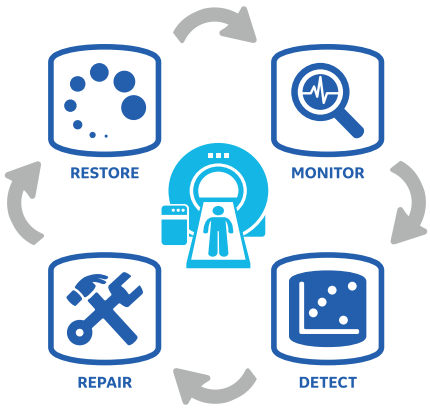
Liquid helium is essential to an MR superconducting magnet. If electricity is lost during a disaster, the cooling system shuts down and the magnet warms up. As this warming occurs the liquid helium converts to a gas, increasing the pressure in the magnet until a pressure relief valve opens to exhaust the excess gas (this occurs through the vent) leading to a loss of helium in the vessel.

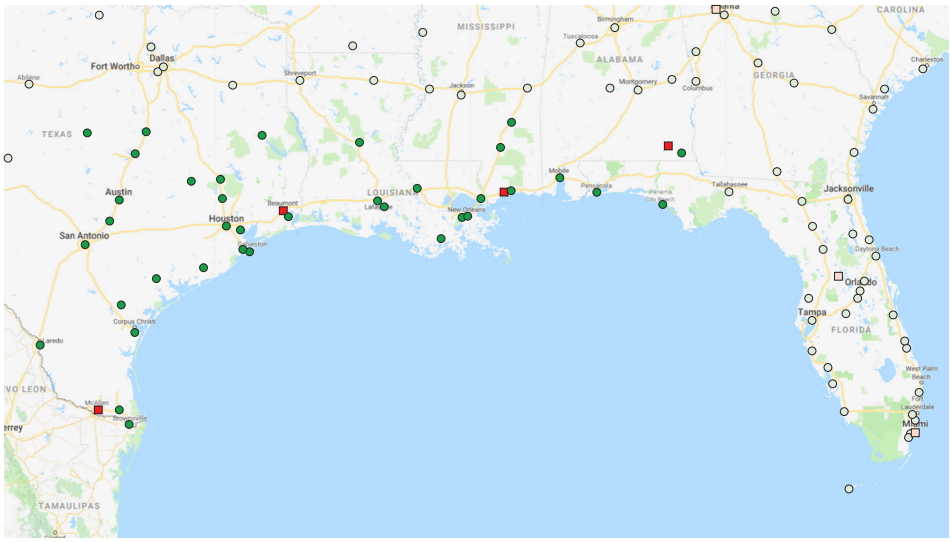
Previous generations of magnets operated at a higher pressure which allowed for less ride-through time before the venting occurred. New generations of magnets can operate at a lower pressure, affording more time before issues become critical. If needed, the pressure can be lowered remotely in advance of a storm so magnet health and uptime are optimized.

A smarter approach to the unexpected

Under normal circumstances, GE Healthcare's OnWatch system monitors critical subsystem elements to anticipate emerging issues. GE Healthcare engineers can then remotely assess and address issues, or initiate a local service visit.

During disasters, OnWatch can help minimize the impacts of power loss by allowing GE Healthcare to remotely monitor and control the MR magnet before the outage, to help reduce downtime resulting from a loss of cooling capacity.





The OnWatch monitoring map above indicates magnets that were in the path of Hurricane Harvey. The magnets noted in red needed adjusting in advance of the storm.

Hurricane Harvey — Weathering the storm

Preparing for weather events requires comprehensive system analyses and in-depth contingency plans. Of course, major events like Hurricane Harvey, which hit the U.S. Gulf Coast in August 2017, are never entirely predictable. With that in mind, GE Healthcare's regional and remote service teams are on standby to partner with healthcare providers to take the necessary precautions and respond quickly to any unforeseen impacts.

OnWatch Response to Hurricane Harvey

188 magnets in the path of the storm

17 magnets set at 4 psi

139 magnets safely set at 1 psi

32 magnets set at 2 psi

With OnWatch monitoring, the GE Healthcare service team was able to remotely set all 49 at-risk magnets to 1 psi before the storm hit.

MR magnet storm preparedness: How it works with OnWatch

- Monitoring rules are developed through advanced modeling and data science.
- GE healthcare teams monitor magnet health globally and can prepare for approaching storms, identify hot spots and triage support for emergency situations.
- Automatic dispatches are sent to regional support teams.
- Remote personnel use OnWatch to review regional magnet health and can remotely lower pressure as the storm approaches.
- During the storm, OnWatch provides visibility into the system's health, allowing for remote action if the helium level becomes critical.
- Once the storm has passed, magnet performance is reviewed to ensure a return to normal functionality.
- Remote continuous monitoring of magnet health continues.

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