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Towards field emission free cavity processing and string assembly at Fermilab

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Cavities and cryomodules assembled at Fermilab have demonstrated unprecedented field emission (FE) free gradients. However, consistent FE-free performance is not guaranteed. Many lessons were learned, and continued vigilance is a must. In addition, several improvements have been identified to further push the state-of-the-art low particulate cavity processing and assembly at Fermilab. Those included the optimization of nitrogen flow, robotic-assisted assembly, and low-particulate fasteners. We share our latest results and vision for the future clean assemblies of cavities and cryomodule strings.

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