

Date: July 16, 2020

To: Clinton Harper, General Manager LAWSS

From: Mark Harris, Senior Operations Manager, OCWA

RE: Major Maintenance #20-02 (VFD Floc Mixer Replacement)

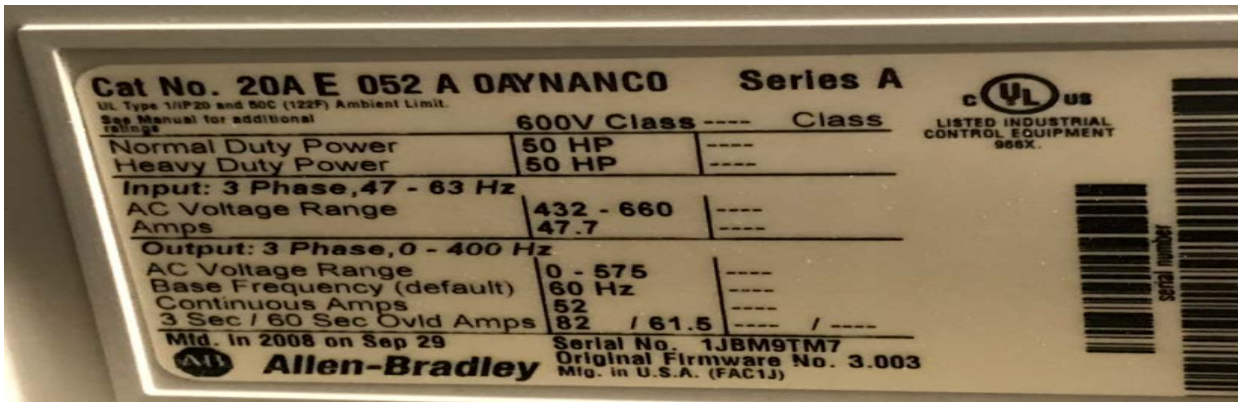
Overview

It was proposed that a Major Maintenance Capital Program be initiated in 2020 to start replacing the Floc Mixer VFD's as they were approaching the end of their anticipated life cycle. The picture below details a PowerFlex 70 VFD for Flocculator #3.



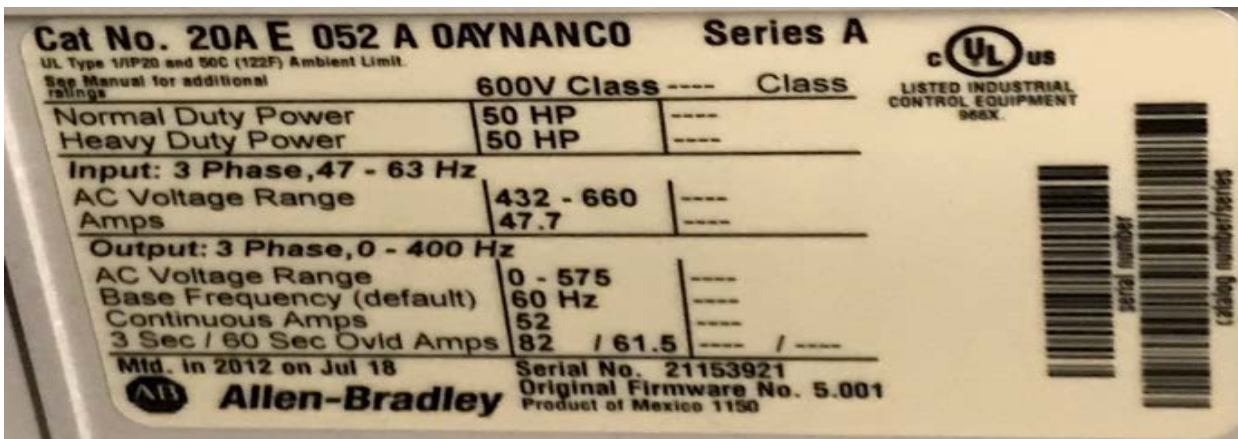
The Allen Bradley Power Flex 70 VFD Drives that are utilized on the 6 Flocculators were manufactured on the following dates:

VFD #1 September 29, 2008 (based on the condition of the label, you can tell that the environment is clean)



VFD #2 September 29, 2008

VFD #3 July 18, 2012



VFD #4 September 29, 2008

VFD #5 September 29, 2008

VFD #6 September 29, 2008

I have performed an investigation with respect to the VFD Floc Mixers with Electrozaad who are the licensed Rockwell Distributer in the area. They indicate that the existing VFD's are 10 years old and that these current VFD's are still being produced for another two years before phase-out. However, for any new quotes it is recommended that the client move to the Powerflex 753 AC VFD in order to avoid legacy issues.

I asked Electrozaad some questions based on their experience with the existing Powerflex 70 drive as I am not aware of any major concerns with the current drives at LAWSS and Electrozaad provided the following details: the drives when run continuously will have a much longer life expectancy. They will run forever if no power spikes and at a constant speed with no variation. The life expectancy may also be extended in a dust proof climate controlled room.

A document review was conducted through referencing an Allen-Bradley Service Bulletin which stated ***"The life expectancy of the power section components is designed to last for the life of the drive for wall-mounted drives. The actual life is dependent on ambient and environmental conditions, load, variation of load, power system configuration, output and carrier frequency configuration, cooling system, and other application-related factors. The***

design life expectancy of the overall components normally exceeds 10 years (in some cases can last 20 years or more) in normal operating environments.”

Based on the above, we generally have a stable VFD operating set-point that remains at a constant speed based on the floc mixer application and we also have a clean room that is climate controlled so this would be an ideal application to extend the asset life expectancy.

I reviewed the criticalness of a potential VFD Floc Mixer failure with Jodi Stradeski and Dean Sitzes and it was felt that these would not be our highest priority items/risk for replacement. If a failure were to occur, we could easily maintain operations as replacement VFD's are readily available. Going forward, we may want to carry an annual Major Maintenance Project that would cover the cost of one VFD replacement as required in order to manage the risk.

On that basis, I would like to request the removal of the MM20-02 VFD Floc Mixers Replacement for 2020, with funds reallocated to allow proposed 2021 Major Maintenance projects to move forward for consideration to be completed in 2020. The projects for consideration to be moved forward are as follows:

MM 20-02A	Actiflo Refurbishment \$6,000.00 + HST
MM 20-02B	Filter Waste Rotork Valve Replacement (2 valves/year for a 5 year period) 2020, 2022, 2023, 2024, 2025. The 2020 cost would be \$15,000.00 + HST for two electric valve actuators including limit set-up by supplier.
MM 20-02C	Security System Upgrade – Intrusion/Man-down Conversion to DMP Panel \$5,443.08 + HST
MM 20-02D	Fire Panel Integration \$1,957.08 plus Fire Company on-site costs, electrical =\$2,957.08 + HST

The VFD project had a budget approval of \$45,000.00. The revised budget based on the four major maintenance projects proposed would be \$29,400.16. As mentioned earlier, if we are concerned about risk of a VFD Floc Drive failure, we could continue to carry an annual budget item of \$11,000.00 to manage the risk. New replacement drives are readily available. I just don't want to replace items that are operating fine and still have potential asset life remaining and are in a low risk application based on our redundancy in that specific unit process.

Feel free to let me know if you have any questions.

Recommendation

It is recommended that the VFD Floc Mixers Replacement program with a budget of \$45,000.00 be cancelled in 2020, and that the following four projects be allowed to move forward: Actiflow Refurbishment, Filter Waste Rotork Valve Replacement, Security System Upgrade, and Fire Panel Integration at a budget price of \$29,400.16 + HST.



Mark Harris

Senior Operations Manager