

# Harsh Environment Display Monitors Paperless Manufacturing Upgrade

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## Background

Hohman Plating, a leading international metal finishing shop, provides metal finishing and coating services to various clients, including the Aerospace and Defense industry. Hohman Plating is undergoing a long-term project focusing on going paperless in their manufacturing process area. To go paperless, Hohman Plating would like to install monitors throughout the manufacturing process area, so the process operators are able to visually check what chemical is currently in the tank, the process temperatures, and process times without having to maintain a written log to be carried from station to station.

Hohman Plating has previously attempted to install monitors in the manufacturing process area but were unsuccessful due to environmental factors within the process area. The issues Hohman Plating encountered were extremely high temperatures and acidic steam damaging the monitors and wire attachments. Some of the damage incurred included rust on the metal casings around the monitor, melting of the wire attachments, and condensation buildup on the inside of a monitor enclosure damaging the monitor. [1]



Images of Hohman Plating Tanks [2]

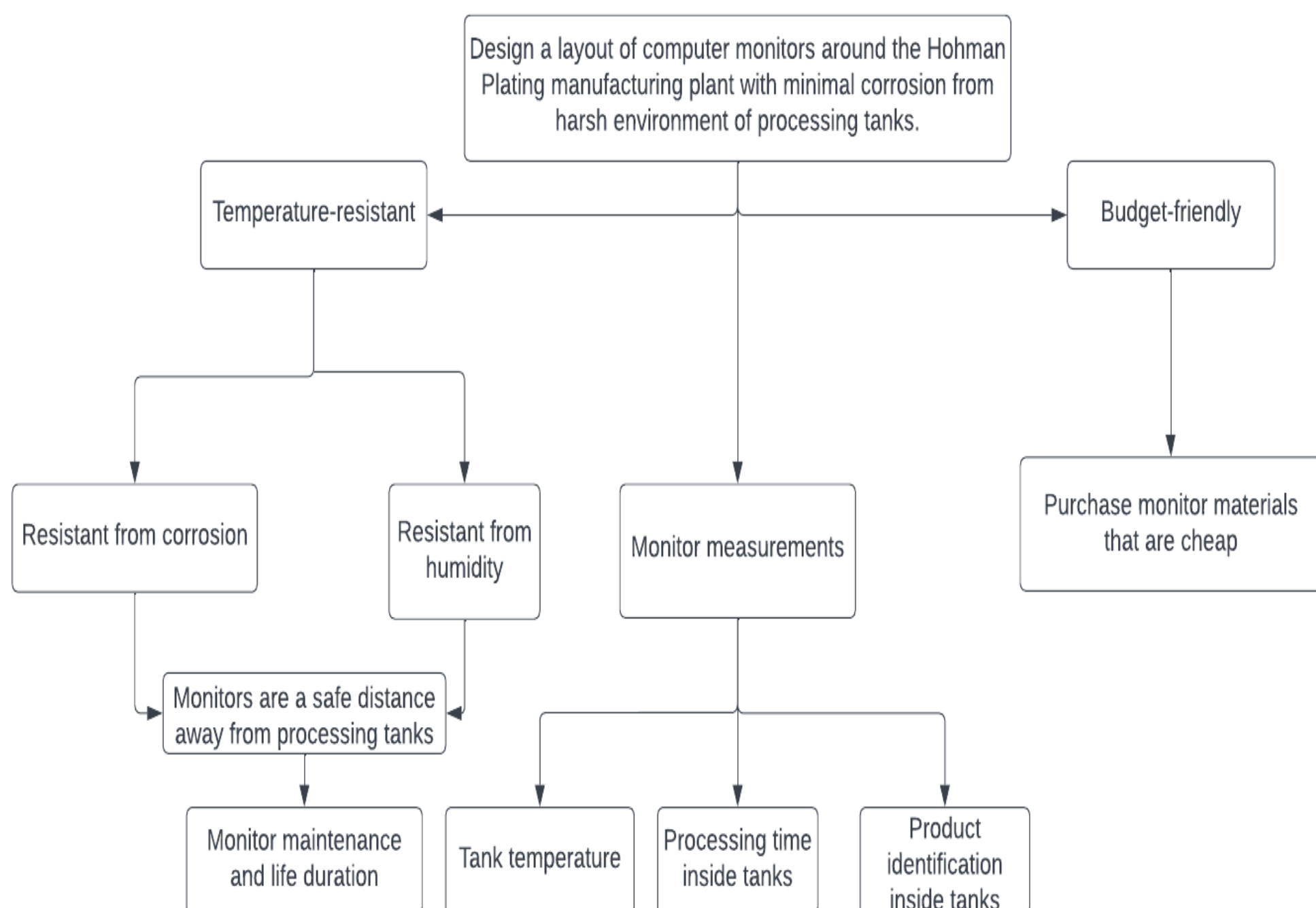
## Problem Statement

Hohman Plating needs a harden monitor solution to protect computer monitors in their harsh manufacturing environment. The solution should be budget friendly and be able to withstand high temperatures, acidic stem, and prevent damage from condensation buildup.

This project will take advantage of our team's experience in ergonomics and human usability systems through our coursework at Wright State University, which will aid in our research of potential solutions to these problems. [1]

## Strategy

Objective Tree Analysis of Hohman Environmental Factors [3]



Our strategy is to research low-cost commercial enclosures that are made for manufacturing environments and have the capability to protect a monitor while maintaining its structure through high temperatures and acidic steam.

Dust Shield Enclosure Design [4]



## Results

An enclosure from Dust Shield was selected. The enclosure is constructed with 3/8" thick ABS plastic and protects against dirt, dust, chemical splashes, and salt. The enclosure also has a fan to prevent the monitor from overheating. The enclosure meets NEMA 12 standards. A 0.1- micron filter is used in the enclosure and is rated to remove 98% of contaminants.

The enclosure with a monitor inside, was installed in an area that has in the past damaged monitors within a few hours of being installed. Using the evaluation checklist, an evaluation was performed two weeks after installation of the enclosure. The structure of the enclosure showed no signs of damage. The wire connections had no damaged. There was a faint white substance on the display window of the enclosure, that appeared one day after installation. The substance was easily wiped away by hand.

Installed Dust Shield Enclosure with a Wall Mount [2]



Display window with faint white substance [2]

## Conclusion

The commercial enclosure seems to be the solution Hohman Plating was seeking. Although there was a light substance on the display window, the monitor itself was protected and full functioning. It is recommended that Hohman Plating continue to evaluate the enclosure for the next few weeks and implement a PM program to keep the enclosure working as it should. If the enclosure continues to protect the monitor, Hohman Plating has been provided the purchasing information to purchase more enclosures if desired.

## References

- [1] References from Past Problem Statements and Reports.
- [2] Hohman Plating Pictures. Retrieved from our Client.
- [3] Lucid Chart. Retrieved as an Office 365 Add-in.
- [4] Dust Shield Quote Request. Retrieved for a Dust Shield PC.

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