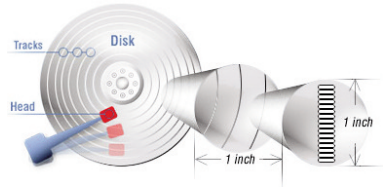


CASE STUDY 4 HUTCHINSON TECHNOLOGY



PURAGRID FILTER IMPROVES PROCESS AIR QUALITY 4 PROMINENT DISK DRIVE COMPONENT MANUFACTURER



ABOUT THE SITE

As a component supplier to the disk drive industry, Hutchinson Technology is part of a unique, exciting and demanding industry. It's an industry that has delivered sensational boosts in disk drive storage capacity and access speeds, along with amazing reductions in size and cost. The combination of greater storage capacity and falling prices has fueled the Information Age and made creating, accessing and sharing digital content a part of everyday life.

Hutchinson Technology plays an integral role in enabling the Information Age by providing product solutions that enhance disk drive performance. The company designs and manufactures suspension assemblies, which are precise electro-mechanical components that hold a disk drive's recording head at microscopic distances above the drive's disks. Hutchinson Technology's leading-edge product designs help customers advance disk drive technology and maintain cost and performance advantages over other forms of digital storage.

THE PROBLEM

Continual advances in disk drive technology require suspension assemblies with specialized designs, expanded functionality and greater precision. Hutchinson Technology uses photoetching technology to produce thin, intricate suspension components with close tolerances that are impossible to duplicate with other processes such as stamping or laser cutting. In the photoetching process, optically generated images of the part are transferred onto thin metal sheets using ultraviolet light. These images define the areas that are to be dissolved (etched) by chemicals and the areas that are to be protected. The photoetching process involves the use of various acids – common yet corrosive materials. These materials that are within the process also have the potential to decrease product yield. As a player in an intensively competitive industry, the company needed a solution to ensure optimum process air quality.

PURAFIL PROVIDES THE SOLUTION

Hutchinson Technology has been a Purafil customer for more than a decade. Therefore, they had experience with and were confident in Purafil's engineered clean air solutions evidenced by the numerous systems in operation in the company's manufacturing plants. Since HTI continually strives to achieve optimum product yields, Dan Miller, P.E., Senior Corporate Engineer, contacted Purafil to discuss contamination control options and develop a testing protocol to evaluate the use of a new Purafil chemical filter product. His concerns were not that Purafil's technology could be applied, but whether it would be effective in this application where the process air temperature exceeds the maximum recommended temperature limit of 125°F (52°C) for gas-phase air filtration media to typically be effective.

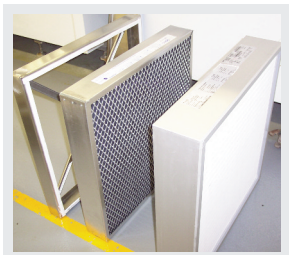
Miller ordered Purafil's revolutionary PuraGRID™ filter with the Puracarb® GridBLOK™ technology along with two copper and silver Corrosion Classification Coupons (CCCs) to monitor performance. Once the PuraGRID filter had been installed into the existing process air stream, one CCC was placed upstream of the PuraGRID and the other was placed downstream of the PuraGRID. After 14 days, the CCCs were sent to Purafil's state-of-the-art laboratory for extensive testing.

Analysis showed that (as suspected) the air upstream of the PuraGRID was contaminated. In fact, both the copper and silver exhibited corrosive rates greater than 2,000 Angstroms (Å)/30 days, which is categorized by the International Society of Automation (ISA) to be a highly corrosive environment (Class GX - Severe) and one in which only specially designed and packaged equipment would be expected to survive. The corrosion rates on the downstream CCC, however, were reduced by more than 90% and meet the requirements for an ISA Class G1 – Mild classification indicating that corrosion is typically not a factor in determining equipment reliability.

TABLE 1

ISA STANDARD 571.04-1985	EFFECTS
Class G1: <300 Å/30 days	Mild: Corrosion is not a factor
Class G2: <1000 Å/30 days	Moderate: Corrosion is measureable
Class G3: <2000 Å/30 days	Harsh: High probability that corrosive attacks will occur
Class GX: >2000 Å/30 days	Severe: Electronic/electrical equipment not expected to survive

This large reduction in corrosion rates observed in Hutchinson Technology's chemical filter evaluation program can be attributed to the use of the PuraGRID filter. This filter, Purafil's newest addition to its product line, is designed to supply a large amount of filtration capacity in existing equipment with a minimal amount of pressure drop. This evaluation provided a definitive example of the filter's operational performance.



PuraGRID® Filter shown between with spacer and HEPA frame

The GridBLOK is a new gas-phase air filtration medium in the form of an extruded monolithic block consisting of a large number of small straight and parallel cells or channels. The GridBLOK is composed of essentially 100% adsorbent materials allowing the entire composite structure to function as a gas filter.

Due to the large number of cells in each GridBLOK, the contact area between the adsorbent layer and the airstream that travels inside the cells is very large. Furthermore, the cells are straight and parallel so that the flow is not obstructed and the pressure drop across the GridBLOK is extremely low.

The cellular geometry of the extruded GridBLOK provides a high surface area per unit volume important for proper impregnation of adsorptive materials. The size of the cells leads to turbulent flow and forces contaminated air into and through the gas-permeable cell walls of the GridBLOK. It also provides the residence time necessary to assure optimum contact efficiency and the associated high initial and average removal efficiencies. As the air is forced through the GridBLOK, removal of chemical contaminants takes place.

When coupled with the GridBLOK technology, the new PuraGRID filter functions as a self-supporting filter with no bypass through or dust generation from the filter.

CUSTOMER SATISFACTION

The dramatic improvement in air quality through the PuraGRID filter as measured by the CCCs provides a snapshot of the PuraGRID's immediate effect. Analysis showed that the PuraGRID filter with the Puracarb GridBLOK medium was able to provide corrosion-free air. Miller agrees the filters are, "definitely taking the corrosive gases out of the air."



Purafil® Corrosion Classification Coupon placed upstream depicts a Severe or GX Environment

Purafil® Corrosion Classification Coupon placed downstream depicts a transformed Mild or G1 Environment

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First in clean air

