



FLO KING ELECTROLESS NICKEL OPERATION

Electroless nickel plating is a popular process that demands exceptional agitation and bath cleanliness. The **Flo King** system offers several advantages and operating features for EN plating operations.

Agitation: EN baths generally require very aggressive agitation—at least 10 tank turnovers per hour. The **Flo King** system frequently provides enough agitation to replace alternate air or mechanical devices. Aggressive solution movement extends bath life, prevents localized overheating, and protects heaters from early burnout.

Energy Conservation: Because it operates totally in the tank, the **Flo King** system reduces energy consumption by up to 40%. There is no out-of-tank pump or plumbing to act as a cooling chamber. Also, because of the aggressive agitation the **Flo King** provides, it is often possible to lower the bath temperature by 5 or even 10° F without compromising the deposition rate.

Alternative to Bag Filters: Out-of-tank bag filters are exposed to airborne contaminants such as particulates, oil and organic impurities. Plus, again, there is the problem of solution cooling and reheating. The “counterflow agitation” generated by the **Flo King** (see Bulletin 12) results in a unique continual skimming action that keeps the surface free of airborne contaminants that can adhere to parts. This helps ensure that only clean parts are introduced to solution.

Pump Material of Construction: Many customers are able to use CPVC as the pump material of construction for the lower-temperature EN baths. However, depending on the solution temperature and aggressiveness of the proprietary bath constituents, CPVC may become brittle over time. Thus, polypropylene is often preferred for EN, particularly if the user has had success with polypropylene tanks or liners for this application. For very high-temperature and/or chemically aggressive EN baths, the best material of construction is usually considered to be the high-temperature plastic PVDF (Kynar), but this comes at a premium price. In most cases, polypropylene is the material of choice for the **Flo King** system in EN applications.

Filter Cartridges: For in-tank filtration of EN baths, the most popular strategy is to use fairly short filter cartridges—10" (25 cm) in most cases—and change them very frequently. This minimizes or eliminates the tendency of EN to plate-out on particulates that have been captured on the filter cartridge. Most EN platers start with the FK50 Poly-Spun disposable filter cartridges. A smaller number use the PMCA Permacore Magnum reusable cartridges; however, prior to reuse, the filter blanket must be stripped with nitric acid, thoroughly cleaned with water, and then neutralized. Failure to follow this procedure can result in catastrophic decomposition of the EN bath when the cartridge is reused.

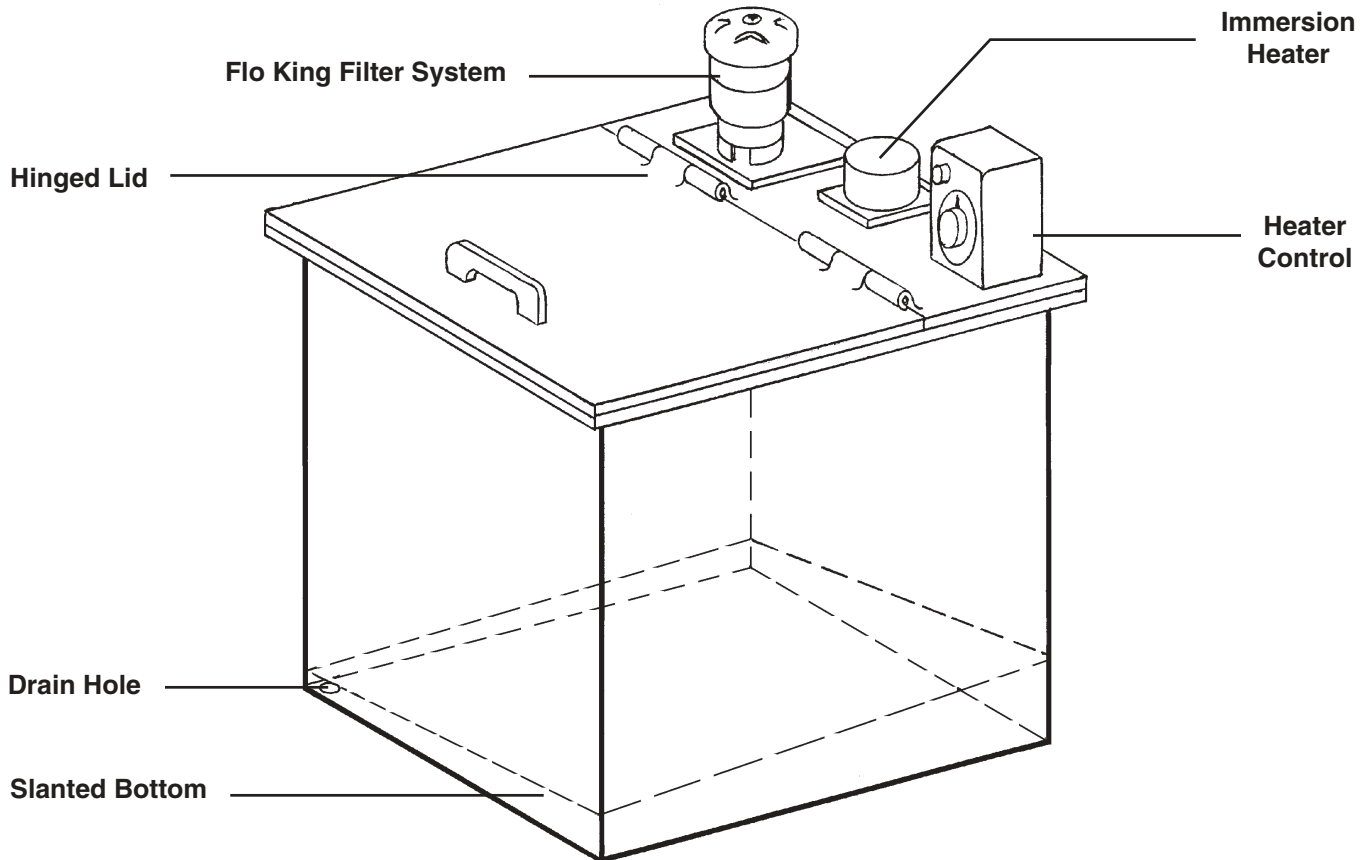
Other Features: Just change the filter cartridge and turn on the **Flo King** pump while stripping the EN plating tank with nitric acid. This will improve and expedite stripping of the tank, heaters, racks and other components. Also, our Transfer Adapter Kit (see Bulletin 32 and 36) enables the versatile **Flo King** to pump the electroless and stripping solutions from one tank to another.



FLO KING ELECTROLESS NICKEL CONCEPT

Here's one way of setting up your FLO KING system in an electroless nickel bath. This arrangement promotes energy conservation, long motor life, and convenient drainage for tank cleanout. To mount the Flo King, cut a hole in the hinged lid.

The hole must be large enough to introduce the Flo King pump body and filter cartridge, yet small enough to support the motor base.



The **Flo King** system provides an oil-free source of agitation as a natural byproduct of filtration. And because solution never leaves the tank, no cooling takes place, so costly re-heating of solution is not required. (An EN installation with Flo King filter system is shown at right.)

