

E-COAT SQUARE TRANSFER PACKAGED FINISHING SYSTEM

MSI "E-Z-COATER" v1.0

MATERIAL HANDLING "MACHINE"

REFERENCE MANUAL

FOR

ABB POWER T&D COMPANY

RALEIGH, NORTH CAROLINA

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MILBANK SYSTEMS INC. PROJECT NUMBER:

BY

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## MAINTENANCE AND OPERATION

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GENERAL INFORMATION

The information contained within this reference, as prepared by the J.H. Thornton Company, Inc. is intended for the express purpose of facilitating the efficient, complete and smooth maintenance and operation of the MSI "E-Z-Coater" Square Transfer Packaged Finishing System installed in Raleigh, North Carolina for ABB Power T&D Company.

This information is meant to augment the maintenance and servicing procedures and programs developed and designed by ABB for the MSI "E-Z-Coater". This information is not intended to supplant the maintenance programs developed by ABB but rather to serve as part of the building blocks of a successful maintenance program.

The J.H. Thornton Company, Inc., requests that copies of this maintenance and operation reference be distributed to appropriate ABB employees designated for maintenance of this system.

Should any further information be required, please have the information on the cover of this manual available when calling the J.H. Thornton Company at (913) 764-6550. Written correspondence may be mailed to the J.H. Thornton Company, Inc., 879 North Jan-Mar Court, Olathe, Kansas 66061.



## ABB POWER T&amp;D COMPANY

MSI "E-Z-COATER" v1.0

SYSTEM OVERVIEW AND CAPABILITIES

The MSI "E-Z-COATER" Electrodeposition Coating (E-Coat) System, installed for ABB Power T&D Company in Raleigh, North Carolina, is a highly compact square transfer Index and Dip type packaged finishing system. ABB Power T&D has the status of receiving the first-ever developed "E-Z-Coater". The material handling system, or the "MACHINE", consists of numerous mechanical subsystems designed, engineered, fabricated and trial setup by the J.H. Thornton Company. The pretreatment tanks, E-Coating System, cure oven, heat dissipation tunnel and all PLC computer controls were designed, fabricated and installed by Milbank Systems Inc. The information contained within this maintenance and operation reference manual pertains solely to the "MACHINE" material handling system.

This system is designed to handle a maximum product ware envelope size of 6'-0"W x 3'-6"H x 2'-0" D.O.T. (Direction of Travel) with a maximum permissible combined product and hanger weight of 770 lbs. The system is designed for a 3:00 - 3:30 min cycle time for a net throughput of 17-20 carriers per hour. The base "E-Z-Coater" as installed consists of Unibilt enclosed track alloy rail and manually pushed carriers which are loaded and unloaded in a small push loop interfaced to the system. This "E-Z-COATER" has designed-in flexibility and versatility to be later upgraded to interface to a Unibilt Uni/Uni power-and-free material handling system. The system already has the necessary clearances to accommodate power-and-free trolleys. Interfacing the "E-Z-COATER" to a flexible and automated power-and-free material handling system would permit loading, unloading, other process interfaces and distribution anywhere throughout the manufacturing facility, yielding reduced manual material handling and work-in-process.

Product is hung on hangers and loaded to a carrier within the external push loop. During a load/unload cycle, the loaded carrier is then manually feed into the pneumatically powered tandem turntables. The loaded carrier is then indexed from the tandem turntables into the main dip mechanism with the electrically powered push-chain type turntable indexer. Once within the thirteen position main dip mechanism, the carrier is indexed to the next dip stage upon each raise of the main dip mechanism. The main dip mechanism is electrically powered and mechanically linked to assure both sides of the main dip mechanism move synchronously. The index of carriers through the main dip section is powered pneumatically and designed such that carrier spacing can vary to accommodate individual dip tank requirements. The dip stages are designed to pretreat, E-Coat and post-rinse the product.

At the exit of the main dip section, the carrier with now E-Coated product, is indexed into the end up lowerator. The electrically powered end up lowerator takes a single carrier up into the cure oven via its entry gravity air seal. Once within the upper level cure oven, the carrier is indexed, via the upper level pneumatically powered indexer, throughout the cure oven and heat dissipation tunnel.

At the exit of the upper level heat dissipation tunnel, the carrier is indexed into the end down lowerator. The electrically powered end down lowerator takes a single carrier down from the heat dissipation tunnel via its exit gravity air seal. Once down at the lower level, the carrier is indexed via the push-chain type turntable indexer into the tandem turntables. The tandem turntables reorient the carrier and trucks to permit the operator to manually pull the finished carrier out into the external push loop for unload. The cycle then repeats.