Progress Report — Publish

I. THE GENERAL ELECTRIC PROGRAM TO ASSURE CAPACITOR AVAILABILITY IN THE FACE OF PRESSURE ON PCBs

- INCREASING ENVIRONMENTAL CONCERNS
  - — STATE LEGISLATIVE — PROPOSALS: NEW YORK, WISCONSIN, INDIANA, MICHIGAN, OKLAHOMA. . . .
  - — FEDERAL EPA TIGHTER RESTRICTIONS AIMING FOR 1977 PHASE-OUT
- MONSANTO ANNOUNCEMENT
  - — MONSANTO ANNOUNCED INTENTION TO DISCONTINUE PCBs SOMETIME IN NEAR FUTURE

Increasing attention focused on the alleged environmental impact of polychlorinated biphenyls has led to proposals in several states to ban the production and sale of PCBs and devices containing PCBs. Coincidentally, the Federal Environmental Protection Agency toughened its posture regarding PCBs.

The intensifying pressure on PCBs by states and by the EPA caused Monsanto to announce that it will sometime in the future discontinue manufacture of PCBs.

1931 - 1973
- — NONFLAMMABLE
- — LOWER COST
- — MULTIPLE SOURCE
- — HIGHER DIELECTRIC CONSTANT

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- — BETTER THAN PYRANOL

1973 →
- — AS CLOSE TO PRYANOL IN ELECTRICAL CHARACTERISTICS AS POSSIBLE

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- — ENVIRONMENTALLY ACCEPTABLE

General Electric has for several years been searching for a PCB substitute. Emergence of the environmental concern relative to PCBs has led to a shift in the objectives of the General Electric program. Nonflammability was eliminated as a prerequisite to liquid consideration. As a result, the General Electric non-PCB dielectric is combustible, are are all of the non-PCB impregnants developed to date.

DIELECTRIC PROPERTIES	PHYSICAL & CHEMICAL PROPERTIES	AVAILABILITY	COST
Dielectric Constant	Environmental Compatibility	Commercially Availability	Base Constituents Costs
Dielectric Strength	Combustibility	Multi-source	Process & Facilities Investment and Modification
Dissipation Factor	Low Viscosity		
DIV & DEV	Stability		
	Refinability		

General Electric's non-PCB capacitor impregnant program included extensive evaluation of electrical, physical, and chemical properties' availability and cost, as well as environmental compatibility, which is a most important criterion because environmental concern is the reason for preparing for a change from the PCB impregnant.

The Dielektrol II liquid is a mixture specifically tailored by GE for power capacitors.

- ENVIRONMENTAL
  - — CONSTITUENTS IN WIDE USE AND NOT INCLUDED IN "DESIGNATION OF HAZARDOUS SUBSTANCES" FEDERAL REGISTER 12/30/75
- ELECTRICAL CHARACTERISTICS
  - — DK & PF COMPARABLE TO PYRANOL
  - — DIV & DEV SUITABLE FOR HV POWER
- PHYSICAL CHARACTERISTICS
  - — LOW VISCOSITY
  - — REFINABLE
- AVAILABILITY
  - — CONSTITUENTS COMMERCIALLY AVAILABLE
  - — MULTIPLE SOURCE
  - — FORMULATED BY GE

General Electric selection of Dielektrol II as the PCB substitute for power capacitors is based on environmental impact, capacitor performance, economics, and availability. In all respects, the Dielektrol II scores high. Capacitor performance superior to that of PCB impregnated units is promised by the liquid characteristics and confirmed by test on full-size power capacitors.

MONS 060413

SINCE 1972 — COMMERCIAL PRODUCTION AND SALE

AC POWER CAPACITORS	11 Million KVAR-Hours Service
AC LOW VOLTAGE CAPACITORS	2.5 Million Unit-Years Service
DC CAPACITORS	2.0 Million Joules in Service

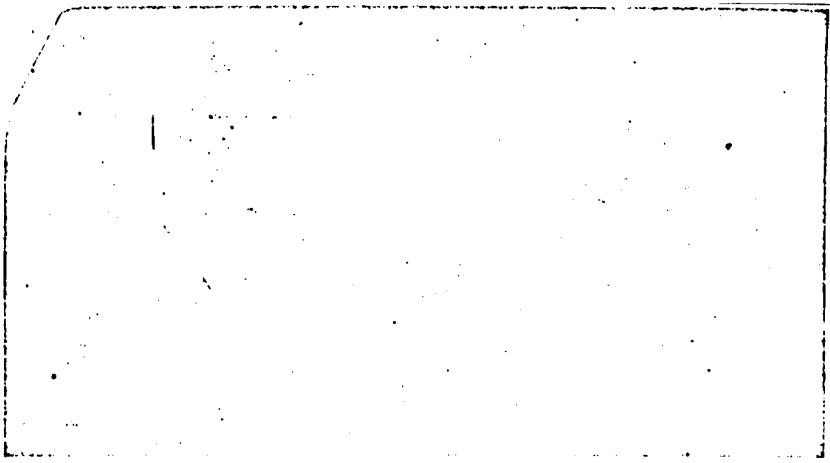
IN ADDITION

DIELEKTROL II ACCELERATED LIFE TESTS HOURS EQUIVALENT TO MORE THAN 100 YEARS NORMAL SERVICE

Confidence in Dielektrol II capacitor performance stems from excellent experience accumulated with more than three years of commercial production of GE capacitors with phthalate-ester based impregnants. In the Dielektrol II liquid the phthalate ester is combined with trichlorobenzene. Both materials have a history of successful use in capacitors. **Both materials passed extensive scrutiny by Japanese authorities and are approved for use in Japan, the first country in the world to ban use of PCBs.**

MONS 060414

The corona start voltage or partial discharge inception characteristic of Dielektrol II capacitors has a different shape than Pyranol impregnated units. A substantially higher level CSV is experienced over the normal operating temperature range. Thus, the Dielektrol II units feature a substantial margin of superiority in terms of the corona characteristic. More reliable, longer lived capacitors are the expected result.



The power factor or watts loss per KVAR characteristic is comparable to the familiar askarel curve with losses less than 0.5 watts per KVAR at typical dielectric operating temperatures. Thus, power consumption and hot spot temperatures for Dielektrol II capacitors will be the same as for PCB impregnated units of the same rating and configuration.

- PILOT PRODUCTION OF "DIELEKTROL II"
- DIELEKTROL II CASE RUPTURE TESTS UNDERWAY
- LONG-TERM ENVIRONMENTAL IMPACT STUDIES CONTINUING
- CONTINUING ACCELERATED LIFE TEST PROGRAM
- EXPANSION OF PRODUCTION CAPACITY IN STEP OR SLIGHTLY AHEAD OF DEMAND
- CONTINUED DEVELOPMENT EFFORT IN NON-PCB DIELECTRICS AND NON-PCB CAPACITORS FOR FUTURE IMPROVEMENTS

GE non-PCB pilot production of Dielektrol II power capacitors is underway. In-depth environmental impact studies are continuing.

Your support in the form of orders for Dielektrol II capacitors is solicited for General Electric's continuing effort to assure power capacitor availability regardless of any future regulatory or statutory actions impacting PCB availability. These non-PCB capacitors are available in the same ratings as PCB units at a price $0.42/KVAR higher. Operation of Dielektrol II capacitors on your system will serve to provide you with absolute confidence in the new product.

PCPS—100

GENERAL ELECTRIC

MCNS 060415

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