Accomplishments and Projects for

Paul I. Nippes, P.E., Registered Electrical Engineer, NJ and NY

President of Magnetic Products and Services, Inc.

President of Nippes Professional Associates, Inc./

Allis Chalmers Manufacturing Company
West Allis, Wisconsin

- Designed turbine-generators 5,000 kW - 175,000 kW.
- Built generator component parts and tested them in the Laboratory.
- Developed stress and thermal calculations for conductor cooled rotors and stators.
- Designed magnetic circuit for 150-660 MW generators (Used on "Big Allis").
- Co-authored article "Fully Supercharged Generator Surpasses Expectations" pp. 4-7, Allis Chalmers Electrical Review, fourth Quarter, 1954.
- Performed torsional calculations for multi-mass turbine-generators when short circuited.
- Instructed Customer's Operators in maintenance and operation of generators.
- Coordinated for two years the Engineering Technical Course for selected engineers.
- Project Engineer for a line of AC inductor alternator exciters.
- Exchange graduate trainee from Allis Chalmers to General Electric Co. of England and Brown Boveri, Switzerland in 1950 - 1951.

University of Wisconsin - Milwaukee
Milwaukee, Wisconsin

- Taught for two semesters, sophomore courses on electrical circuits and magnetism.
- Perfected torsional calculation routine and applied to several examples as a self-study course working towards Ph.D.
- Taught electrical engineering section in the refresher course for professional registration.

Elliott Company/Carrier Corporation
Ridgway, Pennsylvania

- Conducted engineering design and specification meetings with customers
- Designed numerous turbine-generators 5 MW - 50 MW range
- Conducted trouble-shooting of vibration and electrical problems on installed machines
- Developed and tested prototype lightweight 150 kW, 3600 RPM generator
- Developed and tested conductor cooling concept for turbine generators
- Invented and developed the Harmonic Exciter. Built two units, one for a 25.6 MW hydrogen-cooled unit powered by a nuclear reactor in a municipality and one for a 17.5 MW unit powered by geothermal steam, both of which operated successfully for 30 years. Wrote two papers on harmonic power that were published in IEEE Transactions.
- Designed a 7.5 MW generator for air transport to and use in McMurdo Sound, Antarctica.

Biggs-Nippes Associates, Inc.
Ridgway, Pennsylvania

- Warranty job corrections for products of the closed Elliott Company Electrical Division.
- 4,000 Hp synchronous motor field faulting correction.
- Two variable speed electrical coupling extruder drives corrected.
- Six hydraulic turbine generator exciters stabilized by pole shim design and installation.
- Consulted to users and repair shops on motor, generator and coil design problems.
- Analyzed vibration on diesel sets on a Texaco offshore rig, Gulf of Mexico.
- Designed and personally built a 30 kW, 60 to 50 hertz rotating frequency converter.

Stackpole Carbon Company
Saint Marys, Pennsylvania

- Applied ceramic permanent magnets to rotating machinery and lifting applications.

Electro Dynamic/General Dynamics
Avenel, New Jersey

- Designed, supervised drawings, manufacturing and testing of generators 750-4000 kW. Designed, supervised drawings, manufacturing and testing of 200 kW and 300 kW generators that were installed and performed successfully in NAVY deep submergence submarine NR1 and on the Canadian Railway cars respectively.
- Supervised engineers in design and testing of induction motors 1 Hp - 3,000 Hp.
- Coded numerous computer programs for design and performance of rotating machinery.
- Supervised engineers in design and testing of D. C. elevator and variable speed drives.

Nippes-Bell Associates, Inc.*/Magnetic Products and Services, Inc.
Middletown, Woodbridge and Holmdel, NJ

- ***Engineering for Construction***
  - Designed, supplied specifications and drawings and performed construction management for the selection, qualification and installation of a 5,000 kW AC-DC MG set, its electrical feeders and power transformer at Interlake Steel, Riverdale, IL, to run in parallel with the original set in order to maintain production during repair of the original set. The net savings in loss payment by Zurich Insurance exceeded two million dollars.
  - Designed, supplied specifications and drawings and performed construction management for the selection, qualification and installation of a 10,000 kW turbine-generator in South Carolina Industries, a Southern paper mill, to replace the unit that had exploded due to overspeed.
  - Designed electrical systems and performed inspections for Hess Corporation:
    - Electric power and distribution system, Chesapeake tanker unloading dock.
    - Flood control pumps electrical and control system design.
    - Engineered replacements of oil contactors with vacuum contactors, Edgewater.
    - Engineered replacements of oil contactors with vacuum contactors, Pennsauken.
    - Designed an electrical heat trace system for oil tank and pumping installation.
  - Supervised design, specification preparation and instrument selection for Research Cottrell for power plant environmental H2S scrubber installation.
  - Supervised design, specifications and instrument selection for a fluidized bed reactor for Curtiss Wright, Woodbridge, NJ.
  - Coded computer programs for Wigton-Abbott, a prominent engineering firm specializing in laboratory buildings and ran first calculations on actual installations for:
    - Electric lighting (Tenneco, IFI).
    - Electric system short circuits (Tenneco, IFI, and ICI).
    - Electric system load flow (Tenneco, ICI, and ICI).
    - Electric cable selection (Tenneco, IFI).
    - Air conditioning of buildings with special humidity and temperature control (ICI).
  - Designed service and building transformer and obtained approximately six permits for an overhead 13.8 kV insulated cable run for Chevron, Perth Amboy, NJ.
  - Supervised electrical system transient calculations for pulse loading effects on electrical system at the Princeton Plasma Laboratory, PLT and TCT installations.
  - Calculated for AEC building-TVA system using NPA computer programs:
    - Electrical system short circuit.
    - Electrical system load flow.
  - Selected and designed switchgear and winding reconnection of test stand power transformer for traction motor back-to-back loading test stand for Everson Electric, Lehigh Valley, PA.
  - Wrote specifications, selected equipment and physically conducted tests on a rewound 100 MW hydraulic turbine generator at Grand Coulee Dam.
  - Wrote programs and either conducted personally or supervised employees in the monitoring of manufacture, test and approval of numerous motors and generators, the largest project involving 90 units 500 HP through 10 MW for Chevron, Pascagula.

- ***Electrical Machinery and Equipment Design***
  - Designed for Everson Electric, Lehigh Valley, PA:
    - Accelerator coils for Nevis Laboratories.
    - Accelerator coils for Lawrence Radiation Laboratories.
    - Accelerator coils for Scanditronix Laboratories.
    - Accelerator coils for National Accelerator Laboratories.
    - S6G Coil former for nuclear submarine motors.
    - A4W Coil former for nuclear submarine motors.
    - Traction motor back-to-back test stand.
    - Electric coil transposition bender.
    - Electric coil turn-to-turn overvoltage tester.
  - Electro Dynamic/General Dynamics:
    - Designed motors, generators and consulted in-general on electrical machinery.
  - Ram Motors:
    - Conducted detailed review of electrical design, construction and performance of motors.
    - Evaluated correction for rotor-stator rub on wound-rotor induction motor.
    - Analyzed cause for vibration and recommended corrections.
  - Reviewed with the manufacturer the design and component tests of a 65,000 Hp motor for the purchaser.
  - Inspected and evaluated performance of the drive motor of a large Weingarten press for the user.
  - Evaluated rotor coil turn migration on numerous large two pole generators and recommended corrections.
  - Evaluated stator coil failure on turbine generator, redesigned coils for remanufacture by G.E. coil shop.
  - Designed traction motor test stand for MTA, Long Island, NY.
  - National Electric Coil, Columbus, Ohio:
    - Redesigned five different hydro-generator conversions from 50 hertz to 60 hertz.
  - New Orleans Sewerage Authority, New Orleans, LA:
    - Redesigned 14 different wound rotor motors from 25 hertz to 60 hertz.
  - Designed coils for a 4500 HP motor for Fairbanks Morse Corp. Rockford, IL.
  - Evaluated electrical machine design, construction and performance for manufacturers and repair shops.
  - Designed strain ductor for Phoenix Steel Corporation.
  - Designed and supplied drawings for small generators for Jeta Power, Sloatsville, NY.
  - Designed and supplied drawings for small generators for Hol Gar, Philadelphia, PA.

- ***Industrial applications of Mechanical Engineering***
  - Conducted vibration analysis, correction, calculations and/or supervision on many rotating machines.
  - Computations Shaft Torsional response for approximately 20 motors, generators, trains:
    - Electro Dynamic, ARAMCO, Chevron, SASOL, Curtiss Wright, Sier Bath.
  - Calculated shaft lateral critical speed at installation and in the manufacturer's plant:
    - Participated in on-site test of a large gas-turbine generator, made studies and recommendations.
    - Electro Dynamic, Longo Industries, Chevron, etc.
  - Conducted vibration correction or avoidance in approx. 15 large structures and/or ducting:
    - Ohio Nuclear, Jones and Laughlin, US Steel, Wisconsin Public Service, etc.
  - Conducted torsional analysis of a shipboard turbine-gear-generator set and made recommendations.
  - Replaced defective generator rotor wedges on the fully-assembled rotor with special wedges designed and supplied by Nippes, for ENKA Corporation, Lowland Tennessee.
  - Designed bearings and shafts for sewerage treatment for Envirodisk, Beacon, NY.
  - Designed and obtained permits for several Propane tanks for Pro Chem, Plainfield, NJ.
  - Supervised hot water tank design for construction for Monitor Welding, Elizabeth, NJ.

- ***Field Electrical Analysis and Correction Directly for Client***
  - Tested, analyzed results and supervised corrections for generator lamination shorting:
    - Chugach Electric (3 units).
    - Longo Industries.
  - Analyzed winding defects, designed and supervised correction on electrical machines:
    - Orange and Rockland, Manitoba Power, SASOL, Longo Industries, RAM.
    - Shell Supertanker, Electro Dynamic and numerous motor applications.
  - Affiliate, Magnetic Products and Services:
    - Degaussed hundreds of machines in the field worldwide.
    - Consulted on problems of magnetism and stray currents in machinery.

- ***Design, Build and Supply Directly to Client or Customer***
  - Three phase 750 kW reactor for generator testing - Dresser Clark, Olean, NY.
  - Affiliate, Magnetic Products and Services, design, build and supply:
    - Auto Degauss for demagnetizing machinery.
    - Gaussometer for measuring DC and AC magnetism levels.
    - Voltage Current Monitors for monitoring shaft voltages and currents.
    - Special coils for use with the MPS Auto Degauss for degaussing the Bradley Fighting Vehicle.
    - Equipment for demagnetizing large and long pipes in conjunction with lifting magnet.

- ***Forensic Analyses for Users, Insurance Companies and Attorneys***
  - Inspected failed 800MW generator in Zhuhai China, conducted failure analyses and recommendations.
  - Inspected condition of an 8,500 kW propulsion motor on a cruise ship and made recommendations.
  - Conducted an investigation into the cause of a $75 M fire loss for prominent attorneys at the MITSUI Elizabeth, NJ bonded warehouse. Took possession of pertinent fire pump, instruments and electrical gear, set up test protocol and conducted tests in the presence of 15 to 20 experts and attorneys.
  - Conducted one of the first video surveys of the damage incurred at the Consolidated Edison Seaport Sub-station meltdown in lower Manhattan for a major insurance firm.
  - Conducted inspections and an investigation into a crash of a nitrogen compressor train installed near Montreal, Canada for a major insurance firm in Montreal, CA.
  - Conducted surveys and recommended corrective means for a heavy electrical power system melt-down in the Engineering building of CCNY for a prominent adjustment firm.
  - Conducted an analysis and performed tests on remains of a fire at Marita's Restaurant, Princeton, NJ, for Attorneys in the case Marita's vs. AT&T.
  - For Carolina Power and Light investigated and made recommendations:
    - Brunswick Station #1 - 963 MVA Turbine generator stator coil failure.
    - L.V. Sutton Station 496 MVA Turbine generator, stator winding fretting & failure.
    - Darlington Station 71.6 MVA gas-turbine generator winding failures.
    - Witherspoon 37 MW gas-turbine unit #3 rotor winding condition.
  - For a prominent Insurance firm, investigated:
    - Pigeon Point Raytheon 900 MW rotor condition.
    - Florida Power and Light 800 MW Martin's Creek unit stator and core failures.
    - Gibbons Creek 500 MW stator failure.
    - Consumers Power 400 MW turbine generator core and winding failure.
    - South Carolina Public Service 290 MVA turbine generator winding water leak.
    - City of Austin Brauntig station 224 MW turbine generator exciter rebuild.
    - Mosinee Paper 10 MW stator winding redesign by NPA for proper installation.
    - Alton Packaging 42 MW turbine generator winding problem.
    - Alabama River Pulp and Paper 53.3 MW turbine generator fire.
    - City of Austin 20 MW unit bearing failure; later on, how to clean chips from unit.
    - Irving Pulp and Paper 12.5 MW turbine generator vibration due to rotor condition.

- ♦ Federal Paperboard 9.375 MW turbine generator stator winding failure.
- ♦ Consolidated Paper 6.25 MW turbine generator failure.
- ♦ Carlsbad, CO, mine hoist motor and transformer performance problem.
- ♦ Cleveland Cliffs two 4500 HP motor performance evaluation.
- ♦ Consumers Power 450 MVA transformer winding failure.
- ♦ Florida Power and Light 400 MVA Everglades transformer failure.
- ♦ Numerous commercial and residence fires and accidents.

- For a prominent insurance firm, inspected and investigated:
  - ♦ PEPCO Morgantown 625 MW turbine generator winding failure.
  - ♦ PEPCO Chalk Point 732 MVA turbine generator winding and bearing failures.
  - ♦ Consolidated Edison Astoria transformer 10-13 failure with resulting fire.
  - ♦ PEPCO transformer in Buzzard's Point, caused prime and back-up power failure to the White House.
  - ♦ At least 10 other Con Ed transformer, reactor and switchgear fires and failures.
  - ♦ Several other transformer and switchgear failures in the New York Metro area.
- For a European Insurance firm, investigated and determined cause for failure:
  - ♦ Public Service of Oklahoma 250 MW turbine generator winding failures.
  - ♦ Union Electric Labadie Station 400 MW turbine generator connector failures.
  - ♦ Union Electric Labadie Station 400 MW turbine generator end winding failures.
  - ♦ Union Electric Labadie Station 400 MW turbine generator baffle ring failures.
  - ♦ Turbine generator overspeed explosion at Bethlehem Steel, Bethlehem, PA.
  - ♦ Jobos Puerto Rico 20 MW Worthington gas-turbine generator failure.
  - ♦ City of Lakeland, FL, 25 MW turbine generator bearing failures.
  - ♦ City of Lakeland, FL, 60 MW turbine generator motorizing damage to unit.
  - ♦ Anhaeuser Busch, St. Louis, 2.5 MW turbine generator rotor problem.
  - ♦ Numerous other losses in addition to those listed above.
- For Worthington Corporation, investigated, recommended and engineered corrections:
  - ♦ Puerto Rico, Palo Seco 20 MW gas turbine generator rotor.
  - ♦ St. Croix 20 MW turbine generator, engineered and supervised rotor rewind.
  - ♦ Gulf Coast Aluminum 17.5 MW turbine generator stator failure.
  - ♦ Simplot, CA, 4 MW turbine generator overspeed damage.
- For a major insurance firm, analyzed at, Hudson #2 turbine generator a stator winding failure.
- For a large insurance firm, was expert in litigation involving a 20 MW turbine generator stator failure.
- For Great Northern Nekoosa Paper, investigated failure of 47 MVA turbine generator.
- For a major Insurance firm investigated and determined cause for numerous failures, fires.
- A great number of smaller cases have been handled by NPA. It is inappropriate to attempt to list them.
- Many Insurers and Attorneys for whom investigations and analyses were made prefer not to have their names listed and this is the reason that the names of these firms are not listed.

Magnetic Products and Services, Inc. (Incorporated 1982)
Holmdel, New Jersey

- ***Products:***
  - Establish performance criteria for products to measure magnetism, demagnetize and monitor shaft voltages and currents.
  - Supervise design, construction and testing of products.
  - Field test products.
  - Supervise production, application and qualification of products.
- ***Services (1978 to present):***
  - Conducted magnetic surveys and degaussing to remove magnetism at more than 500 sites, worldwide, extending from surgical needles, to machine tools to turbo-machinery, to utility generators up to 800 MW.
  - Measured and documented voltages, currents and power potential of shaft stray electricity.

- Applied voltage-current monitors to shaft grounding and sensing brushes for monitoring unit performance and maintenance information.
- Degaussed 500 MW turbine generator in Ekibastuz Kazakhstan, and taught workers how to degauss.
- Made inspections, tests and recommended corrections on boiler feed pumps in Masinloc, Philippines.

- ***As President of Magnetic Products and Services, Inc. (since 1980)***
  - Actively corrected and supervised correction of factors causing bearing damage due to stray electrical currents in hundreds of rotating machines.
  - Developed, supervised design and manufacture of products to correct and monitor rotating machinery:
    - The Auto Degauss
    - Junction Boxes and High Temperature Cables for Pipeline Degaussing (with the Auto Degauss)
    - The Gaussometer.
    - Voltage Current Monitors (VCM's).
    - Shaft Condition Monitors
    - Hand-Held VCMs
    - Pocket Gaussmeters
    - Grounding Straps
  - Wrote and presented approximately 18 papers on stray shaft voltages and currents in rotating machinery, focusing on elimination and control, and monitoring for "early warning" of developing problems.