PLAINTIFF'S EXHIBIT
DUP-47

ENGINEERING STANDARDS COMMITTEE

newsletter

Vol. 28 No. 8 August 1977

Recent Reports from the Engineering Test Center

The Engineering Test Center has a continuing program underway to evaluate performance of various equipment, tools, and accessories used by Company plants. The Performance Test Program is a Company-wide effort administered by Design, ESD, ETC, and the Energy and Materials Department with support from all Industrial Departments. The following abstracts outline recent tests which have been completed. For additional information on the tests, contact R. L. Faries, Engineering Test Center, Wilmington, DE, phone 121-2337. Copies of the reports or an index of current test reports may be obtained by calling 121-3663.

Compressed Air Filters (Accession No. 15296)

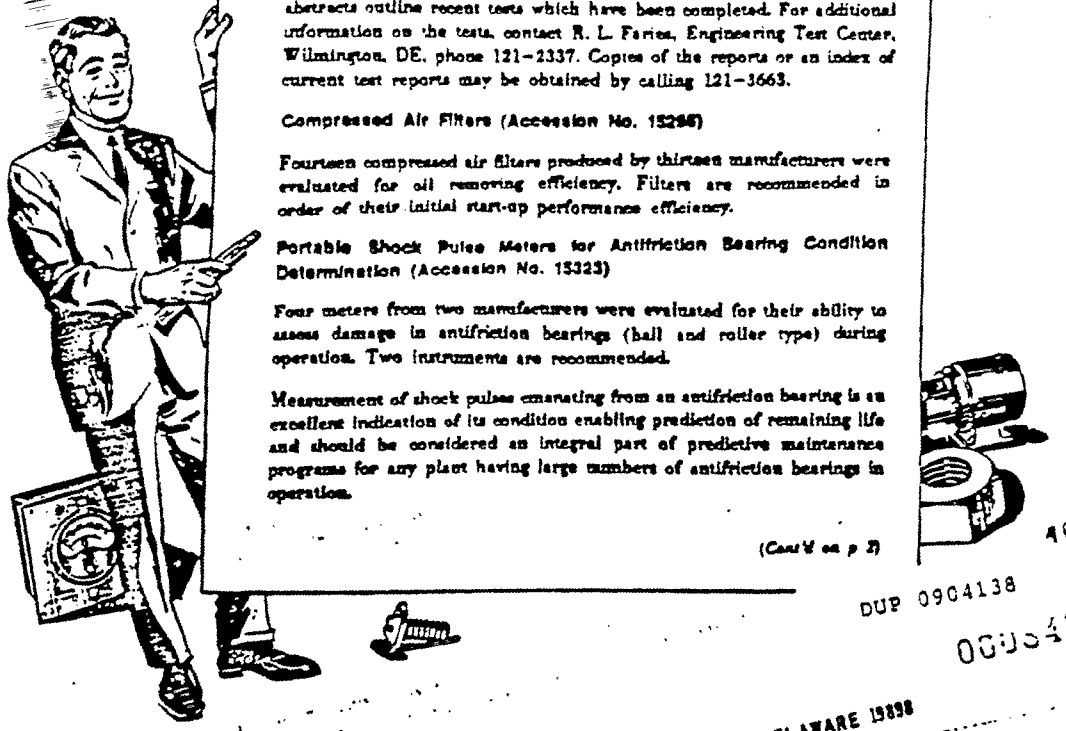
Fourteen compressed air filters produced by thirteen manufacturers were evaluated for oil removing efficiency. Filters are recommended in order of their initial start-up performance efficiency.

Portable Shock Pulse Meters for Antifriction Bearing Condition Determination (Accession No. 15323)

Four meters from two manufacturers were evaluated for their ability to assess damage in antifriction bearings (ball and roller type) during operation. Two instruments are recommended.

Measurement of shock pulses emanating from an antifriction bearing is an excellent indication of its condition enabling prediction of remaining life and should be considered an integral part of predictive maintenance programs for any plant having large numbers of antifriction bearings in operation.

(Cont'd on p 2)



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E. I. DU PONT DE NEMOURS & CO., (INC.) WILMINGTON, DELAWARE 19898

(Cont'd from p. 1)

C. E. Invalco Turbine Flow Meter Retest (Accession a. 15304)

The C. E. Invalco turbine flow meter was reevaluated in tests conducted at both the Engineering Test Center and the manufacturer's plant. The meter, which was not recommended in a previous evaluation, is now recommended with qualification.

Fork Truck Low Battery Voltage Indicators with Lift Interrupt (Accession No. 15332)

Six brands of low battery voltage indicators with forklift interrupt were tested to determine operating characteristics and reliability as a battery protective device, and as a device that would force truck operators to charge batteries before an unsafe low voltage condition occurred. (Also see June 1977 Newsletter).

Industrial Platinum Resistance Thermometers (Accession No. 15336)

One-eighth inch diameter sheathed platinum RTD's from ten manufacturers were evaluated. Two manufacturers are recommended and three rated acceptable.

Precision industrial platinum thermometer calibrations should be confirmed prior to installation. Only one-half of the samples evaluated were within the requested accuracy limits.

Target Flow Meters (Accession No. 15353)

Two-inch Foxboro and Ramapo target flow meters were evaluated in water service. Inaccuracies substantially exceeded manufacturer specifications but were comparable to typical orifice plate installations.

Rupture Disk Evaluation (Accession No. 15358)

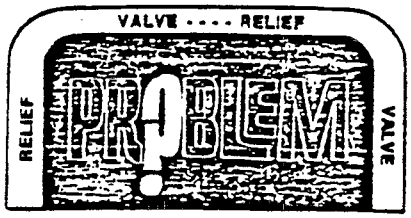
Data from tests sponsored by the Organic Chemicals Department, Chambers Works, were considered of sufficient importance to be shared by all operating departments. Information contained herein is based on the testing of 191 rupture disks produced by four manufacturers from eight materials.

Plastic Tube Fittings (Accession No. 15396)

Tube fittings from nine manufacturers were subjected to pull-out, pressure, ultraviolet light, and a salt spray test to determine fittings most suitable for plant use where external corrosion of brass fittings has been a problem.

Vortex Shedding Flow Meters (Accession No. 15414)

Five models of vortex meters supplied by four manufacturers were evaluated in water service. Two models are recommended and two rated acceptable. The fifth is rated unacceptable because of susceptibility to vibration and electromagnetic interference.



For several years, the Parlin Photo Products Plant has been working to solve a problem involving the failure of axial "flow-through" type pressure relief valves to open at rated set pressure during test – about 20 percent of valves failed to open at pressures 30 percent above the set pressure. Each of the valves had an elastomeric disk (washer) on the valve stem and most had been in refrigerant service and had been exposed to Freon® fluorocarbon refrigerants.

Initial investigation indicated that the disk had undergone a physical change due to the presence of oil which is common in "Freon" systems. This change allowed the disk to adhere to the valve's metal seat thus causing erratic operation. Investigation also indicated that the problem was not limited to a single vendor's valve but rather was a characteristic of all valves of similar design in similar service.

Since most of the valves involved were manufactured by the Henry Valve Company, Parlin worked extensively with them to solve the problem. Initially, a suggestion was offered that a Teflon® fluorocarbon spray be applied to the valve seat to prevent the soft disk from sticking to the metal seat. However, this method was ruled out based on previous unsatisfactory results. The vendor recommended that a disk used in their ammonia valves, which was made of rubber with a laminated sheet of "Teflon," be used. This was the solution adopted by Parlin and, early in 1974, laminated disks were installed in all "Freon" relief valves. Performance was monitored as part of an annual testing program.

There were some initial problems with the replacement disks attributed to the selection of too thin a "Teflon" laminate. This allowed the "Teflon" to peel and fold back on itself, thus allowing the base rubber to contact and adhere to the valve seat. Leakage and/or faulty valve operation occurred. After increasing the thickness of the laminate, the problem disappeared and performance to date has been excellent. In fact, Parlin has changed the test frequency of relief valves with the modified disks from one (1) to four (4) years with significant annual savings.

For additional information, contact J. H. Stark, Parlin Plant, Photo Products Department, phone 191-725.

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It's in the Standards



Asbestos Dust

New Regulations Issued

The Environmental Protection Agency (EPA) has recently issued regulations, which supplement those issued by OSHA, covering the control of asbestos dust. The regulations require that the appropriate EPA Regional office be notified prior to the removal of asbestos during demolition or renovation operations. (This notice is not included in the OSHA regulations.) The EPA requirements are summarized in the May 1977 revision to S4T, Measurement and Control of Asbestos Dust Exposure.

The precautions specified by EPA regarding wetting, containerizing, exhausting, and disposal of asbestos are aimed at preventing visible emissions during an operation. They are equal to or less restrictive than the requirements of S4T.

For additional information, please contact J. J. Frana, ESD, Lourners Building, Wilmington, DE, phone 121-2251.

- **PH 8S, Pressure Relief Valve Repair and Testing** has been revised to provide data needed to set up test facilities, safely conduct shop and field tests, and to clean, troubleshoot, repair, and adjust relief valves. Special procedures and tools required to adjust relief valves under pressure are also included.

- **S22B, Tank Truck, Loading and Unloading and S27B, Railroad Tank Car, Loading and Unloading** have been extensively revised based on current DOT requirements. The precautions discussed have application when loading or unloading any material, although these two safety standards emphasize the safe handling of hazardous materials.

- **H27J, Damper Selection** has been revised to provide better guidance in the correct application of each of nine types of dampers included in the standard. Users are cautioned to be sure dampers are designed to withstand fan pressure at the maximum expected fan operating speed and to endure any process contaminants which might be encountered.

STANDARDS UNDER DEVELOPMENT

Circulated on Serial Letters last month to Engineering Standards Committee for comment. Tentative copies are available upon request.

ARCHITECTURAL

B14E fireproofing for indoor structural steel columns, 2-hour protection, intumescent mastic coating
SB6T fireproofing for indoor structural steel columns, 2-hour protection, intumescent mastic coating

MATERIALS OF CONSTRUCTION

SW10N wrought high-nickel stainless steel type alloys

000850

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STANDARDS ISSUED IN AUGUST

The August issue comprises 58 revised, 7 new, 2 canceled, and 6 reaffirmed standards. (*New standards are shown in italics.*)

ARCHITECTURAL

B3A minor dimension rev and note added; reaffirmed
B11E minor rev; reaffirmed
B15E minor rev; reaffirmed
SB2T 4.1, 4.E1 paint numbers rev; reaffirmed

CONCRETE

B15N reaffirmed
B16N reaffirmed
SB17.1U canceled
DB2L minor rev; reaffirmed

STEEL

B2.1X minor rev; Table 2 rev; reaffirmed

CIVIL

C2S gen rev; reaffirmed

ELECTRICAL

E1.5F canceled
E11G text added; figure updated; reaffirmed
E1Y 2.2 rev to add drive-on bushing, reaffirmed
E1Z 3.19.1, 3.19.2 added; minor rev to Table 1 note and Figure 1
SE2B.4B scope rev; Figure 2 added; reaffirmed

PROCESS EQUIPMENT

G3B 2.1, section 9, Figure 6 added; minor rev; reaffirmed
G1U 3.2, section 4 rev; Figures 9, 16, 18, and 19 added; Figure 13 deleted; reaffirmed

HEATING AND VENTILATING

SH7.1J vendor list, 3.4, and page size nomenclature rev; reaffirmed

ENVIRONMENTAL

J6B Tables 1, 2, and 3 added; reaffirmed
J2C scope rev to correct error
J6E gen rev; section 6 added; reaffirmed
DJ1A gen rev; 3.5 added; new 5.2 added; reaffirmed
DJ1F examples and design procedure rev; reaffirmed

POWER

K1S section 4, 11.3 rev; 11.3.1, 11.3.2, and Figure 1 added
K1T Figures 1 and 2 rev; reaffirmed

LUBRICATION

DL3A 3.3 rev; Figure 4 added; reaffirmed

THERMAL INSULATION

SN102.1D gen rev; reaffirmed
SN114D gen rev; reaffirmed
SN114.1D gen rev; reaffirmed
SN118D minor rev; reaffirmed
SN120D gen rev; reaffirmed
SN10M acoustic insulation absorptive layers
SN30M acoustic insulation laminates
SN60M acoustic insulation barrier layers
SN70M acoustic insulation accessory materials
SN80M acoustic insulation accessory materials – adhesives and sealers

PIPING

P8A piping flexibility analysis
SP1.1B minor rev; reaffirmed
SP85U gen rev; reaffirmed
SP91U minor rev; reaffirmed
SP92U gen rev; reaffirmed
SP98U gen rev; reaffirmed
SP105U gen rev; reaffirmed
SP106U gen rev; reaffirmed

INSTRUMENTS

R12F 2.7, 3.3, Figure 3, Tables 1 and 2 rev; reaffirmed†
R13F Tables 1 and 2, Figures 1 through 8 rev; reaffirmed
R141K Figures 2 and 3 rev; reaffirmed
R111T 2.4, 2.6, Figure 1 rev; reaffirmed

SAFETY

S6H 2.1, section 6, and 7.2 rev; reaffirmed

GASKETS AND PACKINGS

U2S gen rev; reaffirmed

MATERIALS OF CONSTRUCTION

SW11.4W format updated; expanded materials; qualified procedure forms added; reaffirmed
SW11.5W title, scope, safety section rev; UNS numbers added; reaffirmed
SW27W gen rev; reaffirmed
SW28W title and gen rev; reaffirmed
SW44W gen update; reaffirmed
SW47W gen update; reaffirmed
SW52W welding ferritic (25–1) stainless steel pipe and sheet by the gas tungsten arc process (qualified procedure)

PROTECTIVE COATINGS

SZ3A gen rev; reaffirmed
SZ1M section 2 rev; reaffirmed

MISCELLANEOUS EQUIPMENT

DY1H gen rev; reaffirmed

CHEMICAL PROCESS

DG24.2A Table 1 rev; minor rev; reaffirmed
DG27.2D reaffirmed
DG27.3D minor rev; reaffirmed
DG27.4D reaffirmed
DG27.5D minor rev; reaffirmed
DG27.6D reaffirmed
DG27.16D ref and addresses rev; reaffirmed
DG27.17D reaffirmed
DG2.8W UNS designations added; minor change to alloy compositions; reaffirmed

MAINTENANCE AND CONSTRUCTION PROCEDURES

PG 27 Table 1 rev; reaffirmed
PL 22 section 6, Figure 5 rev; Figures 4A and 4B added; reaffirmed
PR 44 minor rev to conform to ISA recommendations, reaffirmed
PZ 6 vendor list updated; example deleted; reaffirmed

Abbreviations above: *Ref* – reference, *Rev* – revised or revision
† New or revised forms included

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