TECHNOLOGY

Diesel Exhausts Measured

Odor and health problems are looming over large cities with the increased usage of diesel engines for power. European scientists are attempting to solve the situation.

➤ BECAUSE DIESEL smoke "stinks and sticks" J. D. Savage of the British Petroleum Co. told the Society of Automotive Engineers in Detroit that the measurement and control of diesel exhaust smoke emission are now being carried on in some European countries.

Whether control is extended voluntarily by operators or by official organizations makes little difference, he said. But, since the diesel engine is now being used extensively as a power unit for trucks and buses, instruments have been developed for the precise measurement of the smoke.

At least five major devices are presently used to check exhaust. These are the filter paper disc system, which checks density by staining egg-shaped filter paper; the filter paper strip, which is a movable filter; the light absorption meter, which checks light density; smoke impingement, which catches relative amounts of exhaust on a card placed in the exhaust system; and photographic methods.

Belgium and West Germany are the most active countries in the control program, he said. Each of these countries has limits for diesel engine exhaust and restricts all vehicles that emit more than the limit.

Vehicles are tested in the shop and on the road. Some companies are taking the initiative and purchasing smoke-meters for their fleets. This has, in turn, aided management in cutting costs in terms of efficiency.

• Science News Letter, 81:37 January 20, 1962

Benzpyrene From Exhaust

➤ AUTO EXHAUST contributes only 2% to 10% of cancer-causing benzpyrene found in city atmosphere.

The remaining 90% to 98% apparently is produced by burning of such other carbon-containing materials as coal, fuel oil, natural gas or rubbish.

As part of a continuing research program with New York's Sloan-Kettering Institute, Charles R. Begeman of General Motors Corporation's Fuels & Lubricants Department reported to the meeting of the Society of Automotive Engineers in Detroit, Mich., a technique for collecting "tars" from auto exhaust.

Mr. Begeman found that:

1. Engine exhaust tars and crankcase "blowby" contain minute amounts of more than 24 polynuclear aromatic hydrocarbons, seven of which are known carcinogens but are classified as less active than benzpyrene.

2. Both tar emission rates and benzpyrene concentrations in the tar were influenced by the composition of automotive fuel.

3. Benzpyrene in blowby gas from the engine's crankcase was less than 4% of the total benzpyrene emitted from the engine.

In computing the estimated percentage of benzpyrene the automobile contributes to urban atmosphere, Mr. Begeman presented these alternative assumptions:

1. If benzpyrene from automobiles settles out of the air the same way as lead from exhaust gas, automobiles may contribute an average of about 2% of the total benzpyrene in air over cities.

2. If benzpyrene disperses with little or no settling, like carbon monoxide from exhaust gas, the auto's contribution to city atmospheres may average about 10%.

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Jet Stops Made Quicker

➤ LARGE JET TRANSPORTS may soon be using a horseshoe-shaped hook to stop them in shorter distances, with less strain and more safety.

The Federal Aviation Agency has been experimenting with the hooks that will aid supersonic jets with landings similar to those made on aircraft carriers, J. R. Dart told the Society of Automotive Engineers meeting in Detroit.

"We believe that it has been proved that jet transport aircraft can engage a ground system without damage," he said. "There will be a small weight penalty, less than one passenger, and some cost; but, it cannot be compared to the value of lives and one airplane."

Tests were conducted with the hook, which engages a cable buoyed up by rubber discs, installed in the belly of a Boeing 720. Passengers did not notice that the 120,000-pound craft was stopped by the hook.

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TECHNOLOGY

Reading Machines May Help Air Traffic Control

➤ READING MACHINES that can be taught simple "mental abilities" may, if present research is successful, be able to warn of approaching enemy planes, play an important role in the control of air traffic, and perform uncomplicated clerical functions, a study of electronic devices show.

Although development of better "pattern recognizing devices" is based on military requirements, the study lists a number of possible industrial applications. The principal ones would include "inspection, quality control, sorting of small parts or materials, blue print reading or machine production controlled directly from paper sheets."

Possible office uses of these devices, according to the study, include automated patent searches and mail sorting in post offices. The report notes that the U. S. Patent Office, in the Department of Commerce, has been investigating ways of automating the time-consuming searches necessary before a patent can be granted.

Some equipment already in use can recognize about 40 standard typewritten letters and numbers, making it possible for computer-controlled systems to read and sort or classify printed information.

The report, compiled for the U.S. Navy, is available through the Office of Technical Services, Business and Defense Services Administration, U.S. Department of Commerce, Washington 25, D. C. The price is $1.50.

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MEDICINE

New Brace Allows Legs To Swing More Normally

➤ LEGS PARALYZED by polio and other disorders can swing in a more normal manner with a new type of brace developed at the University of California, Los Angeles, Medical Center.

The device was developed by John Bray, Joseph Traub and Don F. Caldwell of UCLA's Prosthetics Education Project.

Key part in the device is a J-shaped, tool-steel hinge at the knee. This hinge enables the individual to bend his knee and thus eliminates the stiff-legged walk that present braces demand. The device also enables the patient to sit down and rise in a more normal manner.

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NO ECHO HERE—The window-like openings, framed in foam, lead through an echo-free chamber developed by Republic Aviation Corporation's research center, Farmingdale, N. Y. In the chamber radio waves can act as they would in empty space. Model being inserted is undergoing radar measurement tests.

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