

ENGINEERING

Package Power Plant

Complete units, made up of 24 boxes, that can be moved easily and assembled in 36 hours, are ready to meet critical war-time demands.

► A NEW ELECTRIC-STEAM turbine package-type power plant with an output of 500 kilowatts was described by H. W. Van Kannen and Lester E. F. Wahrenburg of the Peter F. Loftus Company at the meeting of the American Society of Mechanical Engineers.

The package-type plant was designed for use by the U. S. Army to be moved rapidly from one location to another in order to meet critical demands for power made necessary by destruction from aerial bombing or other enemy action of existing power facilities, in areas recaptured from the enemy. It can be moved by rail, water, or truck.

The plant comes in 24 boxes, each containing a pre-assembled unit, ready to be connected with the other units by an electrical link system. It is designed for use in the field, and provides for a wide range of climatic conditions, and varied conditions of fuel and water supply.

"The package-type power plant has been designed to permit complete as-

sembly from the arrival on flat cars to actual power generation within 36 hours. This time element is of extreme importance, since in many instances these plants will move with armies," Mr. Van Kannen said.

The floor area taken up by the complete unit in operation is 36 by 55 feet. Because of its compact nature the power plant may be located in areas available in public buildings, railroad station lobbies, or temporary buildings erected to house it.

Electricity is generated by a steam turbine. The boiler produces 12,000 pounds of steam an hour continuously, burning wood, peat, coal, or even green logs cut from nearby forests and fed by hand into the furnace.

These plants, by the addition of extra equipment, may be made to deliver up to 1250 kilowatts.

After the war the package-type power plant may be further developed for sale by mail order.

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being assembled at the New Philadelphia plant, and 24 three-car 1,000-kilowatt trains are also under construction.

"The importance of the power train to the reconstruction effort in Europe can be appreciated when one realizes that it takes nine months to two years to rebuild a powerhouse that has been bombed or sabotaged by the Axis or destroyed by retreating armies," L. B. McCully, manager of the Westinghouse Transportation and Generator Division, pointed out.

After the war, the equipment can be removed from the railroad cars and installed in permanent powerhouses, or the trains can be kept in readiness for floods or other emergencies.

The power trains develop 50-cycle current for European use. American power stations develop 60-cycle current.

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Three-Dimensional Drawing Made Quickly by Machine

► A NEW MACHINE, called the axonograph, photographically makes a three-dimensional drawing from an ordinary two-dimensional drawing, in less than half the time that it would take a draftsman to do it.

A three-dimensional drawing gives a far clearer picture of how all the parts and assemblies go together, and speeds up work on the assembly line.

The actual making of three-dimensional prints with the new machine, developed by the Glenn L. Martin Company, is a mechanical operation. The original drawing is placed on a movable copy board in front of a camera. By adjusting the position of the copy board it is possible to produce a photograph in any one of three planes, plan, face, or side. The photographic prints are returned to the drafting room where draftsmen place the prints in their proper position and make the finished drawing.

A simple illustration of the new process is the cube, or square block. Taking a drawing of a square and placing it in the new machine, by moving the copy board into three different positions, it is possible to make photographs, which when put together will give an accurate picture of three sides of a cube, of which the original square is one side.

The new machine is now being used extensively in the preparation of drawings for the JRM-1 Mars flying boat, the first plane to take advantage of it.

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Railroad Powerhouse

Eight cars make up a full 5,000-Kilowatt train. Will be used in Europe to supply power for reconstruction of reconquered areas.

► THE FIRST public demonstration of a 5,000-kilowatt power train, a rolling power station that compresses onto eight railroad cars all the equipment of a full-size powerhouse, was given in New Philadelphia, Ohio. It will be used by the United Nations in Europe to supply power for reconstruction of reconquered areas.

The compact power station duplicates every operation of its full-size brothers. It includes everything from the boiler room all the way through to transformers and circuit breakers that carry the power output of the plant to outside transmission wires.

The power train, designed by engineers of the Westinghouse Electric &

Manufacturing Company, can operate on low-grade coal and a minimum quantity of water.

A crew of less than a dozen men are needed to put the power plant into operation in a few hours after it arrives at its destination.

While the power plant is in operation, ten tons of coal an hour are fed by automatic stokers into the combustion chamber, from coal bunkers alongside the train. Two and one-half tons of ashes are produced every hour under full load operation, and 80,000 pounds of steam an hour is generated in the boilers, equivalent to the output of the boilers on a Liberty Ship.

Ten of these 5,000-kilowatt trains are