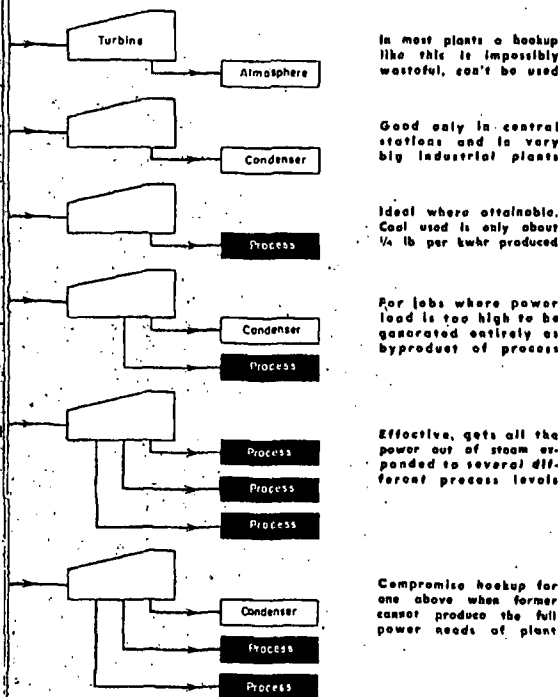


Tips on Buying and Making Power

Today's decision to make or buy power, or do some of both, sets the mold for your future operating costs. Extra time and energy spent now pay off with reduced costs in years ahead

Study Heat Balance Before Modernizing



If your plant now generates power, or there is any possibility it should, explore the whole matter thoroughly before spending any money on modernization. The decision to make or buy your power, or to buy part and make part, is basic; mistakes here can be costly and can hamstring future profits.

Make a Survey. Plot typical daily load curves for process steam (including heating steam) and for electricity, for each season. Next, try to project these curves into the future.

Then study various ways to supply the electrical load—by purchase, by steam units, by internal-combustion engines, and by various combinations of these. For each method, figure the total combined yearly cost (including fixed charges) of feeding the entire electrical load, plus the entire process and heating loads.

Logically, the chosen method of supply will be that with the lowest over-all cost. As a practical matter, purchased power will normally be favored whenever it is near an even break. But there will be situations where big savings can be made by generating part or all of the power load. This is most likely to occur in plants with heavy and fairly steady requirements for both process steam and power. Paper mills are an outstanding example. Power made as a partial byproduct of process steam is the natural choice in many such cases.

Byproduct Power. Studies of steam-generated power should not overlook the possible fuel savings from higher steam pressures if present throttle pressures would allow much steam to waste to exhaust or condenser.

Finding the ideal combination for an existing process plant is a complex matter. It may pay to carry a much higher pressure on new boilers, operating the plant at two different pressure levels. Often, also, it may pay to carry two or three levels of process pressure. Other

(Continued on page 73)

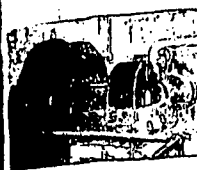
SKINNER ENGINE COMPANY

Erie, Pennsylvania

Manufacturers of High-Economy Steam Engines Exclusively

Sales Representatives in All Principal Cities

"UNIVERSAL UNAFLOW" POPPET-VALVE STATIONARY STEAM ENGINES, horizontal, side or center crank, or multi-cylinder vertical; automatic or variable-speed, special controls as required; STEAM-TIGHT-VALVE COUNTERFLOW STATIONARY ENGINES, horizontal, side or center crank, automatic or variable-speed; SKINNER MARINE UNAFLOW STEAM ENGINES, poppet-valve, for ship propulsion.



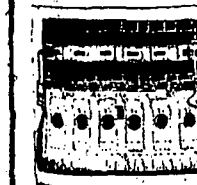
250 Crank "Universal Unaflow" Direct Connected 80 to 800 kw.



Horizontal Type "Universal Unaflow" Direct Connected to Variable-Speed Compressor 75 to 1500 hp.



Vertical Marine Unaflow Dredge Pump Drive



3200 hp. Vertical Marine Unaflow Propulsion Engine 600 to 6000 hp.

EXPERIENCE

Builders of engines since 1888. Our plant is the largest in the United States devoted exclusively to the building of steam engines; and the Skinner organization has justly acquired the reputation of being steam engine specialists.

THE "UNIVERSAL UNAFLOW"

The "Universal Unaflow" was the first American poppet-valve unaflow engine. More "Universal Unaflow" engines have been manufactured than all other American unaflow engines combined.

ADAPTABILITY

Suitable for noncondensing or condensing operation, with automatic change for either condition. Also may be built for constant or variable back pressures; medium or moderately high initial pressures, saturated or superheated steam.

MAINTAINED ECONOMY

Maintained economy is guaranteed, and is due to patented design of the poppet inlet and auxiliary exhaust valves, which are steam-tight after long use and under any variation of steam pressure or temperature. Steam consumption guaranteed subject to penalty test after six months' operation, with final payment withheld until after test.

GUARANTEED SAVING CONTRACTS

Because of the high initial and maintained economy of the "Universal Unaflow," several hundred contracts have been made with these engines, horizontal or vertical, replacing purchased power or other engines, payment being made out of savings, in a guaranteed maximum time.

HORIZONTAL ENGINES

In general use for direct connection to electric generators, refrigeration equipment, compressors, blowers, pumps, etc. Special manual or automatic controls for variable speed and load requirements.

VERTICAL ENGINES

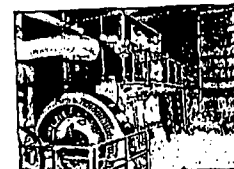
For limited space conditions, the stationary "Universal Unaflow" is offered in multi-cylinder vertical type, embodying the same fundamental economy and design features as the horizontal. Multi-cylinder vertical "Universal Unaflow" assemblies also extensively used for variable-speed compressor drive.

THE SKINNER MARINE UNAFLOW STEAM ENGINE

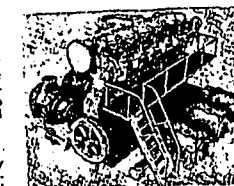
The vertical engine is used extensively for river tow-boats, passenger ferries, automobile and freight ferry-boats, lighters, suction dredges, harbor and sea-going tugboats, Great Lakes ore carriers, and on various types of ocean-going passenger and cargo vessels. Skinner Marine Unaflow engines have established remarkable records for reliability, simplicity, flexibility, maneuverability, low maintenance and fuel-saving compared with other marine engines.

STEAM-TIGHT-VALVE COUNTERFLOW ENGINES

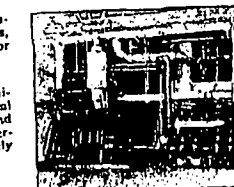
Over 11,000 Steam-Tight-Valve Counterflow Engines have been placed in service, in nearly every kind of industry. Maintained economy insured by use of self-expanding telescopic valve which follows up its own wear; guaranteed permanently steam-tight with proper lubrication. Center crank type in capacities of 75 to 175 hp. (60 to 125 kw.); side crank type, 175 to 650 hp. (125 to 350 kw.); for belt drive or direct connection to generator, compressor, etc.



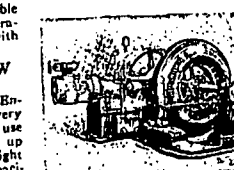
Vertical Type "Universal Unaflow" Direct Connected 200 to 1600 kw.



Vertical "Universal Unaflow" Cylinders Driving Variable-Speed Compressor



Vertical Type "Universal Unaflow" Direct Connected to Variable-Speed Compressor 800 to 3000 hp.



Center Crank Direct Connected Counterflow