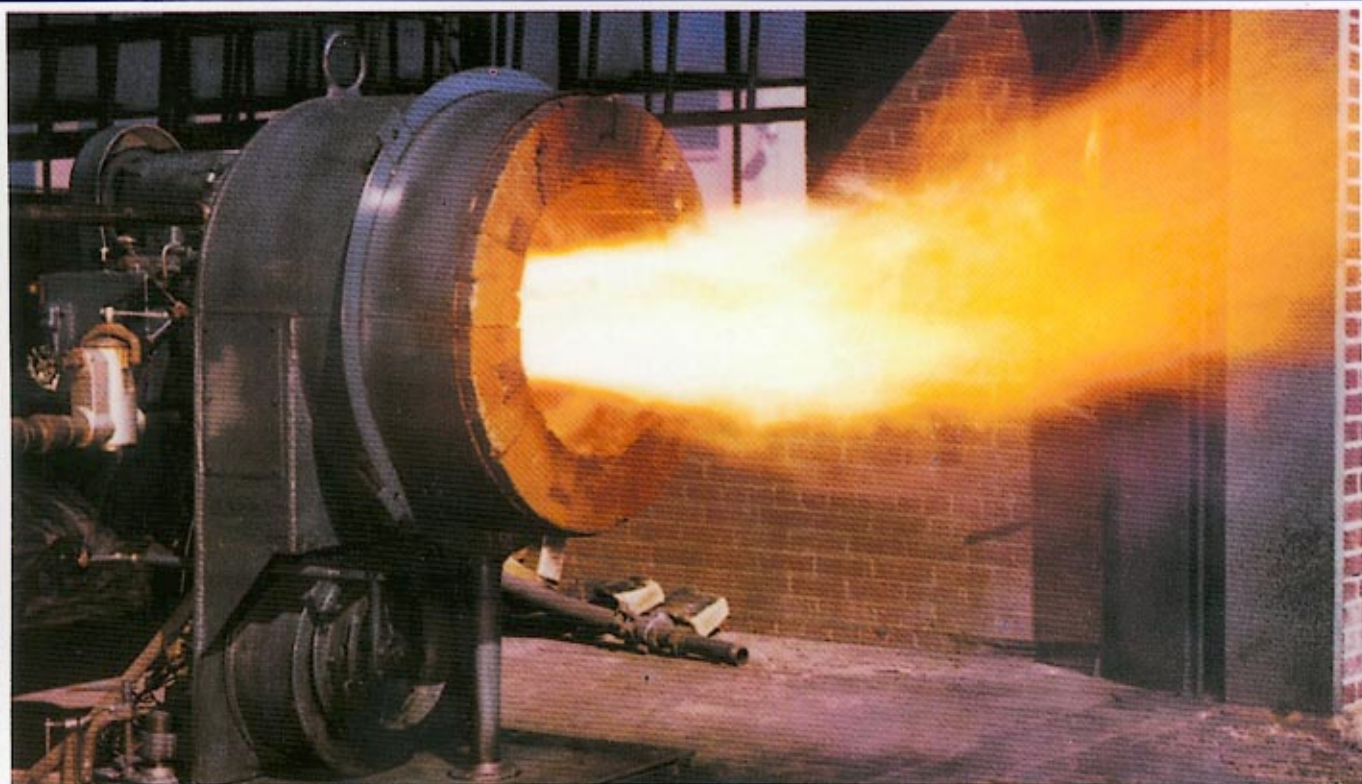


# PREFERRED / W.N. BEST COMBUSTION SYSTEMS



**FOR THE DESTRUCTION & RECYCLING OF**

**waste  
liquids**

**PREFERRED/W.N. BEST COMBUSTION EQUIPMENT**

31-35 SOUTH STREET, DANBURY, CT 06810 • TEL: (203) 743-6741 • FAX: (203) 798-7313

SINCE 1890 SPECIALISTS IN COMBUSTION FUEL FIRING SYSTEMS

A DIVISION OF PREFERRED UTILITIES MANUFACTURING CORPORATION

## **Example: Refinery Acid Sludge**

### **The Problem:**

A by-product of petroleum refinery operations is acid sludge, a black mixture of asphaltic hydrocarbons, sulphuric acid and water. This material is

highly corrosive and would cause disastrous contamination in any disposal area.

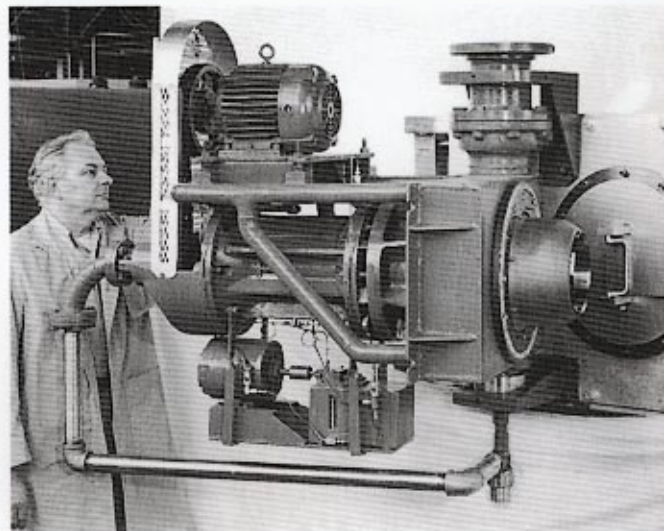
### **The Preferred/W. N. Best Solution:**

Long before ecology became a national concern, Preferred/W. N. Best developed equipment for a process designed to recycle this waste. Not only does this process eliminate a critical disposal problem, it pays important dividends in the form of fresh, white, 99% sulphuric acid.

The heart of this regeneration process is the Preferred/W. N. Best acid sludge atomizer which was designed specifically for this application. Built of acid-resisting materials and alloys, it has a range of sizes to handle from 100 to 7,000 gallons of sludge per hour. This unique atomizer utilizes centrifugal force combined with a blast of compressed air to break the sludge into a mist of minute droplets which is blown into a refractory-lined furnace.

This atomized waste is burned in suspension. In most instances supplementary fuel is used to augment the hydrocarbons in the sludge to maintain the required 2200°F. furnace temperature. When the waste has an adequate hydrocarbon content the firing of the supplementary fuel is discontinued and the combustion of the sludge becomes self-supporting.

The hot gas is drawn from the furnace through a series of stills, scrubbers, heat exchangers and other apparatus which reclaims the sulphur and otherwise cleans and cools the gas before it is released to atmosphere.





## **Example: Sewage Plant Skimmings**

### **The Problem:**

Skimmings, or floatable wastes composed principally of oils, fats and greases containing a high percentage of water together with rags, plastics and rubber present a vexing problem in the operation of sewage

treatment plants. They upset biological processes. Open pit burning creates serious air pollution problems. Lagooning and land-fill contribute to ground water contamination.

### **The Preferred / W. N. Best Solution:**

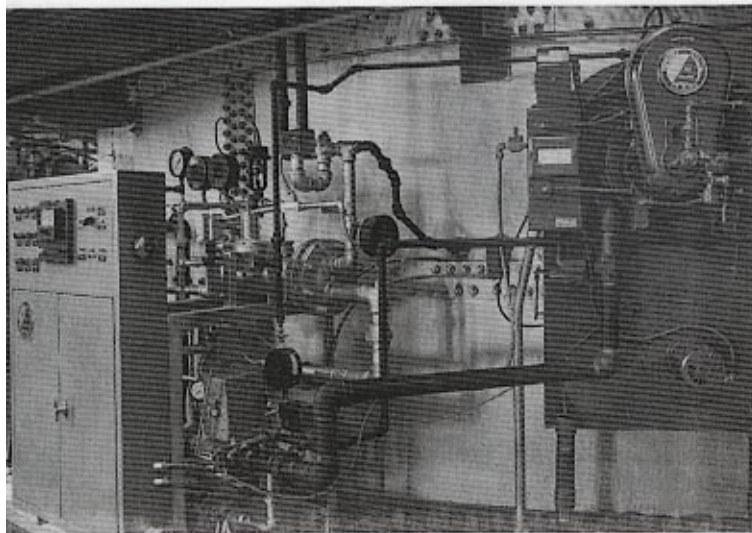
Skimmings are burned as a fuel rather than as a waste material.

Utilizing experience acquired during the past fifty years Preferred/W. N. Best developed a special clog-free combustor capable of handling solids as large as

$\frac{3}{8}$ " in diameter. Incorporating a unique continuous purge cleaning system this combustor uses centrifugal force to achieve micron-size particulate distribution. Counterflowing air, furnished by built-in fans, produces high turbulence and mixing so that combustion proceeds smoothly and completely.

This skimmings combustor may be mounted directly on either a new or existing multiple hearth incinerator to provide clean combustion and a controlled input of supplemental heat. The versatile design makes it adaptable to its own incinerator, with or without waste heat recovery capability. Normally there is no need for supplementary fuel. Once the incinerator has reached operating temperature, the heat in the waste sustains combustion.

A packaged preparation set is furnished as a part of the overall system. This set automatically functions to pump, preheat and meter the flow of the waste to the atomizer and to deliver supplementary fuel if and as it may be required. A factory fabricated control center, complete with first-out annunciator display, automatically programs the operation and provides constant safety monitoring.



## **Example: Molten Sulphur**

### **The Problem:**

The burning of sulphur in air to make sulphuric acid from the resulting sulphur dioxide is an old process. Controlling the combustion at a uniform burning rate and a constant gas strength are

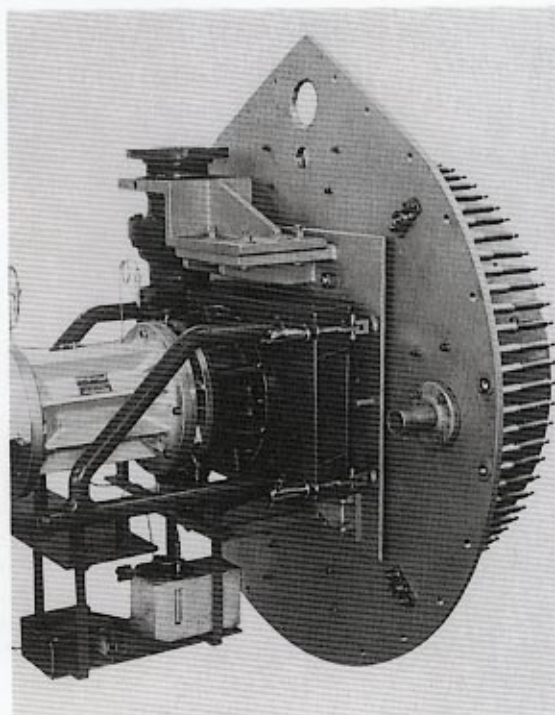
highly desirable. The key to uniform, high-quality product and lower production costs is the burning equipment.

### **The Preferred /W. N. Best Solution**

Sulphur is preheated and delivered to the burner as a liquid at a carefully maintained temperature of 270°F. The Preferred/W. N. Best atomizer breaks this liquid into microscopic droplets which burn in suspension in a refractory lined furnace. Aside from a controlled supply of clean dry air, combustion is entirely self-supporting; no supplementary fuel is required.

The process generates an appreciable amount of heat which in turn is recovered by passing the hot gas through a waste heat boiler to supply plant steam.

The Preferred/W. N. Best sulphur atomizer has several advantages for this application. Unlike other atomizers it has no small orifices in the nozzle and is thus less susceptible to clogging. Because no steam is required, moisture is kept out of the furnace and the possibility of sulphuric acid formation on the heat transfer surfaces of the waste heat boiler is minimized. Most important, the atomizer combines high capacity with a compact flame which permits reductions in furnace size with resultant savings in both initial cost and in furnace maintenance expense.







*The Preferred/W. N. Best approach to incineration and/or recycling of liquid wastes is based upon the premise that all wastes are not alike and therefore there is no single process or piece of equipment which is ideal for all applications.*

*Each proposed installation is handled as an individual problem. After carefully weighing all factors applicable to a specific situation, recommendations are presented for the owner's consideration. Frequently alternative solutions will be offered for evaluation. After tentative processes have been established, our in-house test facilities permit us to set up a pilot operation before the owner is committed to extensive construction. The photograph on the front of this bulletin illustrates such a test firing of a liquid waste burning system.*

*A paramount concern, which is carefully weighed early in the conceptual stage, is the potential for salvaging various components of the waste. In many instances this involves the reclaiming of the energy from the waste for use in the generation of plant steam. In other instances the combustion process removes impurities, leaving a usable residue which can be easily recovered.*

*The increasing cost of energy in all forms mandates full consideration of operating expense. Rather than depend solely upon the burning of gas to create a suitable destructive environment the Preferred/W. N. Best approach whenever possible treats the waste as a fuel, atomizing and burning it in suspension. When the calorific value is too low for self-sustaining combustion oil may be blended into the liquid stream before it is fed to the burner or gas may be used to assist in attaining the desired temperature in the furnace.*

*An inherent weakness in many types of waste burners is the use of small orifices which continually clog. Although strainers or filters may be used to remove the impurities many liquids are so badly contaminated with solids that the necessary frequent cleaning of strainers is unacceptable. The Preferred/W. N. Best burner design eliminates the small orifices and handles the solids contained in the liquid without difficulty, even when they are as large as  $\frac{3}{8}$ " diameter.*



# Experience

## The priceless contribution to problem solving....

The Preferred/W. N. Best organization brings to each problem not only technical proficiency but also the benefits of over 90 years of experience devoted to the design, fabrication, installation and servicing of literally tens of thousands of industrial combustion systems. These systems, which may burn residual oil, gas tar or distillate oil, embrace not only the burner but frequently the combustion air supply system, the flame safeguard system, the fuel handling system, the combustion control system and even the heat receiver.

Our interest in the thermal destruction and/or recycling of liquid wastes comes from working with industrial users in designing systems to reduce their plant discharges. Our long years of experience in solving their problems is now used to design similar systems to attain discharge levels required by environmental regulations. Our products have thoroughly demonstrated their ability to handle a variety of wastes. Our engineers have the skills to adapt these products and incorporate them into innovative systems. The combination provides the customer with maximum assurance of obtaining desired results.

The Preferred/W. N. Best claim to experience is solidly based upon the operation in our customer's plants of our waste incineration systems. These various systems, some in use for upwards of twenty years, have a combined capacity to burn *over two million gallons* of contaminated waste each day.

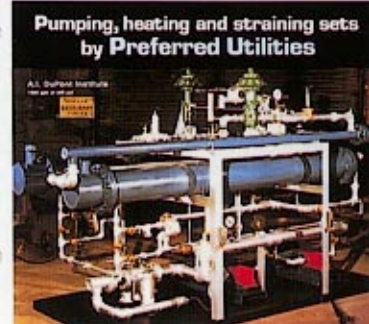
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These bulletins, describing other Preferred/W.N. Best products, are available upon request



Pumping, heating and straining sets by Preferred Utilities

#### Why work with Preferred?

Experience - Preferred Utilities Manufacturing Corp. is a full line combustion equipment manufacturer with over 90 years experience in the design and manufacture of burning, heating and blowing sets. The experience of thousands of sets installed in a wide range of applications has developed an overall knowledge of the industry.

#### What does Preferred have to offer?

Fully staffed engineering department - with specialized experience in fuel burner systems and combustion systems.

Complete manufacturing facility - fully equipped with all types of metal working, welding, grinding, turning, and machine work.

Custom design - in accordance with customers' requirements and specifications.

Proven installation - based on total system evaluation. No unexpected costs because of design changes or installation.

Complete performance - by highly trained, experienced working directly under engineering department supervision.

Standard testing - all sets are subjected to electrical operation and pressure testing with an independent engineering test procedure.

Simple installation - all sets are completely assembled in electric, fuel, and steam or water lines.

### BULLETIN 4000A

## COMBUSTION CONTROL SYSTEMS AND INSTRUMENTATION



CUSTOM ENGINEERED

FOR

COMBUSTION • PROCESS • TANK GAUGING

PREFERRED INSTRUMENTS

### BULLETIN CS-CC-S/I

PREFERRED UTILITIES MANUFACTURING CORPORATION

A SEVENTY YEAR TRADITION OF EXCELLENCE

# COMBUSTION TECHNOLOGY