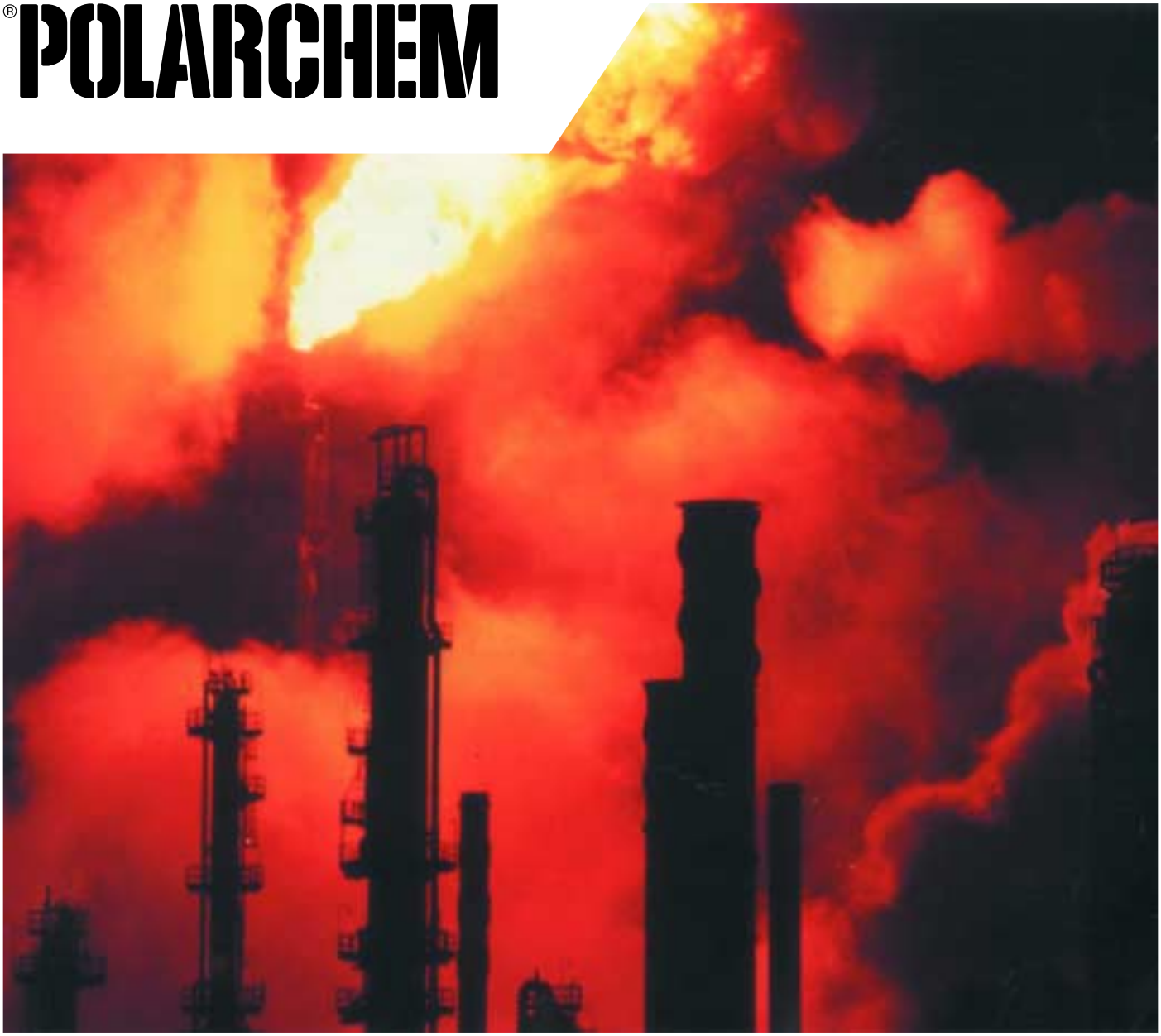
®POLARCHEM



SAVING ENERGY AND PROTECTING THE ENVIRONMENT

POWER STATIONS, REFINERIES AND PETROCHEMICAL PLANTS

THE POLARCHEM TECHNOLOGY

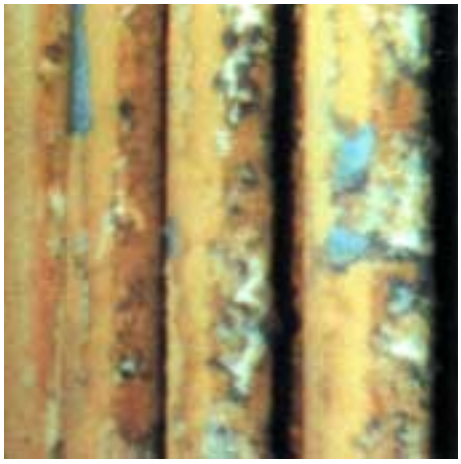
To provide simple, flexible and cost-effective solutions to problems arising from the combustion of oil, coal, lignite, wood and waste.

Methods for injecting products directly into the combustion chamber or the flue gas stream to produce chemical reactions to oxidise, neutralise and convert residues from combustion which would otherwise increase fouling, corrosion and air pollution.

Polarchem cleaning systems for heat transfer surfaces and emissions are the result of practical applications combined with continuous research and development for more than 25 years. New products are created to keep up with users' changing requirements and changes in legislation.

PROBLEMS WITHOUT POLARCHEM

DEPO



As a result of combustion and depending on the type of fuel and temperatures, vanadium, alkali metal sulphates and alumina silicates will form hard deposits

Unburnt carbon and sulphur will form softer and sometimes sticky deposits which will attract other unburnt residue thereby increasing the thickness of deposits even more. This leads to reduced heat-transfer, blockage of flue gas passages and damage to brickwork

CORR

LOW TEMPERATURE

Some of the sulphur in the fuel will be oxidised to SO_3 which will react with water vapour to form sulphuric acid condensing on surfaces when temperatures are below its dewpoint. This can also occur when the temperature of the flue gas is above the dewpoint and the deposits insulate the heat-exchange surfaces. Air-heaters, ducting and stacks are particularly susceptible to this type of corrosion.

HIGH TEMPERATURE

Vanadium pentoxide with a low melting point will form extremely hard deposits mostly within the super-heater zones. Such deposits are difficult to remove and will give rise to corrosion.

Vanadium pentoxide is also a catalyst in the conversion of sulphur dioxide to sulphur trioxide.

EMISS

Smut, dust and NOx emissions will attract complaints from people living nearby and these emissions will sometimes exceed limits set by the legislators.

The main cause of acidic smutting is unburnt carbon carrying sulphuric acid from the stack. Dust is the particle residue from combustion which escapes from the stack where no or ineffective electrostatic precipitators are installed.

The higher the temperature of the combustion the more NOx is formed. Particularly, the emissions of dust and NOx are subject to tight legislative control.

THE POLARCHEM ORGANISATION

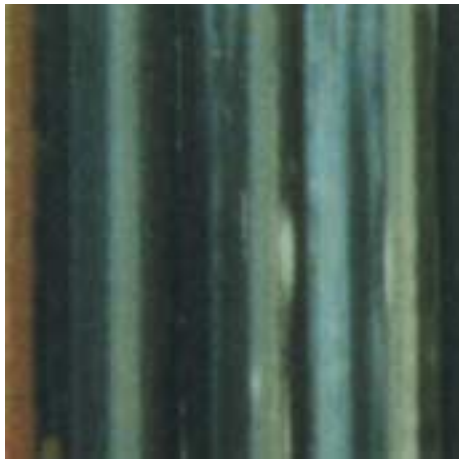
Polarchem was formed in 1967 and the distribution of its products and services is established worldwide. Experienced agents, distributors and licensees, most of whom have been with Polarchem for many years, are servicing industry. Polarchem production units are selected in strategic positions to give the best possible supply of services and are certified for quality management control in accordance with ISO 9002. Administration and marketing is directed from London with the support of technical services and supply of equipment and instruments from France and Germany.

THE POLARCHEM SOLUTIONS

OSITS

Polarchem will oxidise unburnt carbon, reduce sulphates and convert vanadium pentoxide to vanadates with a much higher melting point. Deposits will become dry, powdery and disintegrate. They therefore lose their adhesion to heat-exchange surfaces.

This complements the steam, air and sonic soot-blowing and increases their efficiency. Where no other soot-blowers are installed, the Polarchem “chemical soot-blowing” system will permit extended intervals between shut-downs.



OSION

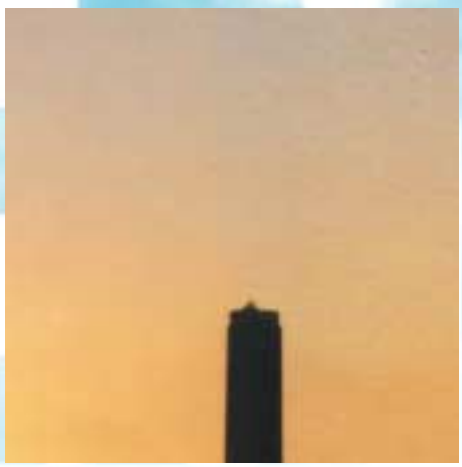
Polarchem will neutralise the sulphur trioxide in the flue gas by the continuous injection of a product containing a water-soluble magnesium compound and which will lower the sulphuric acid dewpoint temperature to any level required to avoid condensation and therefore corrosion.

Any residue will be dry, powdery and easy to remove. This Polarchem treatment will also ensure the conversion of vanadium pentoxide to non-corrosive vanadates with such a high melting point that deposits become brittle and flake off. The reaction of Polarchem with vanadium pentoxide will also inhibit the formation of sulphur trioxide and therefore sulphuric acid.

SIONS

By oxidising the carbon deposits, Polarchem will greatly reduce or eliminate the problem of acid smutting. After oxidation of the unburnt carbon remaining dust particles are less likely to escape into the atmosphere, as their density is greater than that of ordinary soot. The efficiency of separators and electrostatic precipitators will be improved since residues are dry and friable.

NOx must be measured accurately and can be reduced by Polarchem to any level required to satisfy current legislation. Demonstration projects can be arranged to assist users in planning for future requirements.



A POLARCHEM TREATMENT IS SIMPLE AND FLEXIBLE

Installation and operation can start at any time without taking the plant out of service and it does not matter whether the plant is in a clean or fouled condition. The following treatment systems are available:

- Continuous
- Intermittent but regular (chemical soot-blowing)
- During start-up and shutdown of plant (24-48 hours)
- Crash dosing to avoid unscheduled shutdowns and to extend runs
- Crash dosing to make plant easier to clean
- Crash dosing to keep plant dry for longer periods during programmed shutdowns

THE POLARCHEM SERVICE

Our technicians will advise the best product, quantity and injection system to meet your requirements. They will supervise the installation and assist your operators with the help of flue gas analysers and dewpoint meters to ensure optimum benefit to the customer.

THE BENEFITS OF POLARCHEM

- Better fuel efficiency without corrosion
- Reduced cost of soot blowing
- Greater output and availability of plant
- Reduced cost of cleaning and maintenance
- Dry-cleaning instead of water-washing
- Less damage to brickwork
- Safer and better working conditions
- Less pollution

THE ECONOMICS OF POLARCHEM

The use of Polarchem will significantly reduce costs through fuel savings. The Polarchem representative will assist you in calculating these and other benefits.

POLARCHEM SAFETY DATA SHEETS

These are supplied for each product separately and will indicate details of packaging, handling, transportation and storage as required.

CONTACT DETAILS