nitrogen oxide.

The garbage is then put into a high-temperature vaporizer where measured quantities of oxygen are introduced. The coal burns and heats the mixture to 2,000° C so that the solid components melt or vaporize. The high temperature breaks down all organic compounds into exhaust gas. This gas is rapidly cooled by the injection of water at under 90° C, which prevents the new formation of dioxides, furans, and other substances, and cleaned in various steps. What is left is an industrially utilizable synthetic gas that can also be used for operation of the plant itself so that practically no exhaust escapes from the plant. The water used for cooling and cleaning the exhaust is cleaned and used again, with calcium sulfate and salts precipitated out. Other residual materials from the clarified water are put back into the pressurized oven.

The fused mass is fed into a second high-temperature vaporizer in which the mineral and metallic components separate by means of their specific weight. Mineral components form a glasslike substance that can be processed into fibers, or construction material, or filler. The metallic components can be poured into slab molds and reused as raw material in the metal industry: They contain, along with 93% iron, other typical alloy materials such as chromium, nickel, copper, with traces of phosphorus, sulfur, and silicon.

Apart from pure water and synthetic gas, therefore, only solid components that are useful are produced. According to Thermoselect's data, this process releases less than 1 kilogram of dust, whereas the European Community standard for garbage incineration allows 43 tons of dust from 100,000 tons of garbage. Less than 90 kg of sulfur dioxide is produced, in contrast to a permitted amount of 258 tons. Instead of 40,000 tons of slag for the landfill, there are 28,000 tons of usable raw materials; instead of 860 million cubic meters of exhaust gas, 40 million cubic meters of usable synthetic gas is produced; 99.5% of the garbage is made useful. Similar ratios hold for the other harmful materials.

The entire process is ideal, but only for countries or localities which have no laws compelling separation of garbage. If, that is, paper and synthetic organic material are absent from the unprocessed material, in the first step there is no coal or not enough coal, which plays an essential role as energy producer for the later high temperature phases.

There's hope even for countries with elaborate recycling laws, however. The Germans could, for example, consume or mix in garbage that was deposited "unseparated" in past years and thus clean up the many unauthorized garbage dumps in the new federal states that were formerly East Germany. Also, in what was formerly West Germany, shrinking landfill capacities could be extended. When the "old garbage" is used up, the new garbage could, if necessary, be made carbonizable by the addition of organic material, for example, sewage sludge. Better yet, the garbage separation laws can simply be discarded like old buggy-whips, and citizens be spared the absurd cost.

Currency Rates