

# A Stomach of (Stainless) Steel

Every day large amounts of food waste accumulate in restaurants, food courts, hotels, supermarkets, hospitals, stadiums and convention centres. Typically this volume goes into the waste bins and has to be hauled away for off-site disposal. Ultra-modern biodigesters, machines with a 'stomach' of molybdenum-containing stainless steel, are revolutionizing the way such waste is handled in institutional settings.

By Tim Outteridge, Secretary-General, IMO

The United Nations Food and Agricultural Organization (FAO) estimates that 30% of the world's food supply is never eaten due to loss and waste. About a third of that total is due to waste, amounting to about 4 million tonnes of food annually, with a carbon footprint of about 1.1 billion tonnes of CO<sub>2</sub> equivalent. It accounts for agricultural water consumption of 80 km<sup>3</sup> (about the same amount contained in Lake Geneva), and needs about 0.5 billion hectares of land, or about 10% of the world's agricultural land area, to grow it. While the ultimate economic, environmental, and resource-allocation goal is to greatly reduce

these numbers, it is a difficult and long-term task. In the interim there is a great need for strategies to deal with food waste in an environmentally responsible fashion.

### A Mini Waste-Treatment Facility

The current approach to waste food disposal is landfill or incineration. This consumes fuel for transport, generates vehicle emissions and, in the case of landfills, produces methane emissions and taxes increasingly limited capacity. For institutions that generate large amounts of food waste, it also means additional costs to support waste collection and landfill fees.



Biodigesters reduce the amount of waste that has to be transported to landfills or incineration plants.



BioHiTech's Eco-Safe Digester is made almost entirely of stainless steel. Photo © BioHiTech America

On-site biodigesters provide an economic alternative to landfill disposal. Modern digesters use environmentally benign enzymes and bacteria to break down food waste to a liquid that is compatible with gray water (waste water without fecal contamination), sewer systems and sewage treatment facilities. This allows for on-site disposal of waste through the building drain, saving businesses the cost of hauling to a landfill, an incinerator or a composting site. Typically the investment cost of the digester is recovered within a few years.

### The Critical Element: Molybdenum

The digester itself is not so simple a machine as one might expect. Because it must continuously digest high volumes of raw meats, fibrous vegetables and materials not so easily liquefied (egg shells, for example), it requires an extremely durable vessel. The digester's internal lining must withstand the corrosive properties of its contents, including the microorganisms that expedite the digestion process and the chemicals produced by their action. One manufacturer, BioHiTech America, builds its Eco-Safe Digester® using type 316 stainless steel for the reactor, with the main component compris-

ing about 70% of the machine's weight. Thanks to the 2% molybdenum content of type 316 stainless steel, the durability of the reactor is significantly better than earlier designs made from molybdenum-free type 304 stainless steel. Even heavy users have reported no material-related problems with the new reactor.

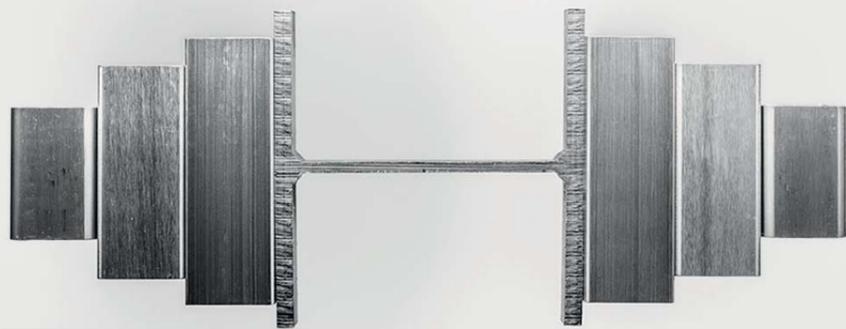
The digester is unique in its ability to record and store information remotely. Because it is equipped with an internal scale, users can weigh input foods and identify the source of the waste. The information is stored in the cloud and allows businesses to better measure their performance, detect sources of food waste, and take steps to reduce or eliminate waste.

### Benefit for All

Biodigesters help to reduce Earth's carbon footprint, conserve scarce landfill volume, and keep operating costs low for kitchens that prepare large quantities of food. Molybdenum-containing stainless steel plays its part to assure digester durability and contribute to efficient processing of food waste streams. This is just another example of the many ways that molybdenum contributes to better stewardship of resources.

### About IMO

The International Molybdenum Association (IMO) is a non-profit trade association representing the majority of the molybdenum industry worldwide, promoting molybdenum's unique properties and its contribution to superior materials performance and enhanced sustainability in a host of applications. Acting as the voice of the industry, the Association works to maintain and develop market access for its members. An unrivalled source of information on molybdenum, IMO also manages a historical database on global production and use.



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## Stainless Steel Connectors for Hygiene-Sensitive Applications

Eisele has further expanded its easy-to-assemble modular kit system consisting of durable solid metal connection components for compressed air, gases and liquids.

At the recently ended IFFA trade fair in Frankfurt am Main, the Waiblingen-based company showcased the pioneering concept of the INOXLINE. These non-corroding and easy-to-clean connection components are an ideal solution for stringent hygiene requirements and aggressive media.

Series 17 and 17A of the INOXLINE provide a large selection of different stainless steel push-in connectors for pneumatic applications. Series 17 includes stainless steel push-in connectors with a release sleeve. Particu-

larly smooth surfaces and the special design prevent dirt and other residue from accumulating in the stainless steel push-in connectors and facilitate exterior cleaning. Featuring a second seal, series 17A is primarily intended for applications where special requirements are imposed on leak tightness and for applications involving high pressures or fluids.

The material used is stainless steel 1.4301/07 or 1.4404 on request. All parts are crafted from solid material and are ideal for hygiene-sensitive applications in the food processing industry. Due to the large range of high-quality sealing materials, push-in connectors of the Eisele INOXLINE can be used at temperatures from -50 °C to +200 °C.