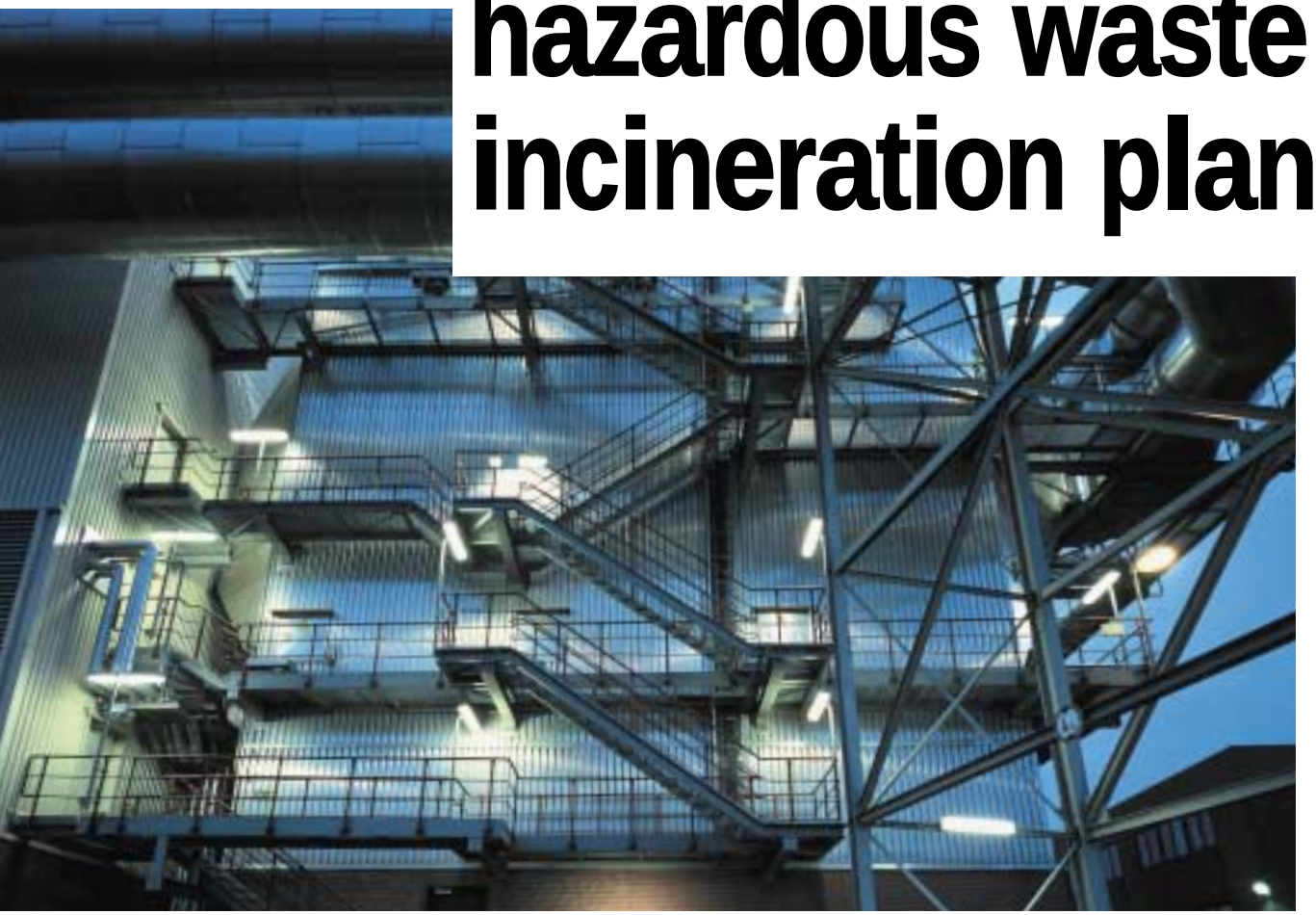
von Roll INOVA

AVG Hamburg hazardous waste incineration plant.



In service after reconstruction: 1997, Capacity: 2 × 6.3 Mg/h

Remediation of hazardous waste incineration plant.

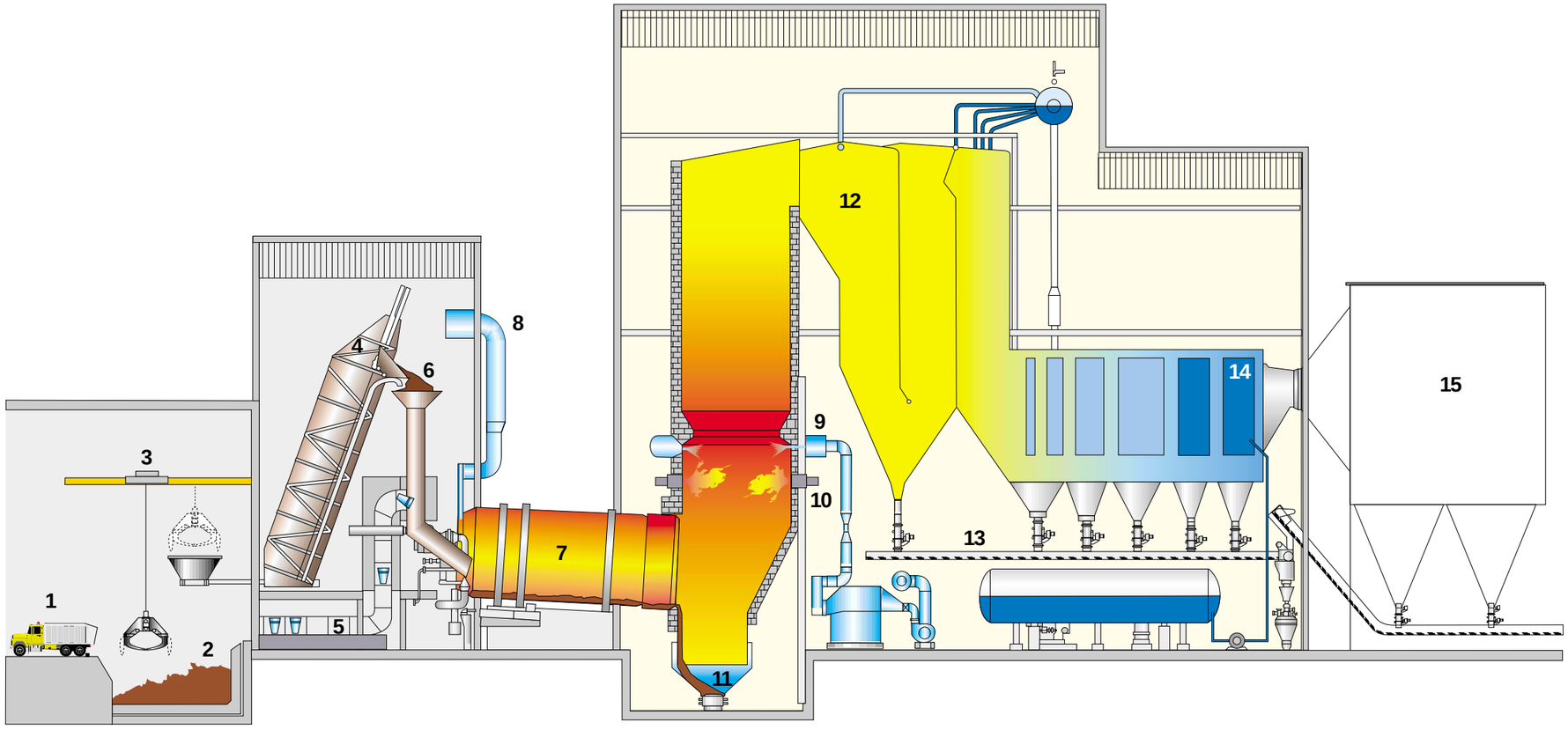
In commissioning the first hazardous waste incineration plant in Northern Germany in 1971, AVG pioneered the field of hazardous waste management. Even though no regulations governed waste disposal at that time, it was recognized that landfilling did not eliminate the pollution potential of hazardous waste. Incineration, on the other hand, drastically reduces the volume of such waste and greatly lowers the threat of pollution.
The AVG Hamburg plant was initially built with two identical incineration trains.

After more than 20 years of successful service, the plant was in need of upgrading. The new facility had to be built around the existing one, because operation had to be uphold as long as possible. This meant that the new plant had to be integrated into the existing facility in just three months. This was a major logistical challenge. Engineering and construction called for meticulous scheduling and management.
Von Roll Inova took responsibility for the engineering, the supply of the rotary kilns, the steam generators, the feed systems, and the auxiliary equipment.

Von Roll rotary kiln technology: a central component of the plant.

The most vital elements of this technology are the rotary kiln and the secondary combustion chamber. During a residence time of one to two hours in the refractory-lined rotary kiln, the hazardous wastes burned at high temperatures – up to 1380 °C. In this way even the most toxic pollutants are reliably destroyed and the wastes reduced to a fraction of their original volume. Our long experience with rotary kilns enables us to supply an optimized and reliable design.
The last equipment to be reconstructed was the skip hoist feed mechanism for solids. The design concept calls for the following rotary kiln feeding methods:

- Solid waste from the storage pit – via a skip hoist.
- Liquids from the tank farm – to the rotary kiln and secondary combustion chamber via lances and burners.
- Liquid and pasty wastes in 60–200-liter drums – directly into the rotary kiln via a drum elevator.
- Wastes in 30-liter containers – via a container elevator.
- Vapors from the tank farm – to the rotary kiln via a burner.



Waste delivery and storage

1 Tipping hall
2 Waste pit
3 Overhead crane

Incineration, slag, energy recovery

4 Skip hoist for solids
5 Container feed system
6 Feed hopper
7 Rotary kiln
8 Primary air supply
9 Secondary air supply
10 Start-up and auxiliary burners
11 Wet deslagger
12 Four-pass steam generator
13 Ash removal system
14 Economizer
15 Flue gas purification system

General project data	Operator	AVG Hamburg
	In service after reconstruction	1997
	Total investment cost	Approx. 200 million €
	Von Roll Inova scope of supply	– Solids and container feed systems
		– Rotary kilns
		– Steam generators
	Intended use	Incineration of industrial, trade and hazardous wastes
Design parameters	Waste types	Solid and liquid hazardous wastes
	Capacity	2 × 6.3 Mg/h
	Average low heat value	17,000 kJ/kg
	Heat release	2 × 35 MW
	Availability, each unit	> 7000 h/year
	Mode of operation	24 h/day
Feed systems		For solid, liquid and slurry wastes, small packing drums, 60–200 l-drums and pails
Incineration system	Number and design of process trains	2 rotary kilns; diameter 4.9 m, length 12 m each
	Combustion temperature	950 to 1380 °C
Slag handling system	Number and design	2 steel belt conveyors
Secondary combustion chamber	Number	2
	Residence time of flue gas at minimum temperature of 1200 °C	> 4 s
Steam generator	Number and design	2 three-pass, natural circulation boilers
	Steam capacity	2 × 36 Mg/h
	Steam temperature	380 °C
	Steam pressure	20 bar
Energy utilization	Process heat	Process steam
Flue gas cleaning system		Exceeds regulatory emission limits

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