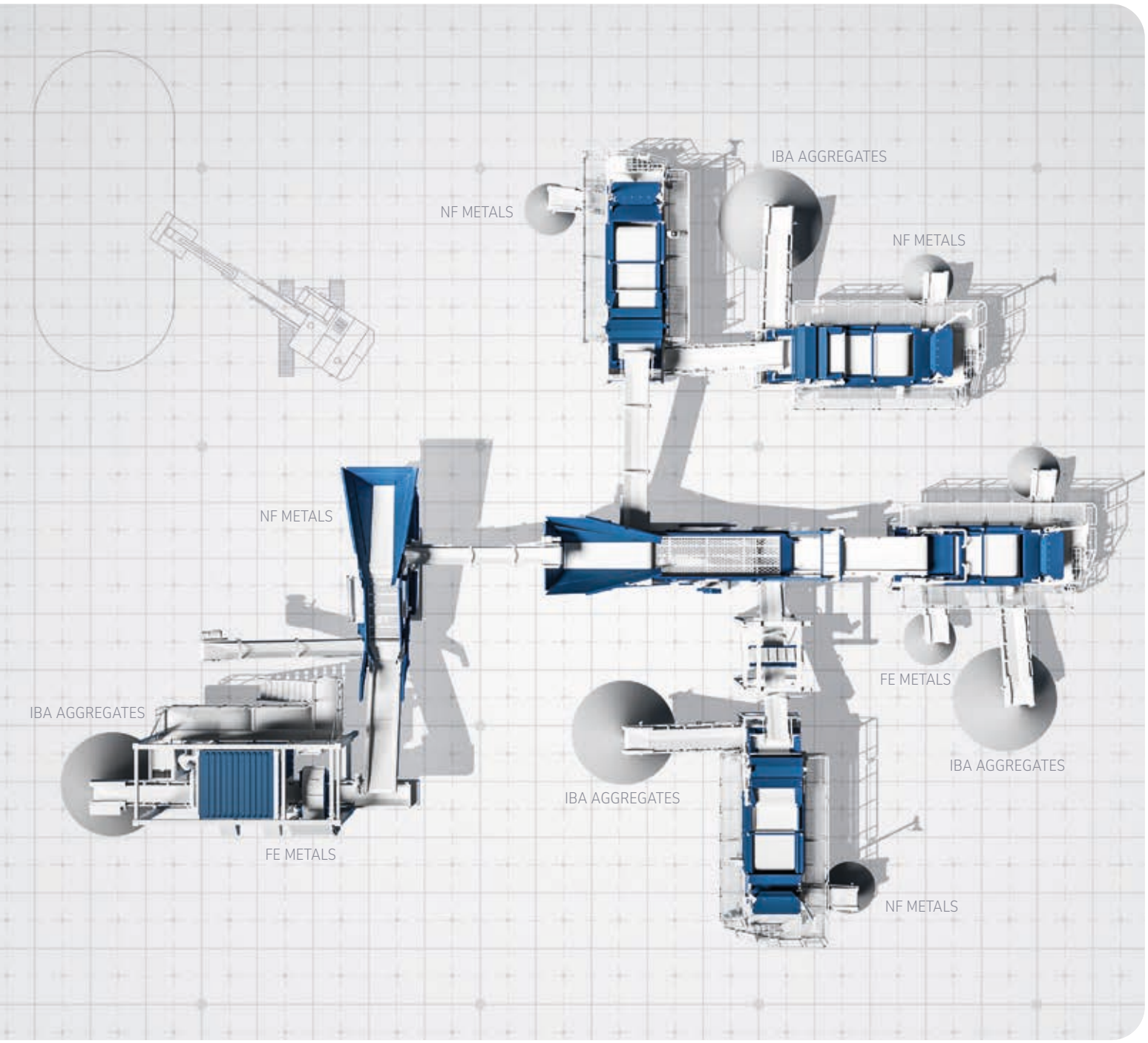


REMEX Mobile IBA processing

Full **recovery** of waste incineration residues

remex.de

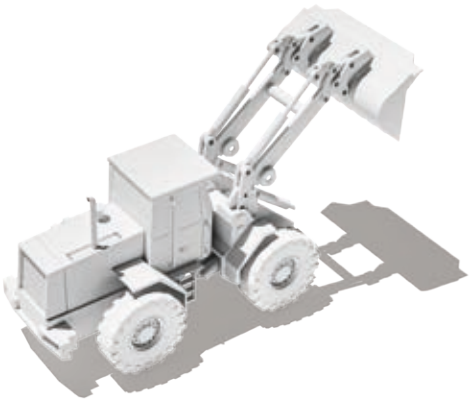
REMEX®
WORKING FOR THE FUTURE

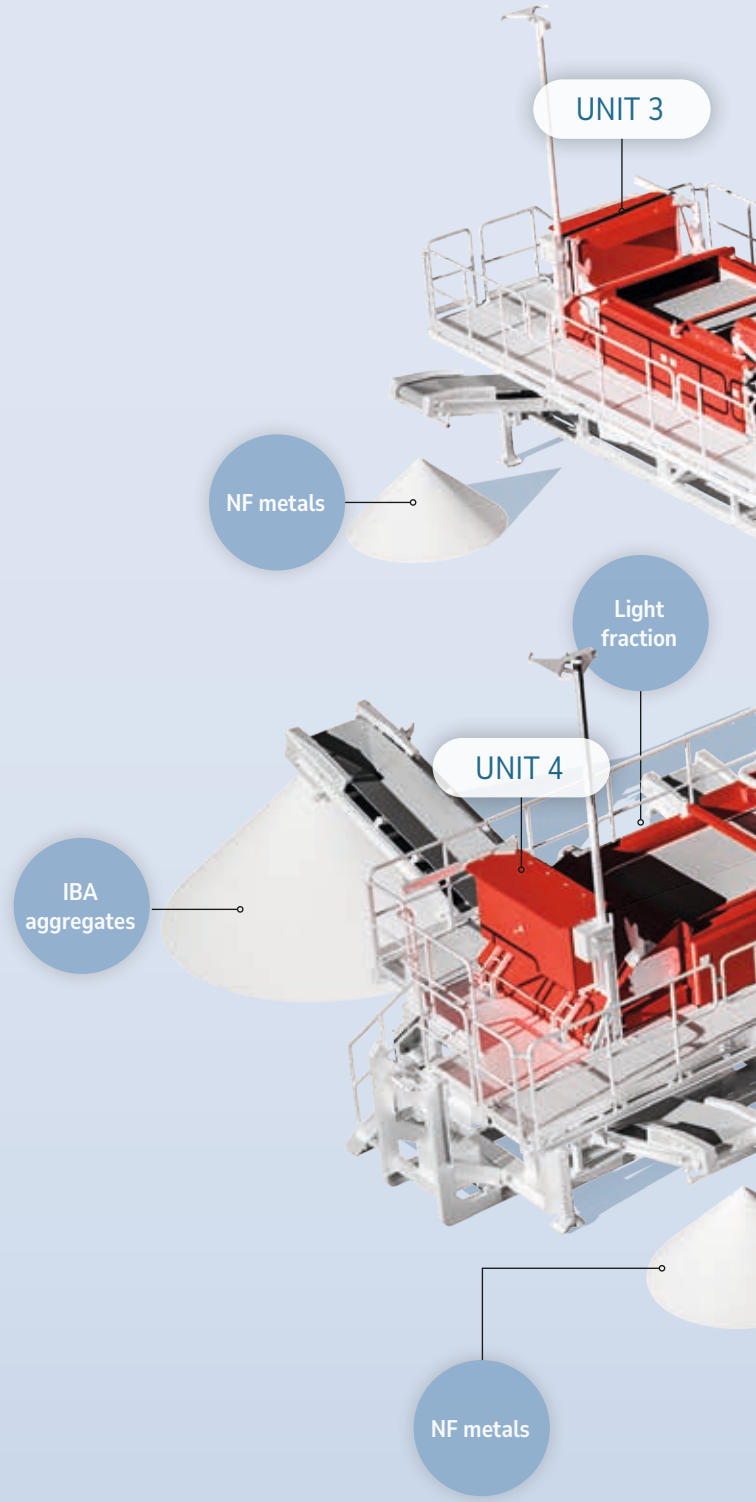
Closing the gap

Worldwide, policy makers extend regulations to enforce a full circular economy. Many countries, cities and regions have already set out binding timelines and metrics. Requirements include bans on landfilling untreated waste and reduction of primary material extraction. Taking into account municipal solid waste as a valuable resource is key to complying with circularity principles.

Indispensable material for a circular economy
Numbers and capacities of Waste-to-Energy plants globally are growing. Thermally treating waste not only produces energy but also reduces the corresponding waste stream to a quarter of the initial volume resulting in bottom ash. It also makes possible the recovery of its metal content concealed in waste, often as composite material. Downstream in the value chain is where REMEX comes into play.

Our commitment: Zero Waste
Our recycling services for IBA ensure that all valuable resources from incineration bottom ash are recycled and marketed at optimum rates for the benefits of our customers – the fine and coarse fractions of ferrous and non-ferrous metals as well as the mineral fraction. Unique in the industry: our know-how and long-standing experience in regard to the production of secondary aggregates from IBA. We make sure that the mineral residues are turned into qualities that can be used in national construction as well as in international recovery measures.





Units

Material outputs

NF: Non-ferrous
FE: Ferrous
IBA: Incinerator bottom ash
IBAA: IBA aggregates

Overband magnet
Sorting of ferrous metal components from coarse and mid-size IBA fractions; further magnets can be added

UNIT 5

UNIT 2

UNIT 1

FE metals
> 40 mm

UNIT 1

IBA
aggregates

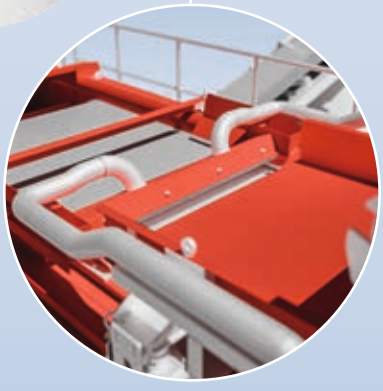
UNIT 2

FE metals

UNIT 2

FE metals

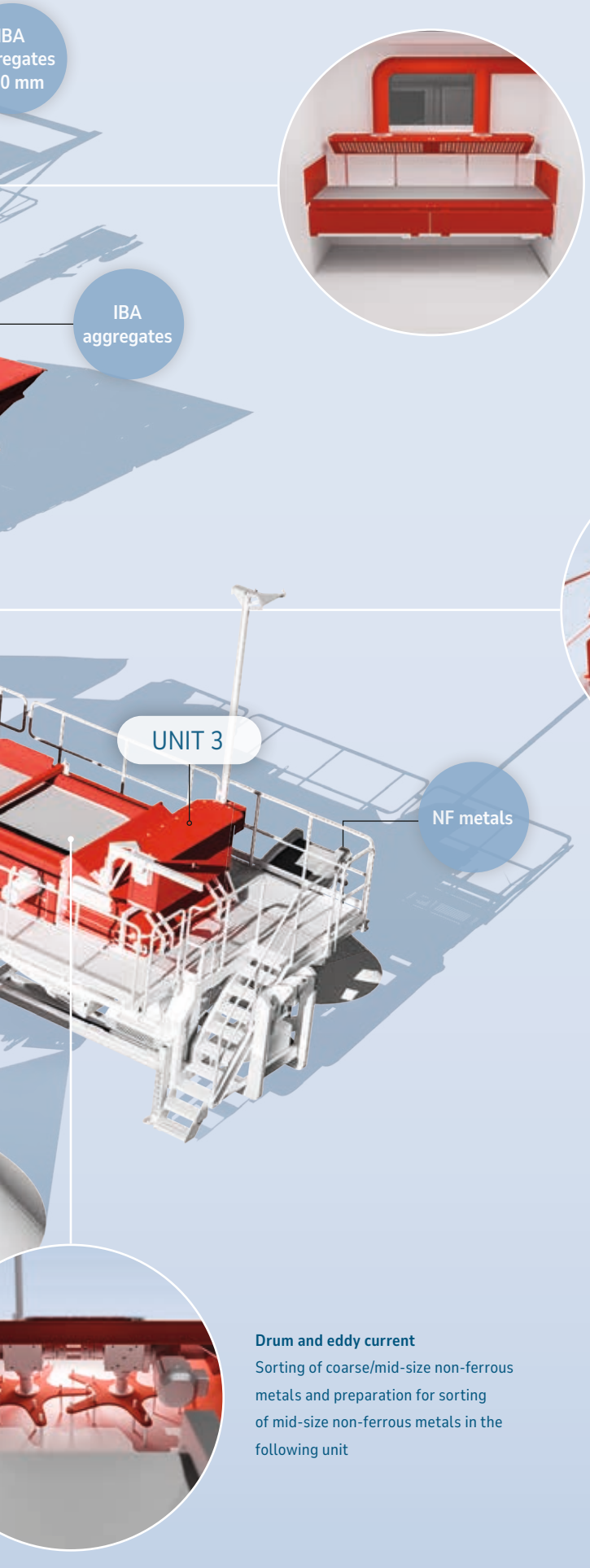
UNIT 3



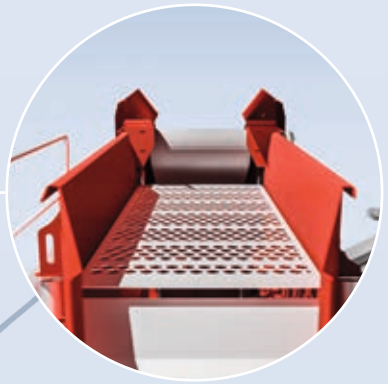
Eddy current and airknife
Separation of dust-like particles and sorting of fine non-ferrous metal mix

NF metals

IBA
aggregates



Manual sorting
Sorting of valuables and impurities of different physical character such as films, cookware or wood



Sieving
Segregation of coarse, mid-size and fine IBA fractions to enable optimum sorting effects downline

Drum and eddy current
Sorting of coarse/mid-size non-ferrous metals and preparation for sorting of mid-size non-ferrous metals in the following unit

Customised to your needs

Our processing solution is based on a modular mobile concept that can be easily shipped, erected and installed – and is available at short notice. Like a typical stationary IBA treatment plant, the mobile facility includes the following set-up:

- Screening units with integrated feed hopper (UNIT 1)
- Overband magnet separators (UNIT 2)
- Eddy current separators (middle and fine fraction) (UNIT 3)
- Eddy current separators including airknife (UNIT 4)
- Handsorting station (UNIT 5)

All components are designed and manufactured to perfectly fit together by capacity, size and efficiency. The facility is constructed in separate units, easily transported to and operated at a dedicated site. Details are defined and provided individually during technical clarification.

REMEX recycling expertise

REMEX is the specialist for the professional management of mineral waste residues from construction, industry and municipal solid waste incineration. Based in Düsseldorf, Germany, our group of companies operates more than 75 sites, serving private as well as public customers in Europe and Asia.

International full-service waste management
With our extensive knowledge of cross-border business activities, we provide a complete scope of services from national and international logistics, processing and recycling to subsequent recovery. In regard to non-recyclables and hazardous waste streams, our portfolio includes disposal capacities above and below ground.

Proven IBA partner
REMEX is the leading market player in Germany, the Netherlands, Belgium, Luxemburg and Singapore in the processing of incinerator bottom ash (IBA) from Waste-to-Energy (WtE) plants. REMEX' unique selling points include the continuous development of pioneering recycling technologies, extensive market know-how, the management of all related by-products and the long-standing expertise in operating IBA treatment facilities. Our IBA processing concepts aim at separating the individual components/resources contained in the bottom ash to precision, further improving the quality of the recovered materials, thus allowing for full circularity to become reality.

IBA BUSINESS IN NUMBERS

The 2025 figures of our IBA business segments

275 mil. EUR
IBA business turnover

3.0 mil. t
of IBA contracted and treated

1.8 mil. t
of certified IBA aggregates produced

> 300,000 t
of metals sorted and recycled

Stationary facilities

Mobile facilities

For the full overview of REMEX business activities and key numbers visit > **profile.remex.de**

Recycling qualities enabling full recovery

SECONDARY AGGREGATES

Regulatory framework
Compliance with individual market and environmental regulations is the prerequisite for the reuse of IBAA. Technically comparable to primary aggregates, IBAA recovery options are driven by environmental considerations, mainly the protection of ground and groundwater. With the implementation of a comprehensive and proven quality control system, we make sure that each single IBA feedstock is processed and recovered in accordance with standards corresponding to the specific recovery measure.

Further processing for optimum applicability
Apart from our mobile processing options, we operate several stationary plants in Europe and Asia. At these plants, we are able to give aggregates qualitative upgrades. Additional eddy current separators for smaller fractions plus MERIT technology and the options for washing IBA enable not only cleaner IBA for high-end use, but also once more recover additional non-ferrous metal fractions. **> remex-processing.com**

International marketing and branding
REMEX markets the produced quality controlled IBA aggregates under the international GRANOVA brand. Our references span from earthworks and road construction to concrete products, landfill safety measures and embankments for noise and sight protection and stabilisation. Furthermore, we support R&D projects in regard to production application such as cement, asphalt, bricks and ceramics. **> granova.remex.de**

Specialised services to complete the circle

Our consultancy services include sharing international best practice on environmental and technical regulations. This is amended by the implementation of a systematic quality control routine for both aggregates and metals. It also extends to all there is to know about waste legislation, thus enabling optimum regional as well as international recovery of all resources contained in IBA.

Environmental benefits of IBA aggregates

Resource protection

0.55 m^3

avoided extraction per tonne of IBAA recovered
(assuming raw material density of 1.8 t/m^3)

Landfill reduction

1.0 t

avoided disposal per tonne of IBAA recovered

FERROUS METALS

From fine to coarse

Ferrous (scrap) materials recovered by us in the processing of bottom ash can be sold to local and regional metal recycling companies. However, dependent on the current market conditions, prior cleaning and sorting, especially of fine scrap, can relevantly increase the market value. This is why we operate additional processing plants for scrap from IBA, one of which is located in the Netherlands, enabling the recovery of ferrous copper-free particles as small as 6 mm. The cleansed recycling metals are market-traded as they can be used directly in various fractions in the steel industry.

Climate benefit from secondary ferrous metals

1.75 t CO_2-eq.

per tonne of aluminium recovered

NON-FERROUS METALS

Reclamation down to the last grain

Non-ferrous metals are recovered using eddy current technology. The specialised facility at HEROS Sluiskil, for example, even recovers metal particles smaller than 1 mm. Non-ferrous metals such as aluminum, copper, brass, zinc, and stainless steel are carefully separated from each other based on density by passing the concentrates over air tables. The result is a fine, high purity metal fraction, which can be directly used at the smelting plant. **> heros.remex.de**

Separating light and heavy metals

While the dry processing technology at HEROS is used for fine non-ferrous metals, its subsidiary Dolphin Metal Separation B.V. deploys high-quality technologies such as sensor separation and robotisation to efficiently and thoroughly process coarse non-ferrous concentrates through wet processing into directly re-usable products. The focus lies on the production of aluminum, stainless steel, copper, brass and zinc. **> dolphin.remex.de**

Climate benefit from secondary NF metals

12.58 t CO_2-eq.

per tonne of aluminium recovered

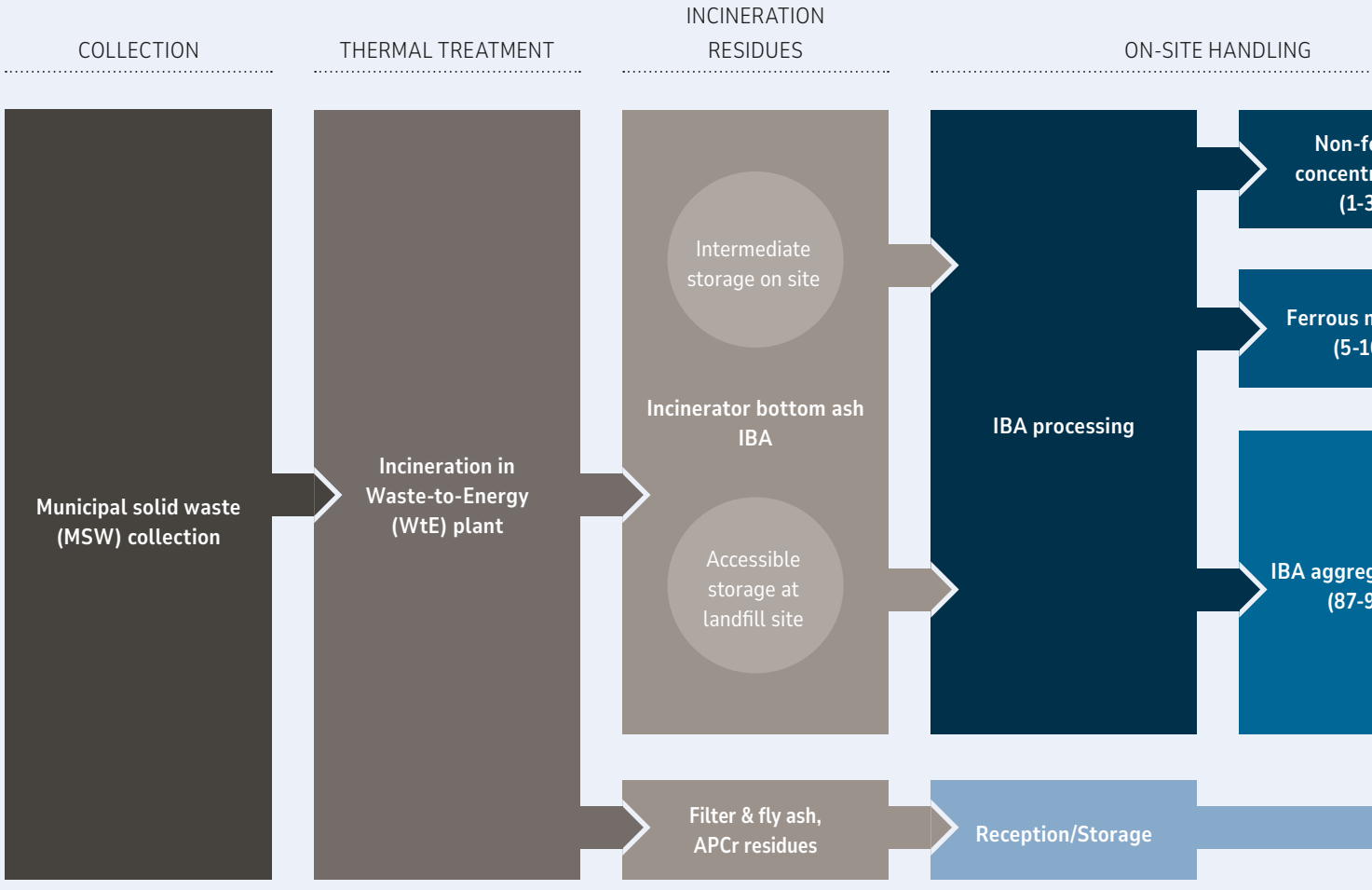
4.76 t CO_2-eq.

per tonne of copper recovered

Partnering with REMEX

Circularity starts with us: We are offering all technical and logistical solutions for optimum values from IBA – closing the circle from waste collection and incineration in WtE plants to the recovery of all inherent resources. REMEX services leverage economic and ecological synergies on all sides: Our partnering approach covers the treatment of IBA including plant installation and investment as well as the processing of non-ferrous concentrates from 3rd parties' IBA and the sale and re-use of all secondary materials recovered from IBA.

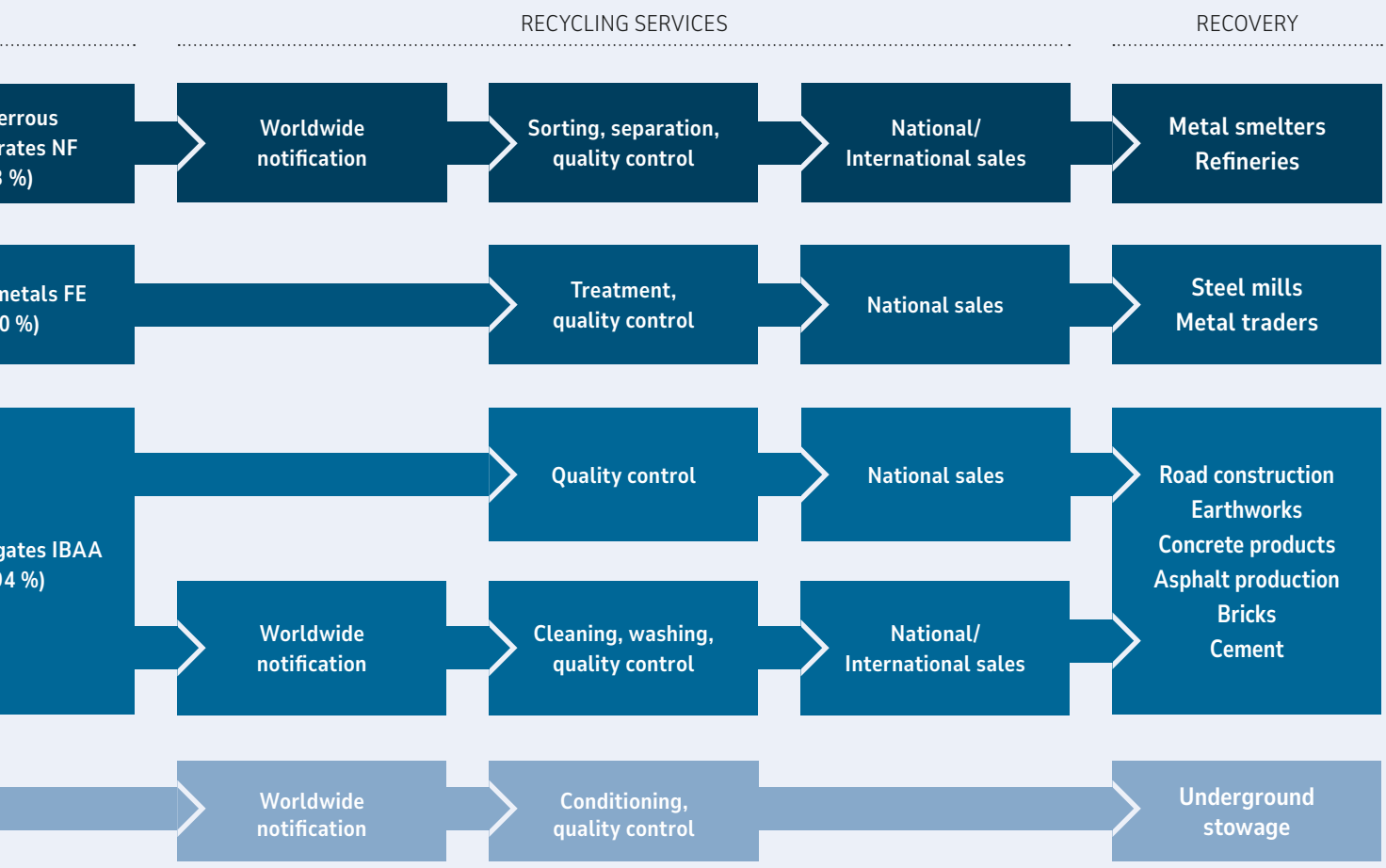
MUNICIPAL SOLID WASTE MANAGEMENT



Access to all group services
REMEX operates nationally and internationally, using its vast network of stationary IBA and metal processing facilities and off-take pathways for IBAA and metals. In addition, our mobile plant business provides flexible IBA processing options at any suitable place worldwide – be it next to a WtE plant, at a landfill site or any other permitted waste treatment site. In terms of hazardous waste residues such as fly ash or air pollution control residues (APCr), customers additionally benefit from direct access to our group-wide disposal and recovery services underground.

Quality management system
To meet perfect material qualities at any stage of the value chain, REMEX takes over responsibility for sampling and analysing IBA as well as ferrous and non-ferrous metals at every stage of the process. As part our quality control measures, we certify compliance with the relevant technical and environmental parameters. Our material experts are engaged at the very early stage of a project, identifying the potential of the material and a suitable treatment strategy for optimum resource recovery.

REMEX VALUE CHAIN FOR MSW INCINERATION RESIDUES



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WORKING FOR THE FUTURE

REMEX specialises in the professional management of mineral waste and the recovery of resources it contains. Through its recycling activities, the company has a proven track record in reducing the consumption of gravel, sand and natural stone and improving the carbon footprint of metal production. REMEX is an international leader in the development of innovative recycling technologies and ranks among the largest manufacturers of secondary aggregates in Europe. REMEX is a member of the REMONDIS Group, one of the world's leading recycling, service and water companies.

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