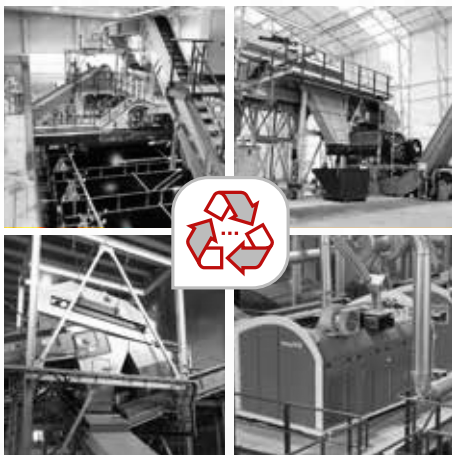




## ADVANCED SOLUTIONS FOR WASTE TREATMENT PLANTS

from concept to implementation



RECYCLING



WASTE TO FUEL



TURN INTO GREEN

# YOUR PARTNER FOR TURNKEY PLANT SOLUTIONS



## REDWAVE WASTE COMPETENCES AND TECHNOLOGIES



### Process Consultancy

- Definition of requirements
- Sorting tests
- Feasibility study
- Preliminary planning



### Detailed Engineering

- Classification of technical interfaces
- Establishment of mass balance
- Technical specification of plant components
- Process and instrumentation diagram
- Detailed plant engineering
- Supporting services for the plant operator (planning, supervising)



### Project Management

- Procurement
- Coordination of all parties involved
- Project scheduling



### Manufacturing – Supply of equipment

- Quality assurance
- Factory acceptance tests of third-party supplier deliveries
- Preparation of operation manuals
- Packing and shipment



### Installation – Commissioning

- Site coordination
- Mechanical and electrical installation
- Commissioning
- Training of plant personnel
- Plant implementation as general constructor



### Customer Service

- Remote access for support
- Service contracts
- Preventive services
- Service hotline

### MECHANICAL TREATMENT



#### RECYCLING

- Max. recovery of tailored RDF for WtE-systems
- Recovery of recyclables:
  - ferrous and non-ferrous metals
  - plastics
  - glass, stones, ceramics
- Reduction of landfill disposal
- REDWAVE in-house sensor based sorting machines

### MECHANICAL-BIOLOGICAL TREATMENT



#### WASTE TO FUEL

- Max. recovery of clean dry SRF & recyclables
- Tailored systems for:
  - coal co-firing
  - advanced WtE-technologies (gasification)
- Minimisation of landfill disposal
- REDWAVE in-house sensor based sorting technology
- REDWAVE biocell technology for biological tunnel drying

### IN-VESSEL COMPOSTING / STABILISATION



#### TURN INTO GREEN

- Aerobisation and composting of digestate
- Source separated organics composting
- Sewage sludge composting
- REDWAVE biocell technology for tunnel composting for sanitisation and stabilization of green waste



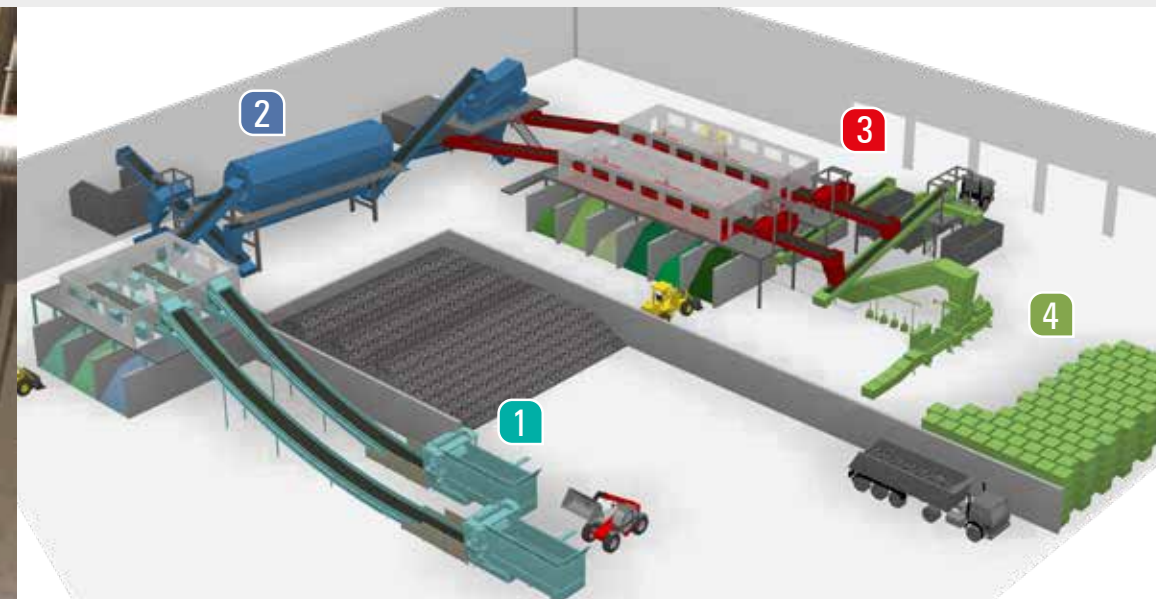


# MECHANICAL TREATMENT

## FOCUS

- Loosen up and preparation of the feedstock for the downstream sorting
- Separation of recyclables such as metal, paper, cardboard, plastics etc.
- Separation of contaminants such as PVC, aggregates etc.
- Production of RDF/SRF according to the client's specification
- Reduction of the materials to be landfilled

## BASIC SOLUTIONS



### 1 PRE-TREATMENT

Preparation for the downstream process

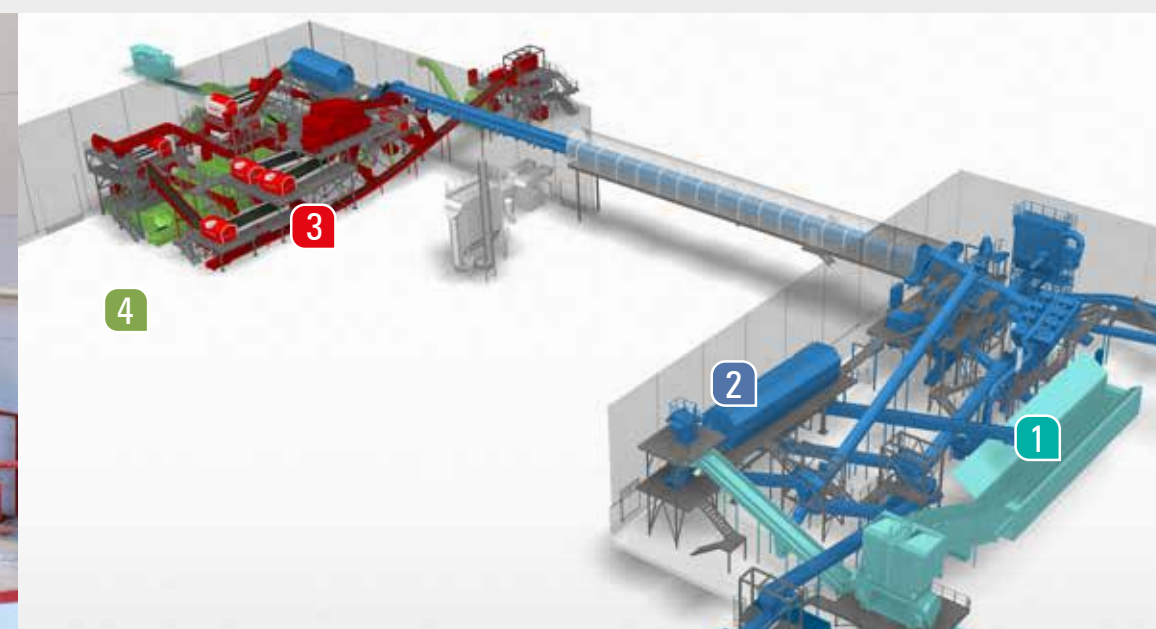
- Shredding
- Ferrous separation
- Pre-sorting

### 2 MATERIAL CLASSIFICATION

Processing of specific fractions according to their physical properties

- Shredding
- Screening
- Wind shifting

## ADVANCED SOLUTIONS



### 3 SEPARATION

Recovery of recyclables and separation of impurities

- Sensor based sorting
- Ballistic separation
- Magnetic sorting
- 

### 4 PACKAGING / LOADING

Packing and transport

- Loose or compacted
- Baled and wrapped
- Soft pelletised





# MECHANICAL BIOLOGICAL STABILIZATION

## FOCUS

- Loosen up and preparation of the feedstock for the downstream biodrying and sorting
- Separation of recyclables such as metals, paper, cardboard, plastics etc.
- Biodrying to:
  - improve the sorting efficiency
  - increase the calorific value
  - mass loss due to the reduction of the water content
  - good storage capability because of the biological stabilisation
- Separation of contaminants such as PVC, aggregates etc.
- Production of SRF according to the client's specification
- Reduction of the material to be landfilled

## 1 PRE-TREATMENT

Preparation for the downstream process

- Shredding
- Ferrous separation
- Pre-sorting

## 2 BIOLOGICAL DRYING

Reduction of the MSW water content up to <20%

- Increase of the calorific value
- Biological stabilization

## 3 MATERIAL CLASSIFICATION

Processing of specific fractions according to their physical properties

- Shredding
- Screening
- Windshifting

## 4 SORTING

Recovery of recyclable materials, separation of non-combustible materials

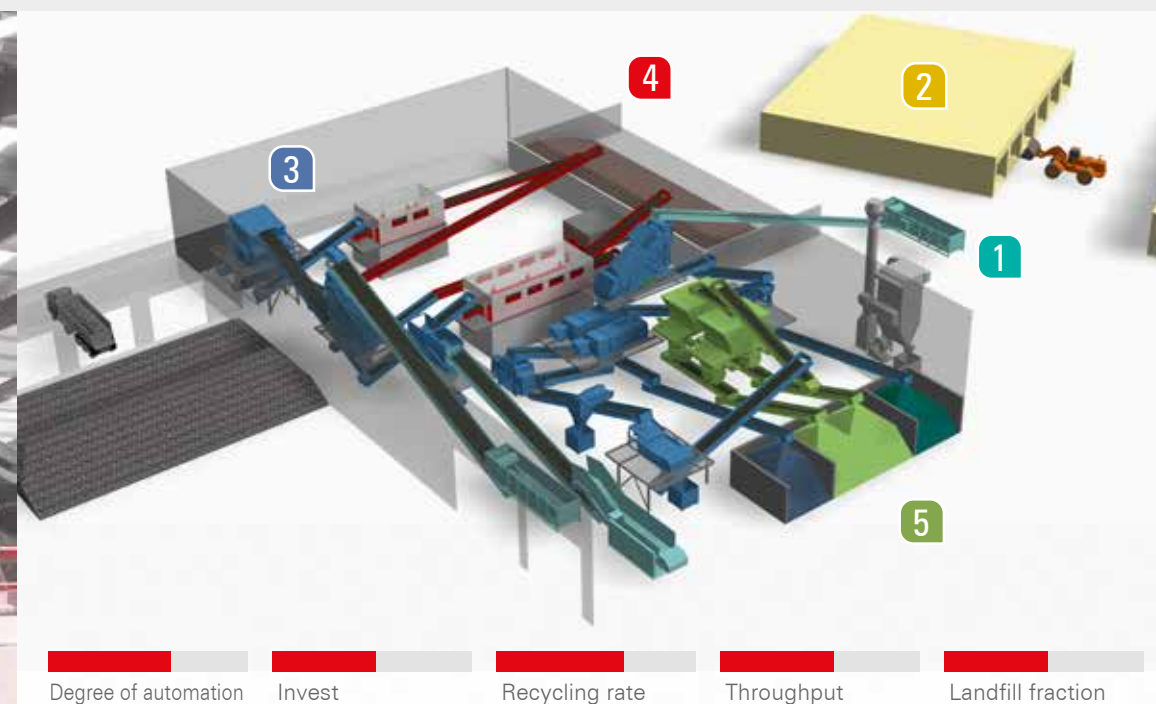
- Sensor-based sorting
- Ballistic separation
- Magnetic separation
- Windshifting, density separation

## 5 PACKAGING / LOADING

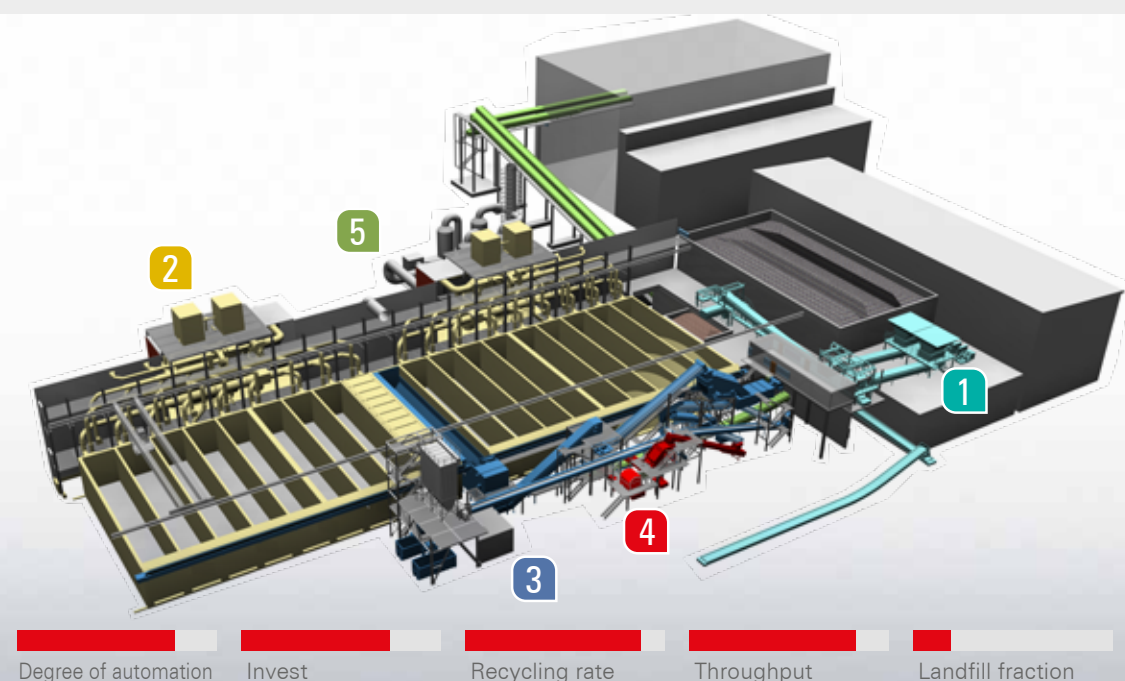
Packing and transport

- Loose or compacted
- Baled and wrapped
- Soft pelletised

## BASIC SOLUTIONS



## ADVANCED SOLUTIONS

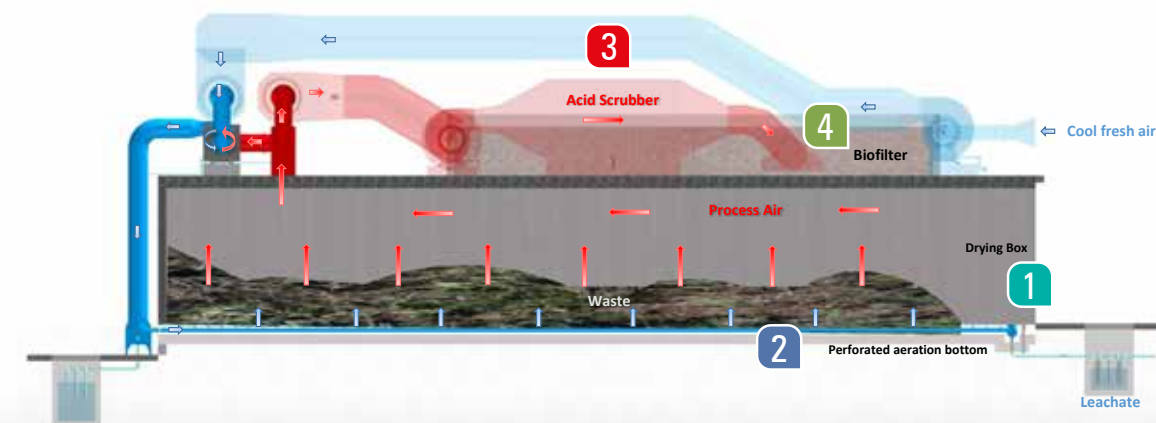
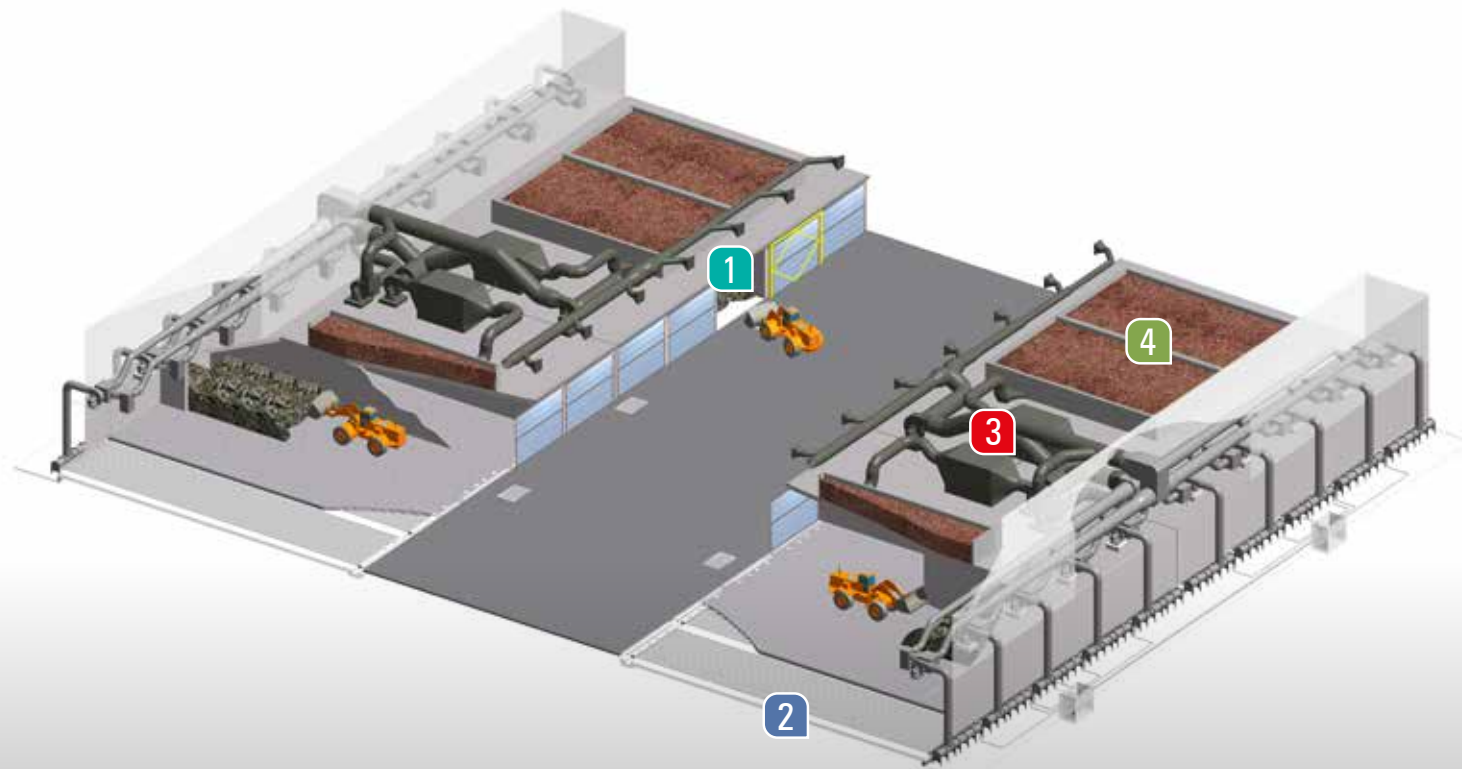






# IN-VESSEL COMPOSTING / STABILISATION

## DRYING AND COMPOSTING



### BIOLOGICAL STABILISATION (DRYING):

#### Benefits:

- Unlike thermal drying no fossil fuel or external heat is required (low power consumption)
- Landfill diversion rate greater 85% achievable
- Inerts can be used as landfill cover
- Low space requirements due to short retention time of the waste inside the biodrying unit (4-10 days)
- Outgoing products meet industrial requirements (SRF, metals, recyclables)
- SRF is recognised as a quality fuel for thermal processes (coal fired power plants, cement kilns etc.)
- Proven and reliable technology

### IN-VESSEL COMPOSTING:

#### Benefits:

- Optimised microbial environment
- Enhance natural breakdown and speed up composting compared to conventional composting systems
- Reduce organic waste
- Convert the remaining organic waste into compost
- Sanitisation of the feedstock guaranteed
- Enclosed system
- Odour control according to European requirements
- Recycling of condensate

#### 1 BIOCELL DRYING BOX

- Enclosed system
- Monitored system
- Lowest maintenance
- Highly economical

#### 2 AERATION FLOOR

- Forced ventilation by tailor-made aeration floor
- Special arrangement of the nozzles to allow for an optimal ventilation
- Inverter controlled air flow



#### 3 ACID SCRUBBER

- Fines and ammonia reduction of the exhaust air
- Humidification of the air flow prior to the biofilter
- Low maintenance
- High reliability

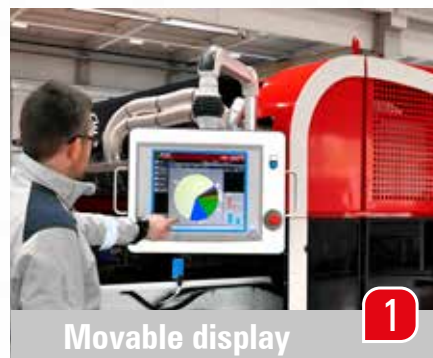
#### 4 BIOFILTER

- Completely natural process
- Low maintenance
- Low energy costs
- High reliability
- Long duration of the biofilter media



# The new generation of INTELLIGENT<sup>®</sup> sorting

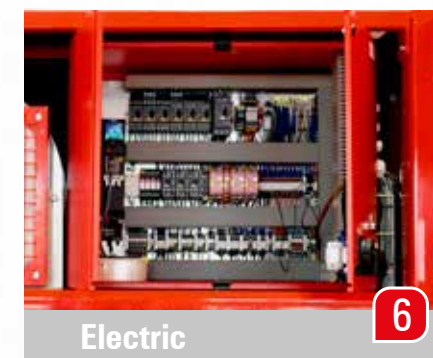
## OPTICAL SORTING FOR RECYCLING AND WASTE



Movable display



Illumination



Electric



### FOCUS

- Sorting, recovery and quality improvement of recyclables
- Reduction of chlorine content in RDF/SRF
- Enrichment of combustibles



Movable display

Illumination

Valve box pneumatically movable

Rotating divider

Plate for easy maintenance

Cooling

Electric

### SORTING APPLICATIONS

- **Municipal Solid Waste**  
Recovery and sorting of:
  - plastics
  - paper and board
  - combustible materials
  - metal (ferrous/non-ferrous)
  - glass (different material and/or colour)
- **RDF/SRF**
- **Construction and Demolition Waste**
- **Plastics**  
Sorting of lightweight packaging:
  - PET (different material and/or colour)
  - HDPE + LDPE
  - PP/PS
  - PVC
- **Paper**
  - cardboard
  - news & pams
  - tetra

### GENERAL DATA

- Execution: 2-way-system or 3-way system

### REDWAVE SORTERS

- Cutting-edge sorting technology
- Highest reliability and efficiency
- Highest sorting accuracy at high throughputs
- Increased value of the material, increased profit
- Instant online support
- Ready for industry 4.0



### BENEFITS OF THE NEW REDWAVE NIR

- **Simple and short-term implementation on site**
  - Place – connect – start
  - All-in-one black box design
    - no wiring on surface
    - flat design
- **Electrical improvements**
  - Lower energy consumption
  - Improved energy saving light system
  - New designed temperature management
- **Improved maintainability**
  - Floor flap for activities inside
  - Easy access, maintenance-friendly
  - Pneumatical swiveling of valvebox
  - Enhanced belt exchange
  - Flexible interface
- **Maximal flexibility**
  - Easy upgrade from 2-way to 3-way system
  - Sensor fusion (NIR/RGB/METAL)



## Locations



### 1 HEADQUARTERS – Austria

REDWAVE  
office@redwave.com

### 2 SUBSIDIARY – Germany

REDWAVE Waste GmbH  
office-germany@redwave.com

### 3 SUBSIDIARY – US

REDWAVE Solutions US LLC  
office-us@redwave.com

### 4 SUBSIDIARY – Singapore

REDWAVE Solutions Pte. Ltd.\*  
office-singapore@redwave.com

### 5 SUBSIDIARY – China

REDWAVE Environmental  
Science & Technology (Shanghai) Co. Ltd.  
office-china@redwave.com

REDWAVE, a division of BT-Wolfgang Binder GmbH, Wolfgang Binder Str. 4, 8200 Eggersdorf bei Graz, Austria  
Tel.: +43 3117 25152 2200, E-Mail: office@redwave.com, www.redwave.com