Welcome

# RDF preprocess optimization and efficient handling

# Westeria

## Key Facts

Ostbevern **Germany**

Factory **16.745 m²**

Technology Center **720 m²**

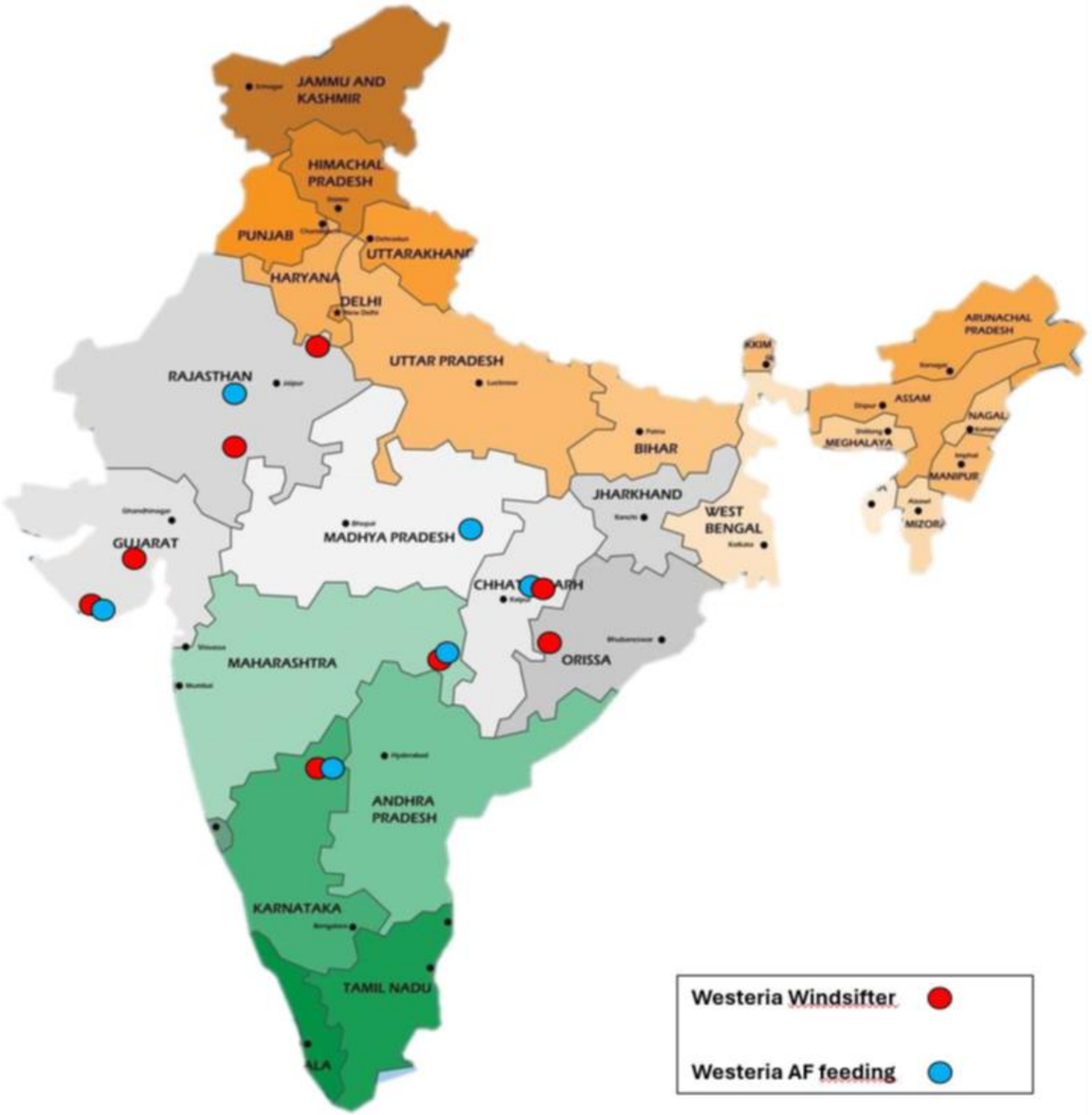
Founded in
**1956**

Employees
**145**

Turnover
**45 M €**

# Westeria in India

- Joint Venture with „Sales & Service Partner - **Kiron**
- Provider of key recycling machines and complete solutions
- Local service provider for spares, technical support, assembly & maintenance
- Manufacturing and Engineering support
- First installations in 2013 for ACC and AMBUJA
- Main markets in solid waste handling and separation



# Products

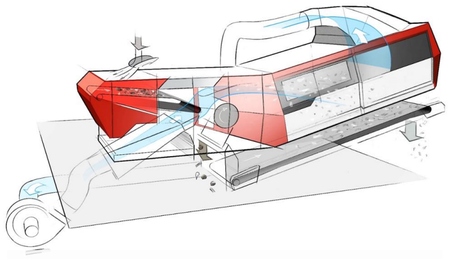
## WINDSIFTING

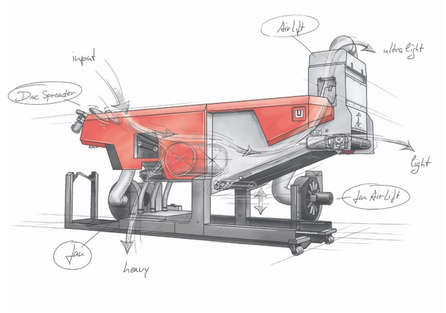
AirStar® evolution

AirBasic®

AirLift®

AirLift® move

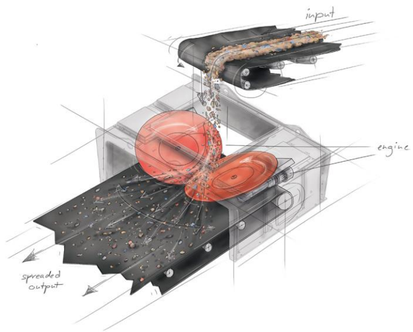


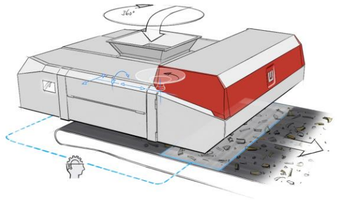



## SPREADING

DiscSpreader®

DiscSpreader® automove

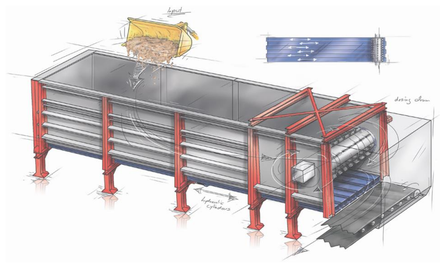


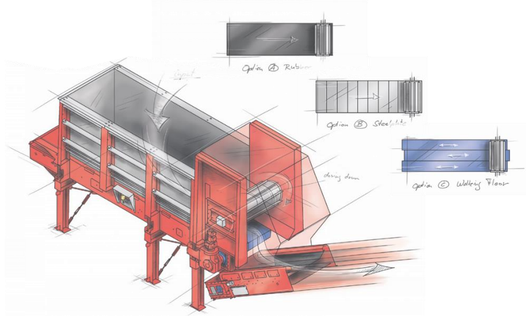



## DOSING

MovingFloor®

MultiFeeder®





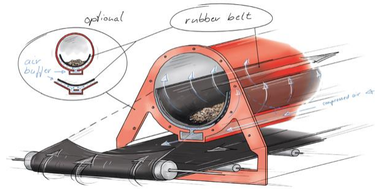
## CONVEYING

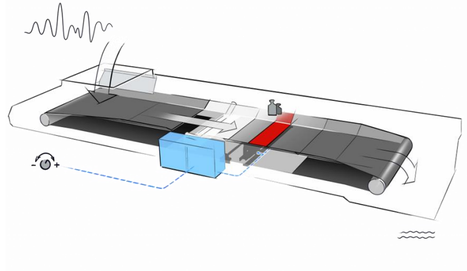
PipeCon®

DoseCon

FlatCon®,UCon®

ChainCon, BendCon



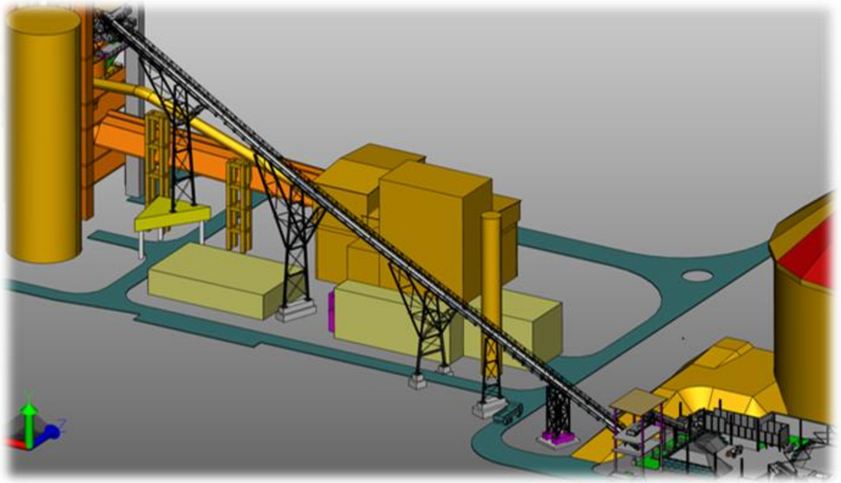



# Turnkey Engineering

- Internal engineering department
- 3D planning of Westeria machines in plants
- Creation of "walk through" animations
- Processing of all common file formats
- Integration of 3rd party equipment
- Complete solutions for customers
- Responsibility in one hand
- Selection depending on targets and local conditions

## RDF Preparation

## RDF Handling



# Reasons for Alternative Fuels

## Cost Reduction

RDF is generally more cost-effective than conventional fossil fuels. Using RDF in cement production can lead to substantial savings on fuel costs. Additionally, cement plants or RDF production facilities may receive a tipping fee for accepting specific types of waste, transforming a potential disposal expense into a source of income

## Waste Management Strategy

Using RDF significantly diverts waste from landfills, helping to tackle waste disposal issues while also minimizing the environmental impact associated with landfills.

## Reduction in Emissions

RDF is produced from non-recyclable waste materials and can replace fossil fuels like coal, resulting in a substantial decrease in $CO_2$ emissions.

# Challenges for Alternative Fuels

## Waste Quality & Consistency

Variations in waste quality affect the efficiency and environmental performance of RDF. For both producers and users, it is crucial to maintain high feedstock quality to ensure operational success. Furthermore, economic viability hinges on managing production costs, securing long-term contracts, and keeping RDF competitive with traditional fuels

## Circular Economy Integration

To align with circular economy principles, RDF systems must be adaptable to accommodate various waste streams and respond to local market and regulatory requirements. This flexibility in processing and application enables RDF to play a key role in minimizing waste and enhancing resource efficiency.

## Environmental Impact and regulations

The success of RDF relies on adherence to local laws and environmental regulations. Incentives for effective waste treatment are essential for minimizing landfilling and promoting RDF usage. Additionally, maintaining low emissions during RDF combustion, particularly with diverse waste compositions, presents a significant environmental challenge.

# Actual RDF production in India

## Direct shredder feeding (single shaft shredders)

PROS

- Minimum amount of machines and investment
- Defined granulometry
- Lowest power consumption

CONS

- Unburnable material stays in the stream
- Lower throughput
- Extreme wear of shredder (knives & counter knives) – fast rotating machine

# Actual RDF production in India

## Loop systems (two shaft shredder)

PROS

- Reduced amount of machines
- Higher throughput
- Compact plant design

CONS

- Unburnable material stays in the stream
- Increased operation cost due to relooping and more maintenance
- varying granulometry of output
- High wear of shredder (rewelding)

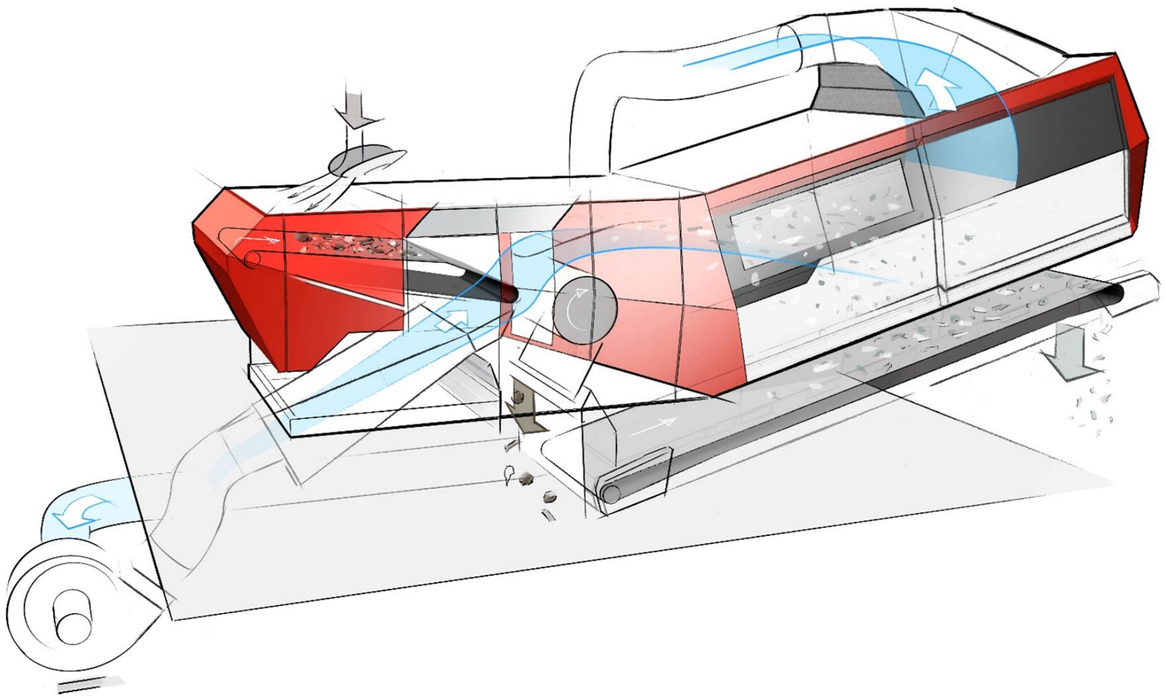
# OPTIMIZATION possibilities – time to make the next step

## Density separation directly on the dumpsite WESTERIA WINDSIFTER AIRBASIC

- Mobile windsifter for heavy fraction removal directly at dumpsite
- Reduced logistic cost (stones)
- Protection of preshredder
- Placement after mobile screens
- Low investment machine

# OPTIMIZATION possibilities – time to make the next step

## Integration in stationary and existing lines WESTERIA WINDSIFTER AIRSTAR



- Efficient removing of all heavy material
  Stones, Glass, Ceramic, Iron
- Precise separation adjustments
- Low maintenance machine
- Highest protection for shredder
- Increased calorific value
- High Throughput

# OPTIMIZATION possibilities – time to make the next step

## Integration in stationary and existing lines WESTERIA WINDSIFTER AIRSTAR

- Efficient removing of all heavy material
  Stones, Glass, Ceramic, Iron
- Precise separation adjustments
- Low maintenance machine
- Highest protection for shredder
- Increased calorific value
- High Throughput

# OPTIMIZATION possibilities – time to make the next step

## Integration in stationary and existing lines WESTERIA WINDSIFTER AIRSTAR

- Efficient removing of all heavy material
  Stones, Glass, Ceramic, Iron
- Precise separation adjustments
- Low maintenance machine
- Highest protection for shredder
- Increased calorific value
- High Throughput

# OPTIMIZATION possibilities – time to make the next step

## Full shredding line

- Efficient Removal of fines
- Possibility of three fraction screening
- Removal of heavies
- Highest throughput
- Best protection of secondary shredder
- Redundancy
- Highest calorific value
- Lowest amount of ash content
- Quality RDF with defined output particle size
- Minimum wear in RDF handling line

# Main causes of failure for feeding line

Design must be adapted to the AF processed

**Some AF is very light (RDF/SRF, biomass)**
- ✓ Large volume need to be handled
- ✓ Accurate feeding - weighing equipment vs weight AF

**RDF/SRF auto-consolidation**
- ✓ Design avoiding bridging (silos, hoppers, chutes etc.)
- ✓ De-lumper or disk screen after storage

**AF with organic fraction are self-heating & sticky**
- ✓ Condensation in wintertime
- ✓ Sticky in wet season

**RDF is often abrasive**
- ✓ Material choice & wear plates
- ✓ Best material preparation







# Main causes of failure for feeding line

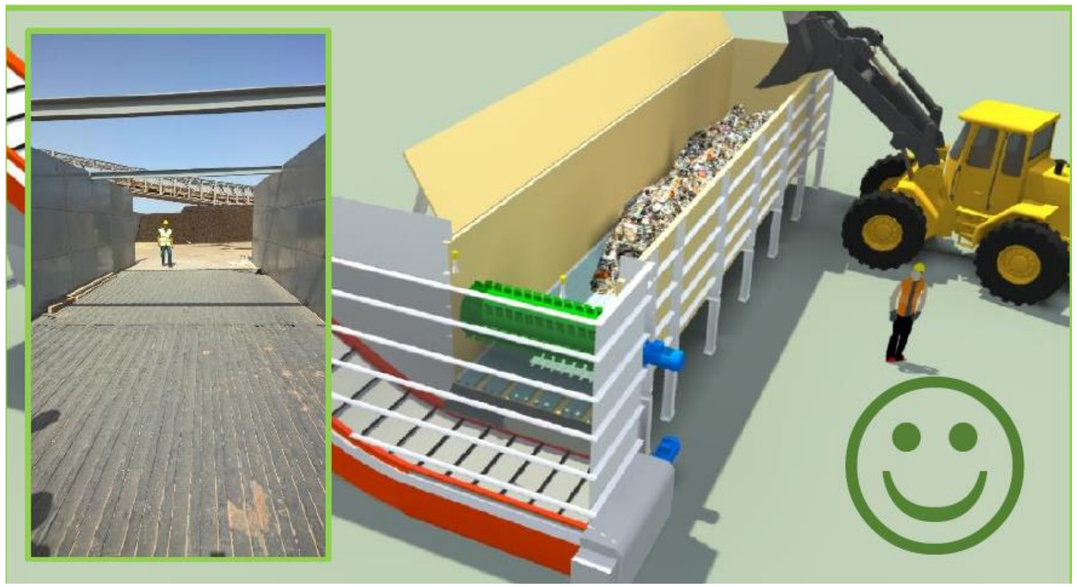
Design must be adapted to the AF processed

**Geometrical design & slopes**
- ✓ Vertical walls & Fully activate storage
- ✓ Limit transfer points
- ✓ Chutes : no angle under 60°

**Managing oversize/ metallic material**
- ✓ Magnetic separation
- ✓ Protection of air supported conveyors

**Long strips could be present**
- ✓ Avoid screws
- ✓ Use Police screen

**Continuous operation**
- ✓ Avoid start/stop
- ✓ Use proper feeding & weighing equipment

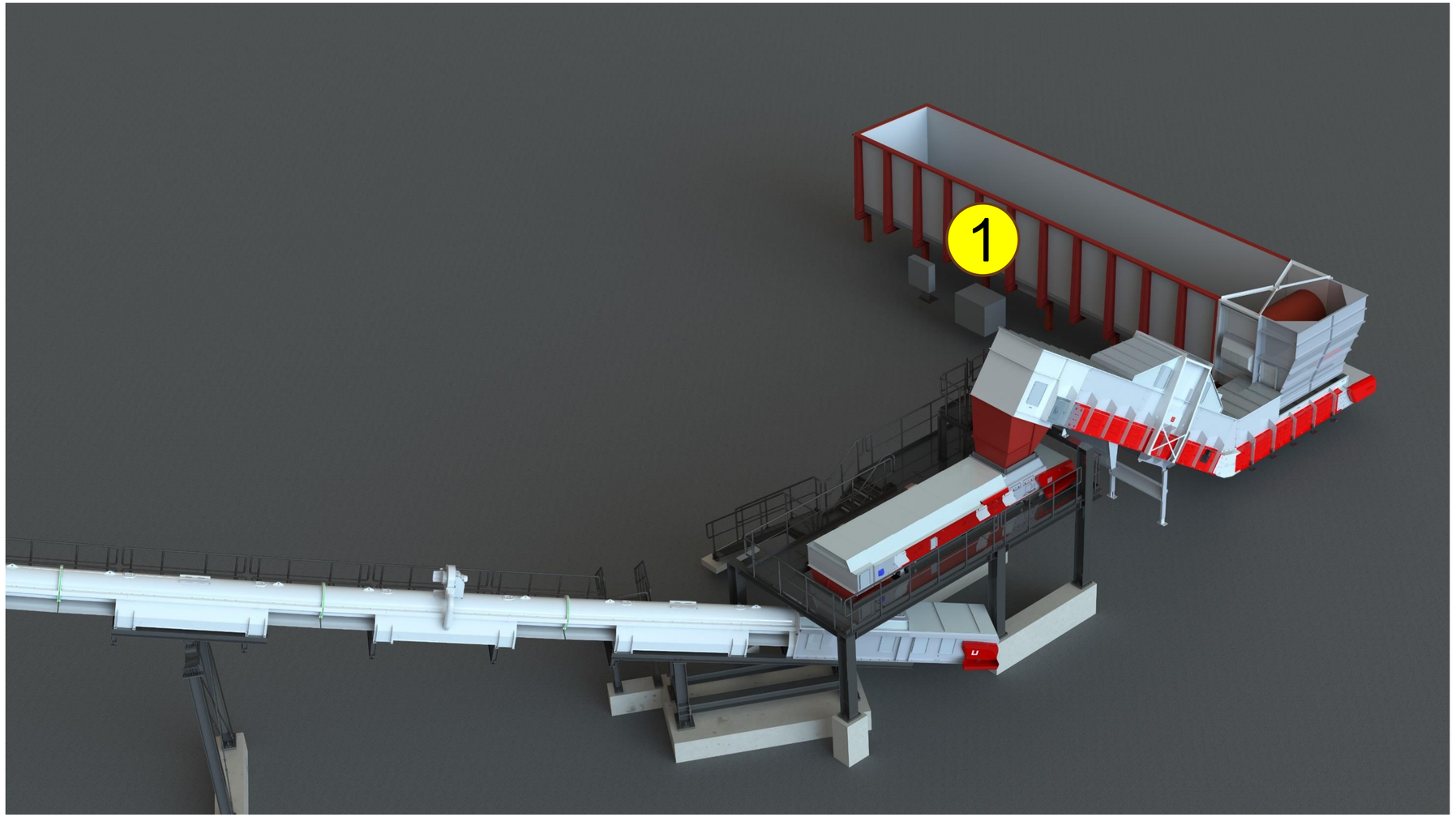


# Westeria AF fine dosing system – MFB (Movingfloor bunker)

Combination of Westeria portfolio

1. **Infeed hopper**

- MFB – Movingfloor bunker
- Storage volume between 20-500m³
- Robust solution
- Low amount of moving parts
- Leveling drum
- Variable loading possibilities
- Steel or concrete walls

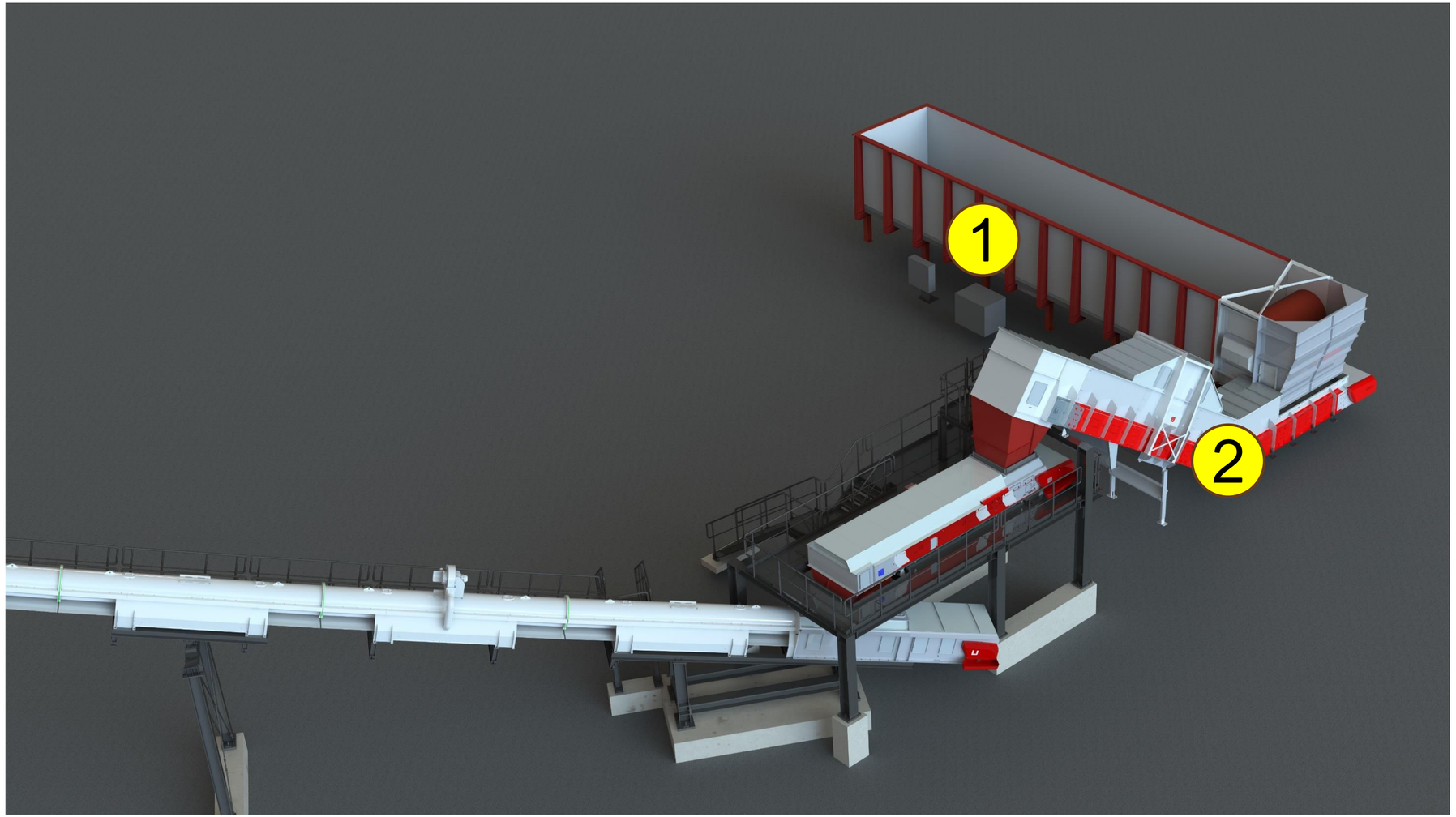


# Westeria AF fine dosing system - ChainCon

Combination of Westeria portfolio

1. Infeed hopper
2. **Volumetric fine dosing**

- Chainbelt conveyor
- Most robust solution
- High torque to discharge MFB load
- Additional leveling drum
- 60° tumble back for smaller RDF
- Radar filling sensor
- VFD driven

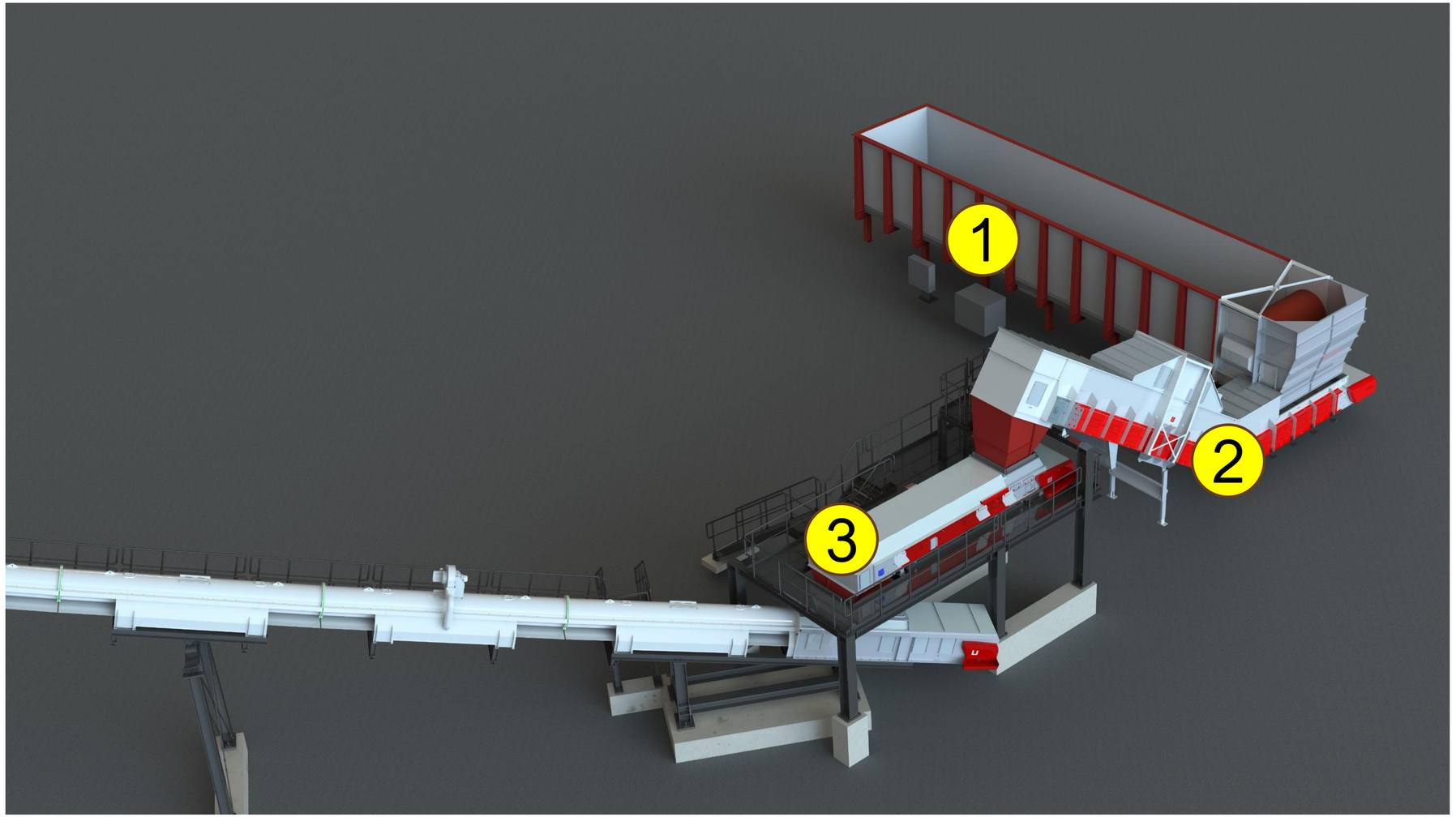


# Westeria AF fine dosing system - DoseCon

Combination of Westeria portfolio

1. Infeed hopper
2. Volumetric fine dosing
3. **Gravimetric fine dosing**

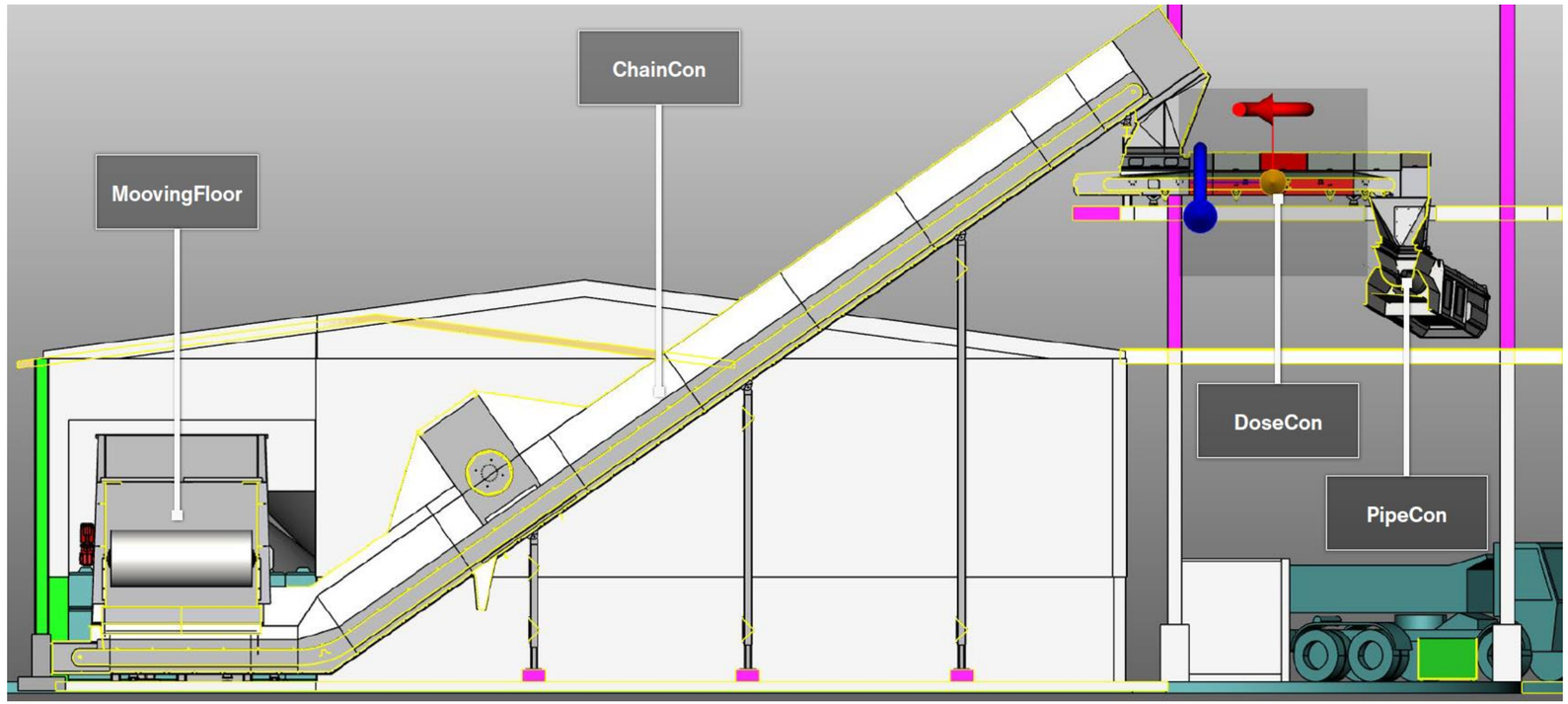
- Strong EP 400/ 3 4:2 belt
- VFD driven
- Integrated control unit
- Laser sensor chute control
- Standardized conveyor modules
- Flexible length dimensioning



# Control & Communication

Precise dosing made easy – Communication is the key

- Simply define the dosage via the control system
- Communication between MFB, ChainCon and DoseCon
- Weighing accuracy +/- 1% (load 75kg/m)

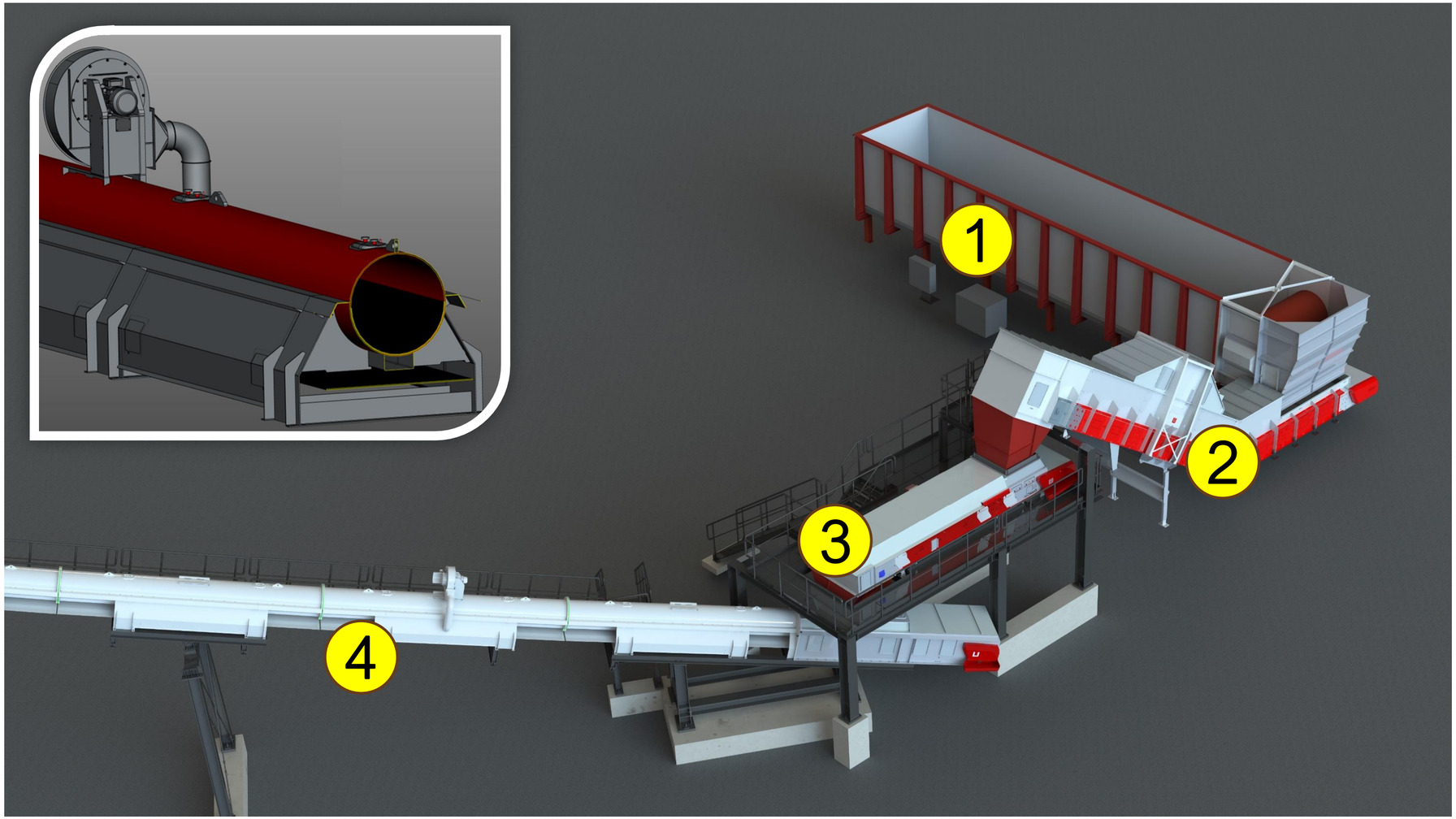



# Westeria AF fine dosing system - PipeCon

Combination of Westeria portfolio

1. Infeed hopper
2. Volumetric fine dosing
3. Gravimetric fine dosing
4. **Air supported transfer**

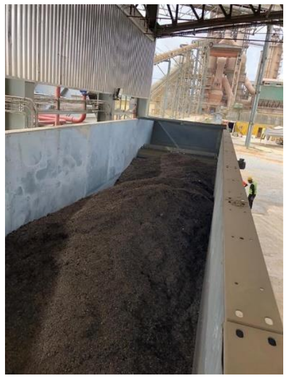
- Self-supporting structure
- Maximized span width between supporting points
- Highest throughput (up to 1000m³/h)
- Weather protection
- Low maintenance (no support rollers)
- Reduced power consumption
- Walkway rec. just on one side



# Alternative fuel feeding - References

## Bangladesh





## Azerbaijan

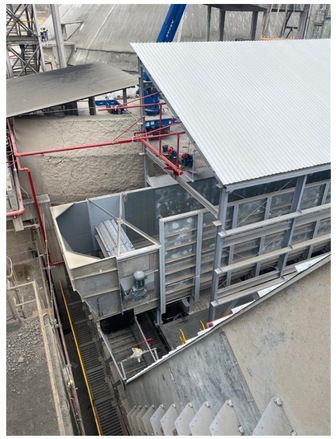


# Alternative fuel feeding - References

Nigeria



Thailand



# Alternative fuel feeding - References

## Egypt



## Denmark


# Thank you for your time

WESTERIA®

*MOVING INNOVATION*


WESTERIA®

**Björn Fahle**
Sales Director

+49 173 3162606

b.fahle@westeria.de



weima | KIRON

**Weima Kiron India Pvt Ltd**

**Pratik Vadher**
**Sales Manager**

**+91-8454833940**

pratik.vadher@weimakiron.in