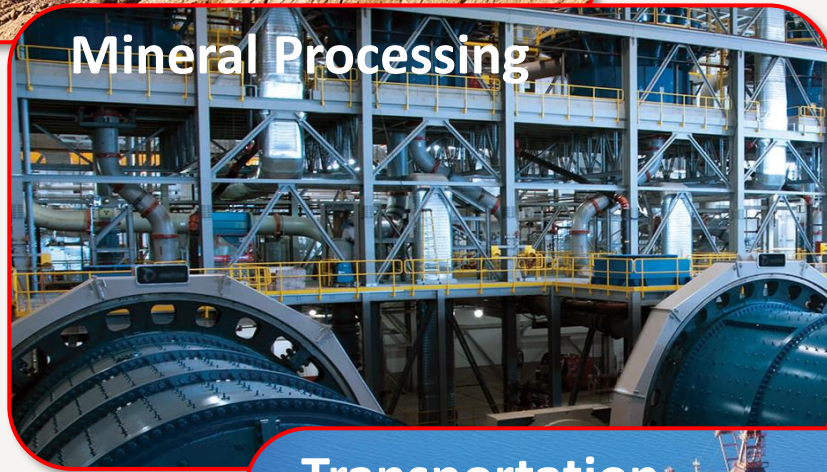




- Primary samplers
- Secondary samplers
- Dividers and splitters
- Extraction samplers
- Crushers and shredders
- Conveyors and feeders
- Sample magazines
- System automation



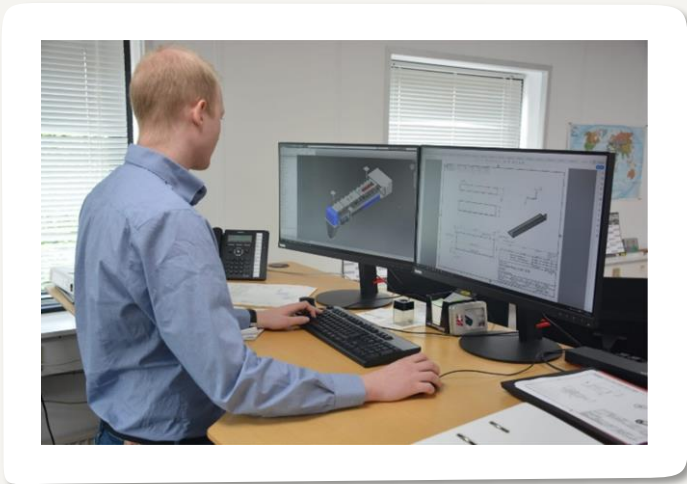
- Engineering
- Design
- Manufacturing
- After sales
- Field service



## Representative Sampling of Bulk Materials.

Contact us directly.

## Introducing M&W JAWO Sampling.



### Sampling made Simple

M&W JAWO Sampling is one of the global pioneers in the development and production of automated sampling equipment, instruments, and whole system solutions for representative sampling of aggregate bulk materials, powders, and industrial dust and ash.

M&W JAWO Sampling offers a full range of customized products ensuring representative and unbiased samples for the mining, mineral processing & metals refining, oil & gas, power and heat generation, cement, building materials and fertilizer sectors.

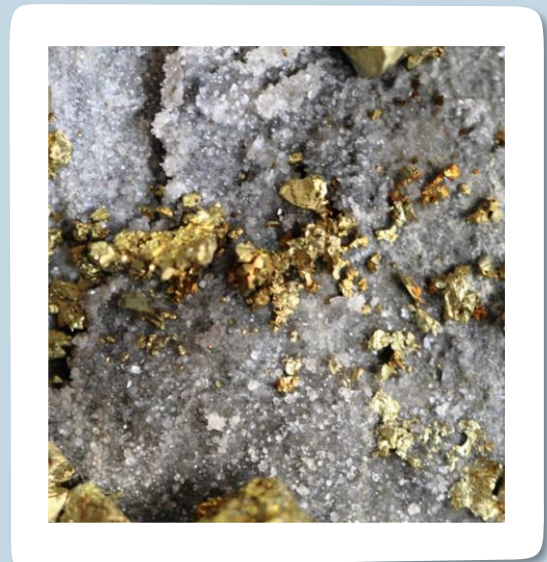
## Why representative sampling?

The purpose of sampling is to produce a reliable small mass that accurately represents the total mass of material from which it was collected.

The primary sampling and on-line sample processing are critical for the ultimate quality of the analytical results. If the sampling process is not representative, there is little point in having made significant investments in laboratory equipment and analytical competences.

No sampling equipment in the world *alone* can guarantee that a sample is representative. The sampling process must also be designed according to the principles and rules outlined in the Theory of Sampling (TOS).

At Mark & Wedell we have expert knowledge and 40 years of practical experience in *representative* sampling. We offer our customers competent advice and assistance at every stage of the project – from concept development to testing, commissioning, staff training, and after sales service.



Representative sampling -> valid analytical data -> right business decisions.



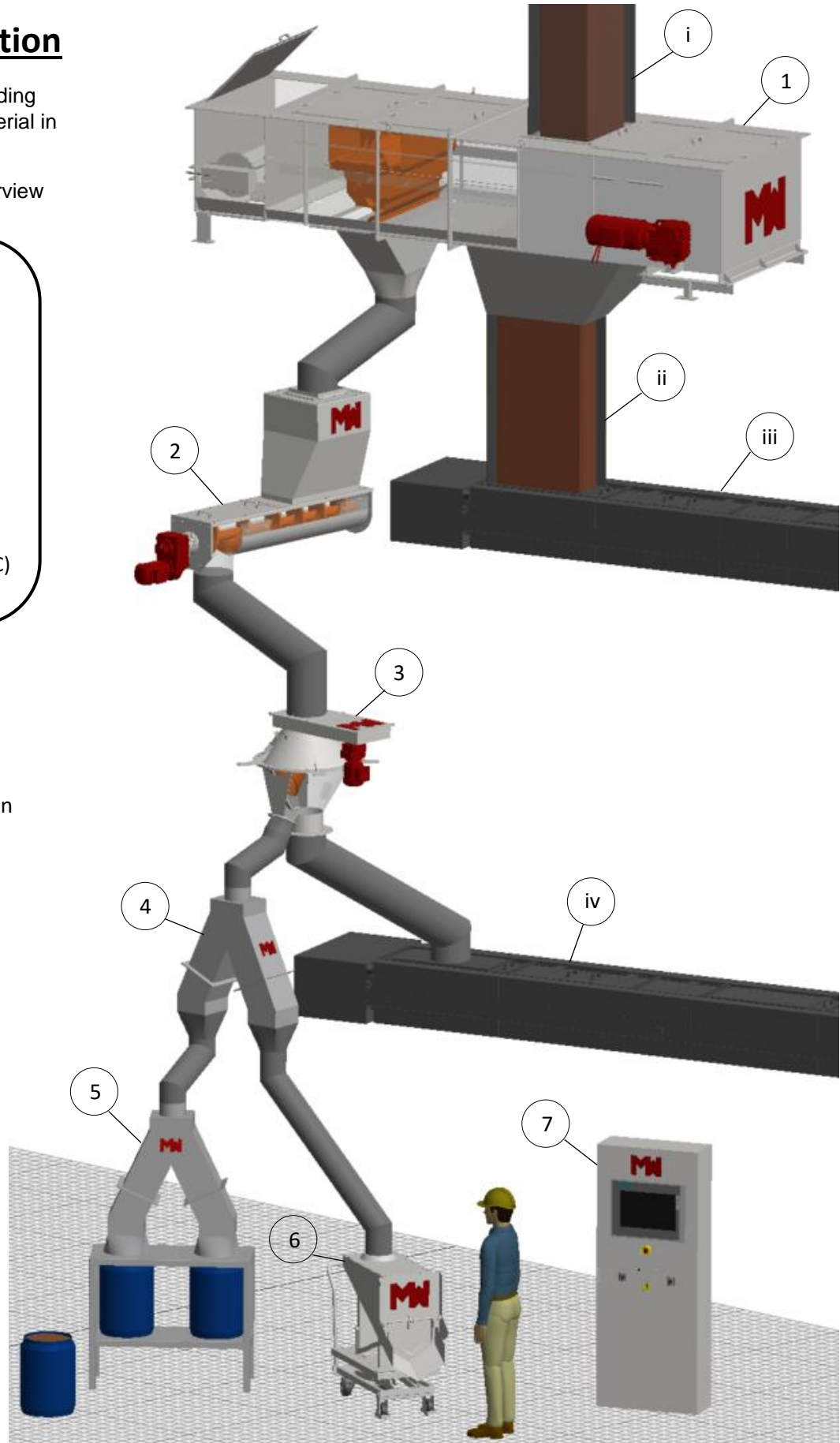
## JAWO Sampling Solution

**Example A** - Sampling system including **Bucket Sampler** for free-falling material in a duct.

- **Illustration 1** - General overview

- i) Main Inlet Duct
  - ii) Main Outlet Duct
  - iii) Main Outlet Conveyor
  - iv) Reject Conveyor
- 1) Bucket Sampler (BS)
  - 2) Screw Conveyor (SC)
  - 3) Rotary Tube Divider (RTD-12)
  - 4) Divider Gate (DG)
  - 5) Dual Splitter (DS)
  - 6) Mobile Sampling Container (MSC)
  - 7) Control Cabinet (CC)

- M&W products
- Chutes
- Sampling cutter/transportation
- Driving motors
- Sampling buckets
- Material
- Main ducts

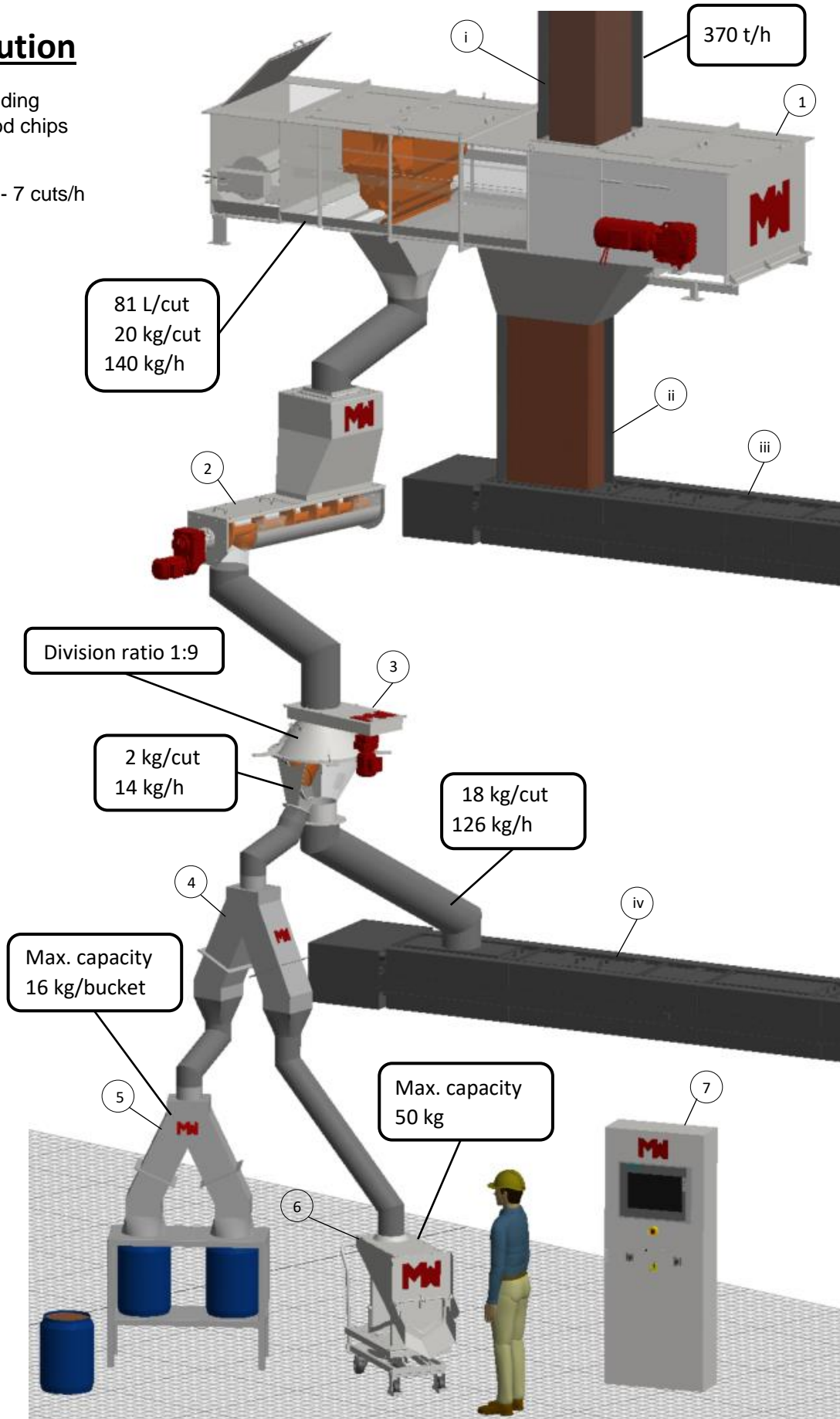


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## JAWO Sampling Solution

**Example A** - Sampling system including **Bucket Sampler** for free-falling wood chips in a duct.

- **Illustration 2** - Wood chips - 7 cuts/h

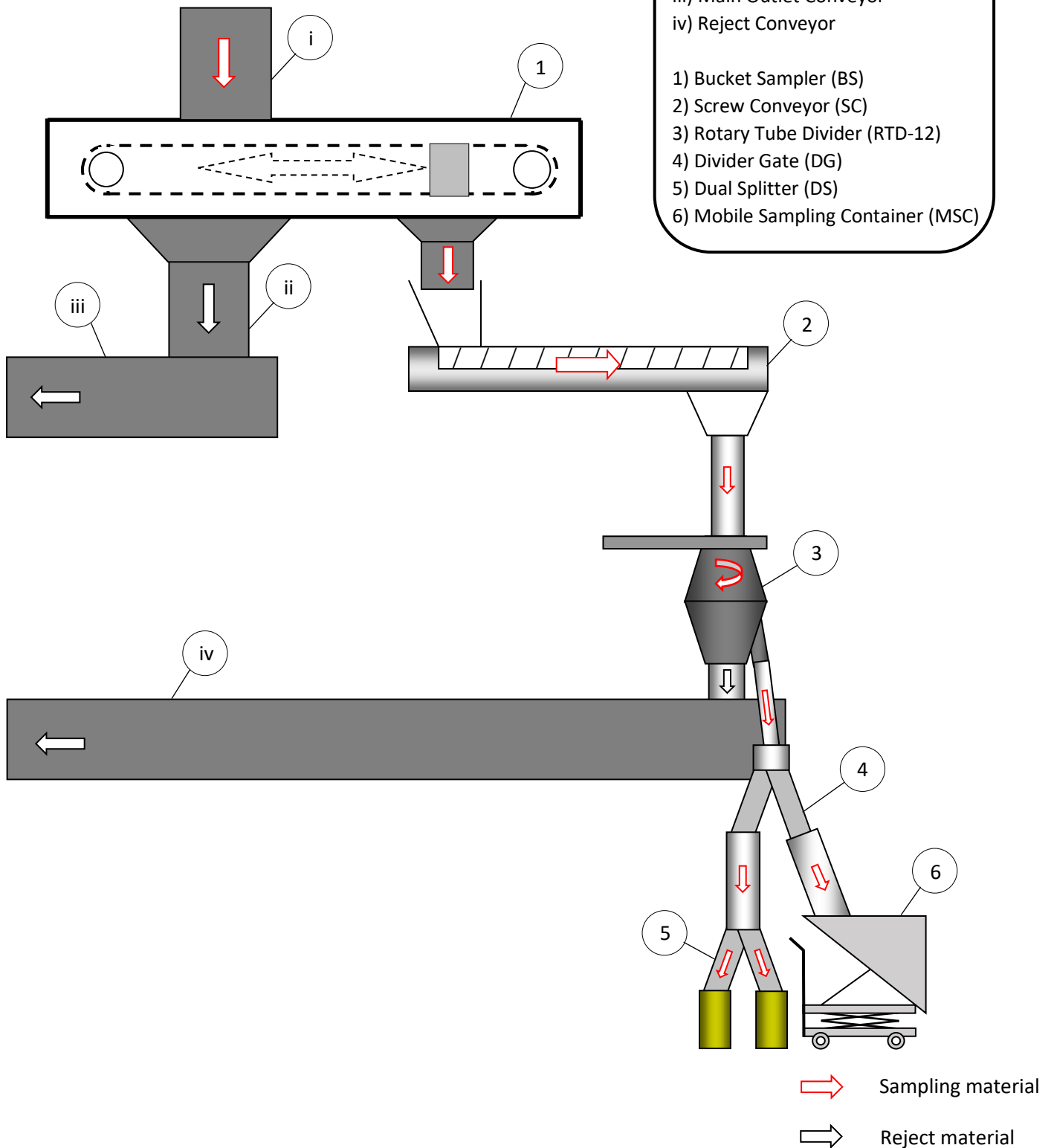


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## JAWO Sampling Solution

**Example A** - Sampling system including **Bucket Sampler** for free-falling material in a duct.

- Illustration 3 - 2D flow



Contact us directly.

## JAWO Sampling Solution

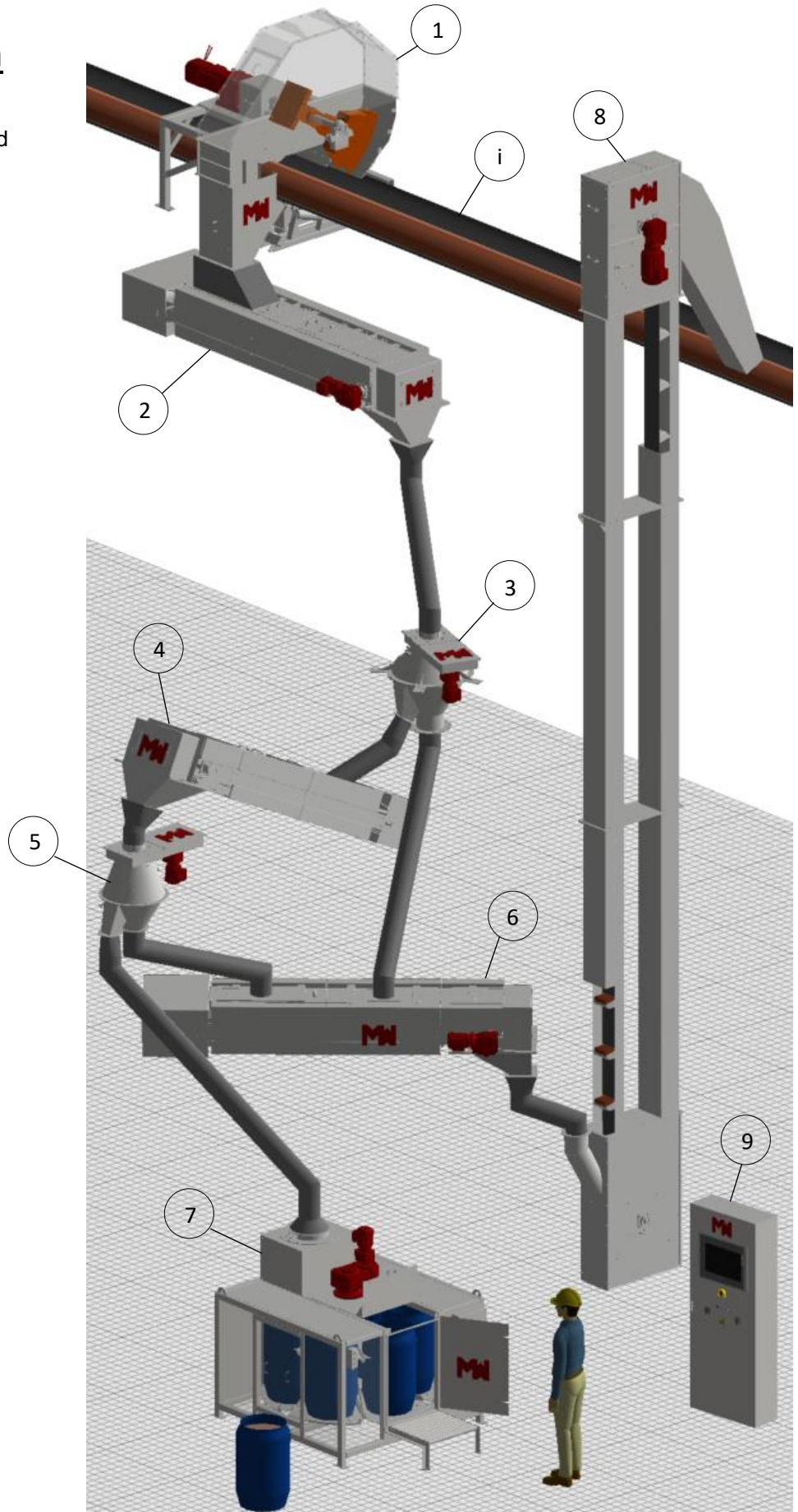
**Example B** - Sampling system including **Cross Belt Sampler** for material transported on a conveyor belt.

- **Illustration 1** - General overview

i) Main Conveyor Belt

- 1) Cross-Belt Sampler (CBS)
- 2) Dosing Conveyor 1 (DoC)
- 3) Rotary Tube Divider 1 (RTD-12)
- 4) Dosing Conveyor 2 (DoC)
- 5) Rotary Tube Divider 2 (RTD-8)
- 6) Dosing Conveyor 3, Reject (DoC)
- 7) Sample Magazine (SM)
- 8) Bucket Belt Elevator (BBE)
- 9) Control Cabinet (CC)

- M&W products
- Chutes
- Sampling cutter
- Driving motors
- Sampling buckets
- Material
- Main Conveyor Belt



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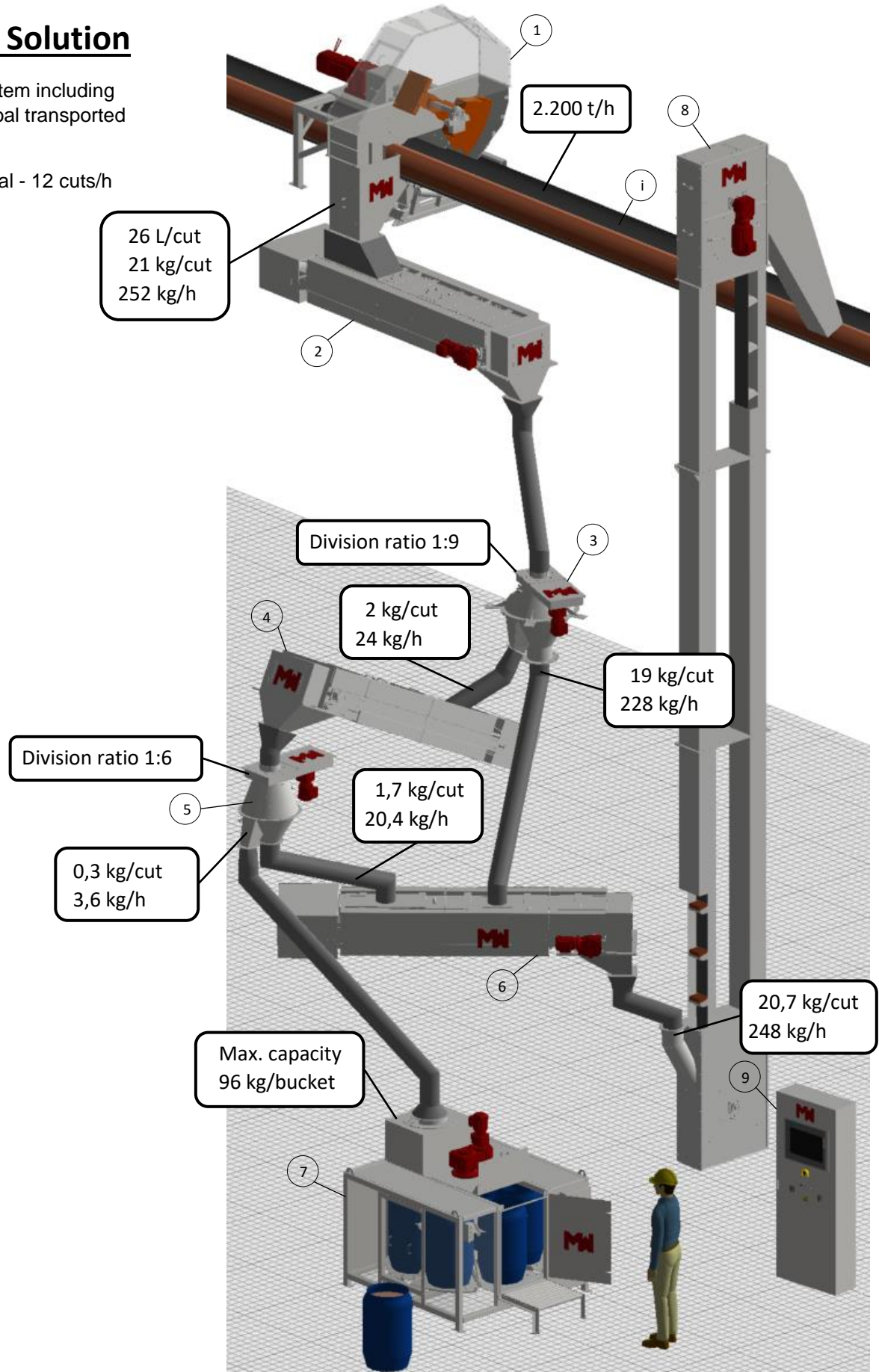
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## JAWO Sampling Solution

**Example B:** Sampling system including **Cross Belt Sampler** for coal transported on a conveyor belt.

- Illustration 2 - Coal - 12 cuts/h

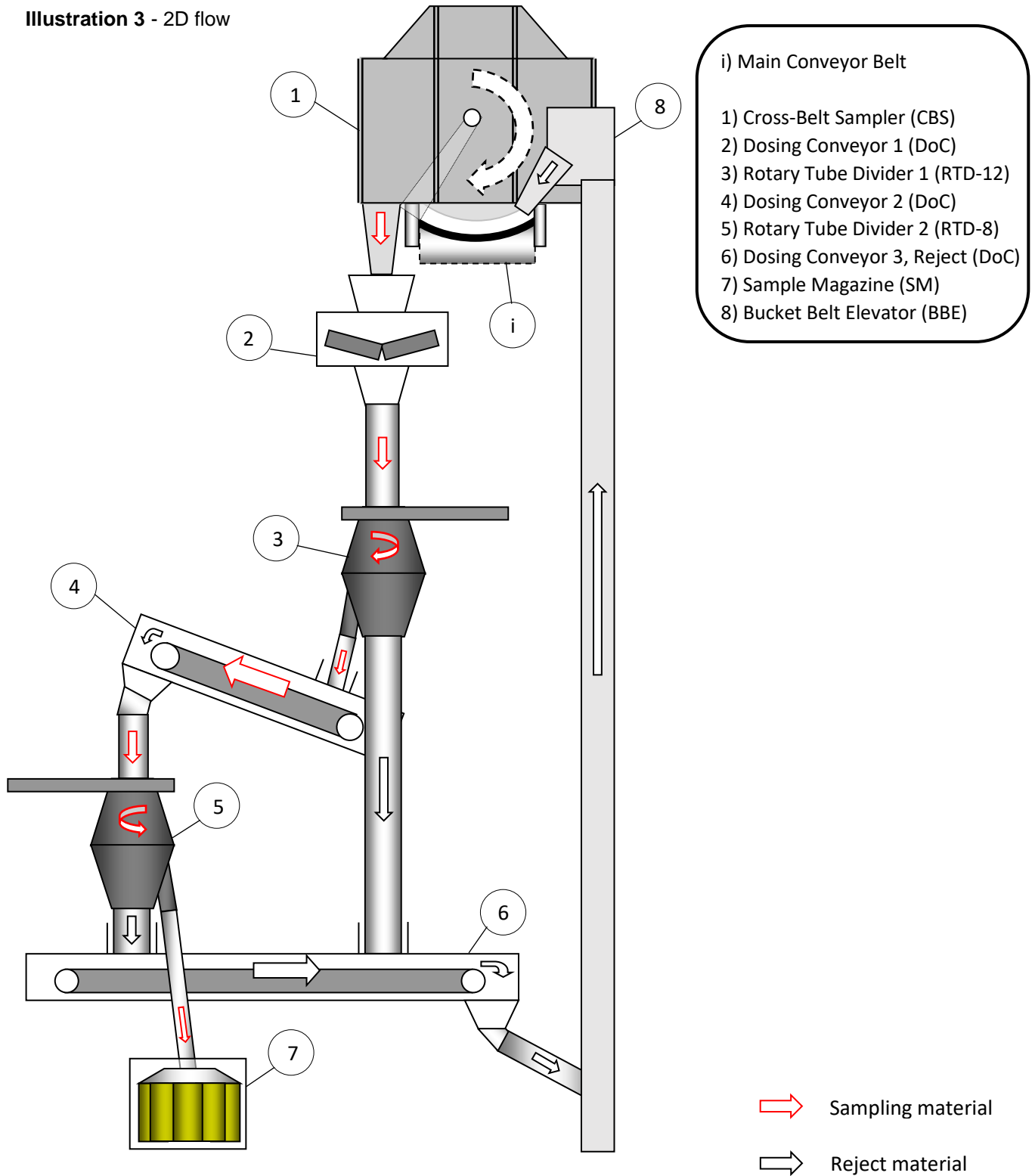


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## JAWO Sampling Solution

**Example B** - Sampling system including **Cross Belt Sampler** for material transported on a conveyor belt.

- Illustration 3 - 2D flow



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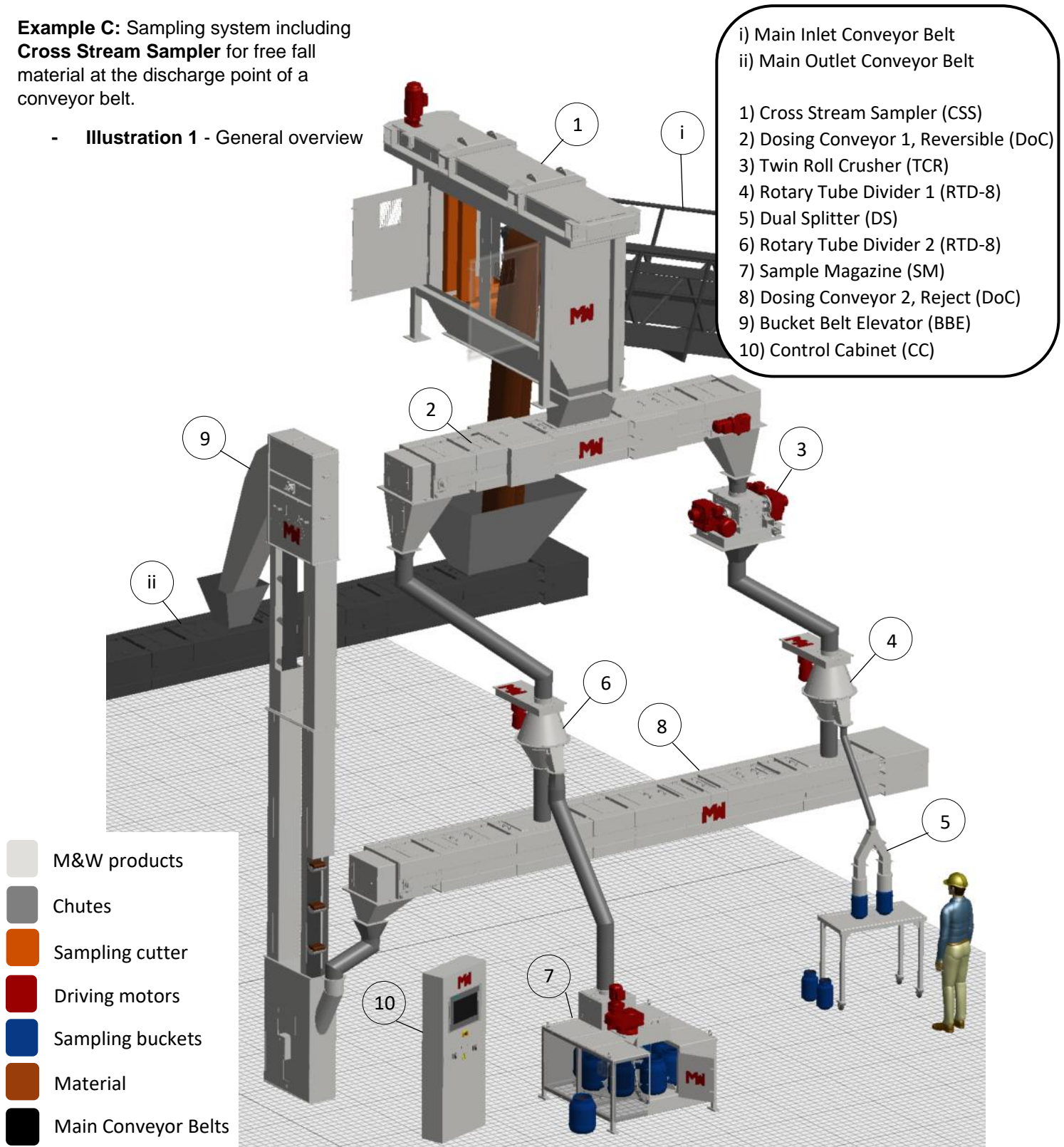
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## JAWO Sampling Solution

**Example C:** Sampling system including **Cross Stream Sampler** for free fall material at the discharge point of a conveyor belt.

- **Illustration 1** - General overview

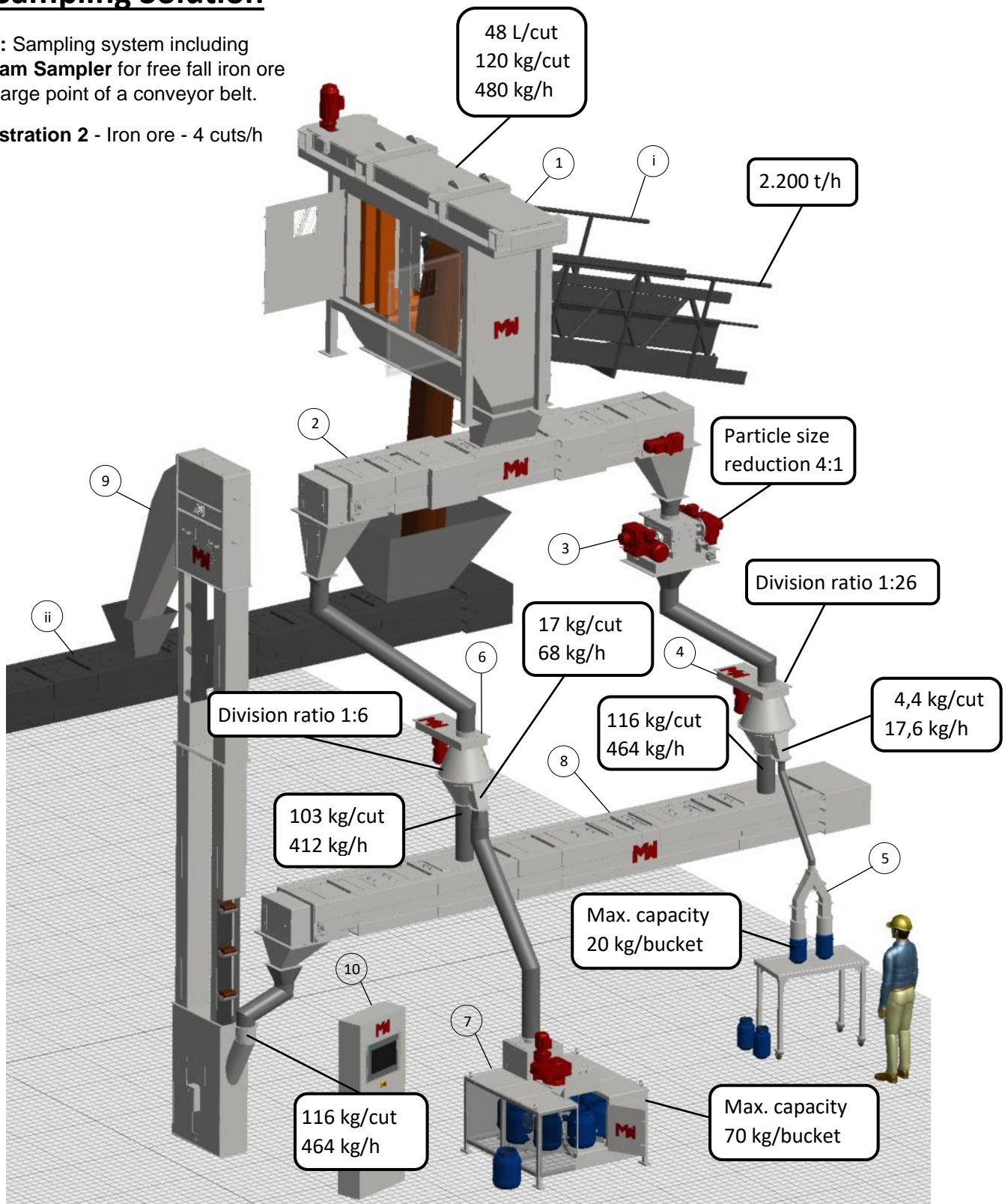


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## JAWO Sampling Solution

**Example C:** Sampling system including **Cross Stream Sampler** for free fall iron ore at the discharge point of a conveyor belt.

- **Illustration 2** - Iron ore - 4 cuts/h



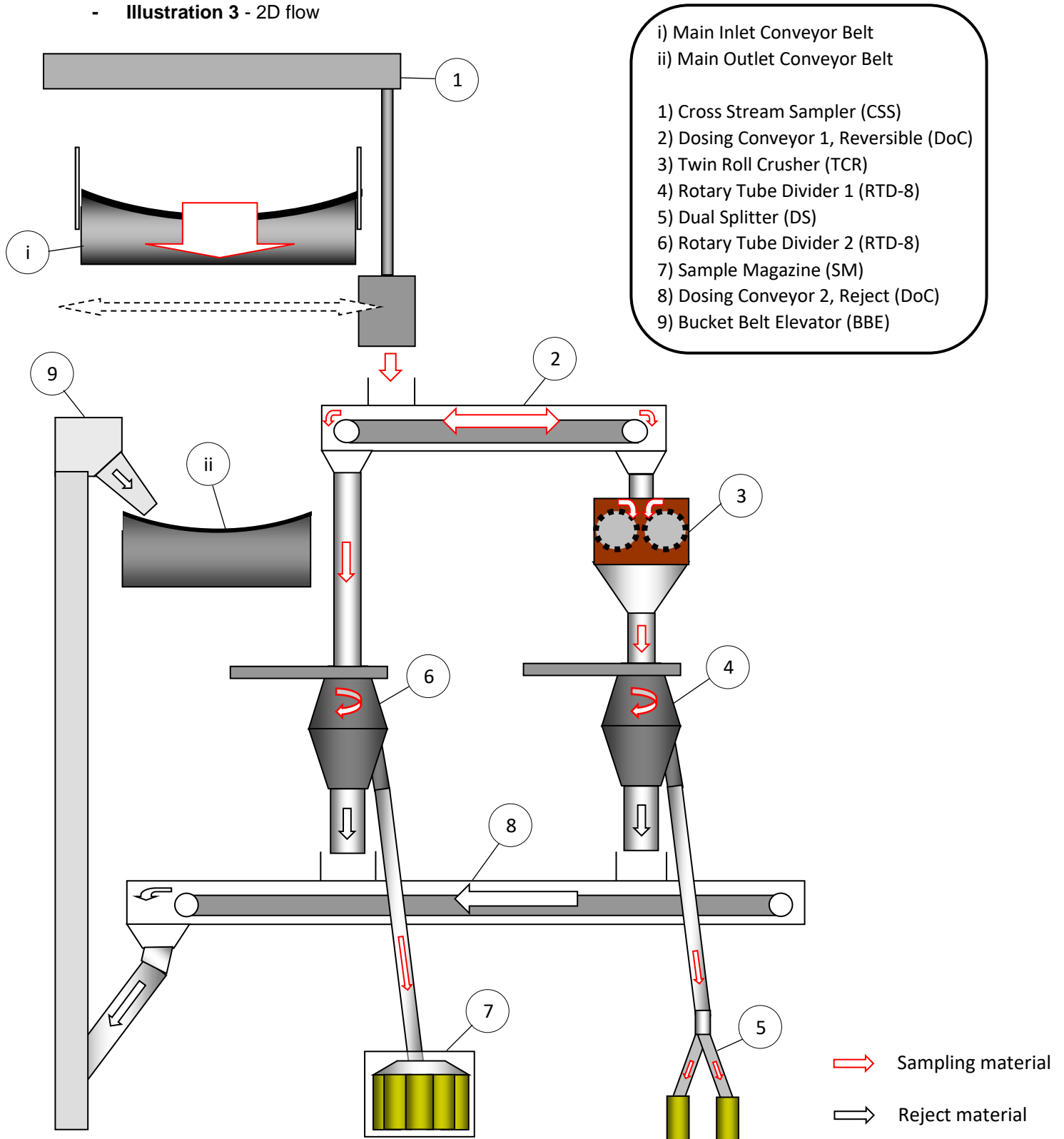
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## JAWO Sampling Solution

**Example C:** Sampling system including **Cross Stream Sampler** for free fall material at the discharge point of a conveyor belt.

- Illustration 3 - 2D flow



Contact us directly.



## Primary Samplers:



Cross Stream Sampler



Cross Belt Sampler



Bucket Sampler



Vezin Sampler

The M&W JAWO **Primary Samplers** are designed primarily for the first stage of sampling, prior to any sample division and reduction. During this operation, an adequate number of portions of the material is collected from positions distributed over the entire lot. These portions, known as primary increments, are then combined into a primary sample.

The fundamental requirements of representative sampling are that: *a)* all parts of the material in the lot shall be accessible to the sampling instrument, and *b)* particles of equal mass shall have an equal probability of being selected and included in the sample. Based on these requirements, the preferred method is sampling from a moving stream of material – either free-falling or on a moving conveyor belt.

## Secondary Samplers, Dividers and Splitters:



Rotary Tube Divider



Rotary Disc Divider



Rotary Tube Splitter



Dual Splitter

Usually, the primary sample must be divided to reduce its mass to a manageable size and split into a certain number of portions for different intended tests and analyses. For this purpose, M&W has developed a broad range of **Secondary Samplers, Dividers and Splitters**. In most modern industrial applications this equipment is integrated together with the primary sampler into an automated sampling system.

Many types of M&W JAWO Sampling products, for example Rotary Tube Dividers, can be used both as primary and secondary samplers, depending on the volume of material and actual process conditions.

## Extraction Samplers:



Screw Sampler



Air Slide Sampler



Screw Sampler Mixing Tank



Unburned Carbon Online Analyser

The M&W JAWO **Extraction Samplers** are designed for sampling of various types of dry, fine-grained materials and powders, such as cement, coal dust, biomass dust, fly-ash, etc. from free-falling or airborne streams. The extraction samplers also find their application with respect to granular materials and seeds.

Some of M&W JAWO extraction samplers have online analyzers built in, other simply extract a physical sample for further analysis.



## Material Transfer Equipment:



Dosing Conveyor



Vibration Feeder



Screw Feeder



Bucket Lifter

The M&W JAWO **Material Transfer Equipment** includes various types of conveyors and feeders that serve different purposes. They are commonly used in automated sampling systems to transport the sample material between the different JAWO sampling units, to create an even and controlled flow of the material required for correct operation of other equipment, or to move the reject material back to the main process.

The right type of transportation equipment is selected depending on the volume and properties of the material.

## Crushers and Shredders:



Twin Roll Crusher



Twin Roll Shredder

Sample processing in automated sampling systems often requires reduction of the particle size of the sample. The M&W JAWO **Crushers and Shredders** are designed for flexible and controlled sample reduction of hard, semi-hard and brittle materials.

## Sample Magazines:



Sample Magazine



Sample Magazine – Long

The M&W JAWO **Sample Magazines** are designed to automatically fill the sample material into buckets and store the ready samples until they can be taken to the laboratory. The Sample Magazines also prevent cross-contamination and moisture loss of the samples.

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## Control Cabinets:



Control Cabinet – Stand-alone



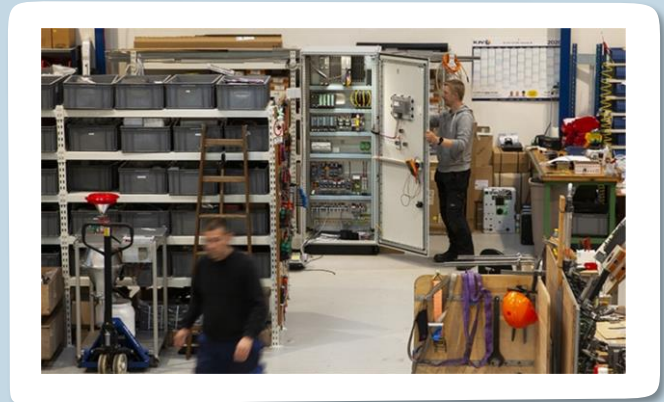
Control Cabinet – Central

The **Control Cabinets** are used to control, power and protect individual machines and complete automated sampling systems. They also provide HMI for the operator and act as a junction box for all power and signal cables.

## M&W JAWO – made in Denmark:



M&W Mechanical Workshop



M&W Electrical Workshop

All M&W JAWO Sampling products are designed and manufactured by Mark & Wedell in-house, according to highest quality standards, at our own production facilities in Kvistgaard, Denmark.

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Some of our customers.



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We are located in Denmark, between Germany and Sweden.



Bridging German **quality** and **precision**  
with Nordic **flexibility** and **innovation**.

## About M&W.



Mark & Wedell A/S (M&W) is a global engineering and manufacturing company. M&W serves a solid and growing international customer base within mining, mineral processing and metals refining, power generation, fertilizer, cement, pharma/healthcare, food, oil & gas industries and Big Science.

Since 1982 M&W has developed and supplied automated sampling equipment, instruments and whole system solutions. In 1999 M&W acquired FLS JAWO Handling from FLSmidth and continued developing a range of specific sampling products.

Our brand M&W JAWO Sampling and unique know-how is well recognized in our markets and among our customers due to more than 40 years of experience. M&W JAWO Sampling has supplied more than 2,600 automated sampling solutions to more than 850 projects in 85+ countries.

**Contact us directly.**

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