

# RCS™ flotation solution

MORRIS S.W.L: 15T



Maximizing  
ore and grade  
recovery

LT05

## Beneficiation Solutions

Metso Beneficiation Solutions for minerals processing aim for maximizing ore and water recovery while optimizing operations costs.



Proven solutions to address any mineral processing challenge

## Integrated packages for maximizing ore and water recovery

From plant modules to complete solutions, Metso offers world class technology for the beneficiation a wide variety of ores such as copper, gold, iron, lead, zinc, platinum and industrial minerals.

Maximizing Ore and Water Recovery is our ultimate goal and promise

### Delivering a combined value with our Beneficiation Solutions

#### Classification

Metso's advanced classification solutions help in achieving optimum size control, improved product quality, enhanced comminution efficiency and increased throughput.

#### Separation

Metso's reliable beneficiation technology considerably improves the contained value of the ore by removing gangue minerals using flotation, gravity separation, magnetic separation and washing.

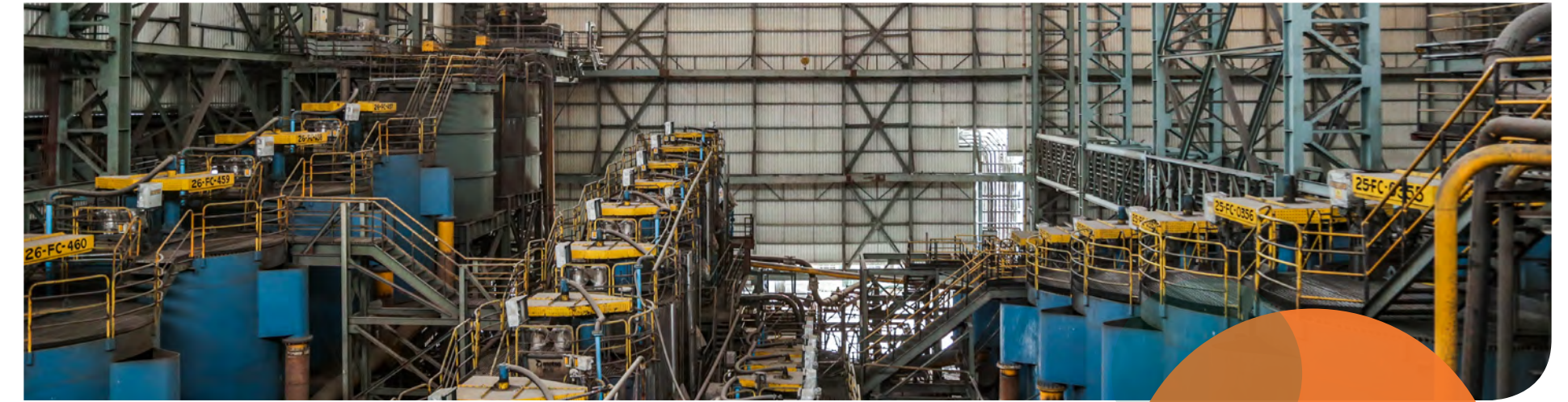
#### Dewatering

Metso's energy efficient dewatering solutions enable concentrate separation achieving maximum recovery of valuable materials using filtration and slurry handling.

## A versatile solution offering maximum recovery at the desired grade

Many challenges can be faced in your flotation process, and any recovery losses have an impact in the long run. Without proper flotation circuit analysis capabilities, chances for losses greatly increase. By installing the right flotation solution into your process, your plant will experience:

- Flexibility to capacity changes
- One-piece mechanism removal
- Optimized energy consumption
- Reduced operating costs
- Improved uptime
- Advanced automation and control systems



## RCS™ flotation concept

Optimal mineral recovery in a flotation circuit depends on the capacity to adapt to metallurgical variability in the ore being processed. Recognizing the need for a solution that addresses these challenges, Metso has made several advances in flotation design and technology.

Combining the benefits of circular cells with the unique features of the patented DV™ mechanism, the RCS™ (Reactor Cell System) flotation technology has been developed to create ideal conditions to maximize flotation performance for all roughing, cleaning and scavenging duties. The cell can be modified to handle high density slurries.

### DV™ flotation mechanism

The latest DV™ (Deep Vane) flotation mechanism design improves air dispersion and bubble size distribution. The patent protected DV™ mechanism impeller consists of a unique arrangement of vertical vanes with shaped lower edges and air dispersion shelf. The mechanism design produces powerful radial slurry pumping to the cell wall and gives strong return flows to the underside of the impeller to minimize sanding. Additionally, it is the only mechanism to give maximum slurry recirculation to the upper part of the impeller. Vertical diffuser vanes promote these radial flow patterns and eliminate slurry rotation in the tank.

The fully suspended DV™ mechanism allows for the entire mechanism to be removed from the tank without the need to drain the tank of its valuable contents. The profile of the DV™ impeller, and the design and construction of the complete mechanism makes it possible to start the mechanism in a fully sanded situation.



### Applications:

- Iron flotation
- Non-ferrous metals
- Industrial minerals

## Why choose Metso RCS™ flotation solution?

### Enhanced performance

- Maximum bubble-particle contact within the mechanism and the flotation tank
- Effective solids suspension & resuspension
- Effective air dispersion and distribution throughout the cell volume
- Smooth froth surface & removal

### Innovative tank design

- Circular tank concept to minimize slurry short circuiting
- Modular design for quick construction, shipment & installation
- Simplified froth handling
- Internal dart valves to minimize footprint requirements

### Proven drive systems

- Standard V-belt drive up to 70 m<sup>3</sup> cells
- Standard gearbox drive with extended output shaft bearings and drywell construction for cell volumes ≥100 m<sup>3</sup>
- Availability of gearboxes for 30 m<sup>3</sup>, 40 m<sup>3</sup>, 50 m<sup>3</sup> and 70 m<sup>3</sup> cells
- Availability of v-belts for 100 m<sup>3</sup> and 130 m<sup>3</sup> cells

### Efficient air & level control

- Flotation air provided by separate air blower
- Controlled aeration rate at each cell
- Effective pulp level control by pneumatically operated dart valves with ultrasonic level sensor and float

### Reduced operating costs

- Extended wear life due to minimized local high velocity zones
- Impeller & diffusor constructed with abrasion-resistant elastomers
- Impeller profile designed to minimize absorbed power

### Ease of maintenance

- Easily replaceable wear parts within the machine
- Easy routine maintenance due to full suspension of the DV™ mechanism from the cell superstructure
- Modular dart valve design provides flexibility to capacity changes



## Industry leading automation and control systems

### Optimizing your flotation circuit performance

Today, mines need to process more complex ores making the operation of flotation circuits more difficult. Backed by advanced technology and digital tools, we help customers to assess flotation performance with detailed mineralogical and operating data analysis to increase grade, ore recovery or optimize reagent consumption

### VisioFroth™ technology

Higher froth recovery with continuous monitoring and analysis of flotation cells

VisioFroth™ technology is an industry leading image analysis system for live measurement of multiple flotation froth properties such as froth velocity, bubble size distribution, colour, stability, texture and other parameters. The camera can be used as a standalone instrument or combined with advanced process control (APC) methods to optimize set points throughout the concentrator.

### Advanced process controls

State-of-the-art platform for improving cell performance

OCS-4D© is among the most cost-and time-effective proven tools for improving metallurgic plant performance, continuously maximizing plant throughput and recovery, while optimizing production cost. Since 1990, Metso has provided optimizing control systems for grinding and flotation circuits with successful applications in Europe, North & South America, Africa and Asia.



# RCS™

## Range and cell characteristics

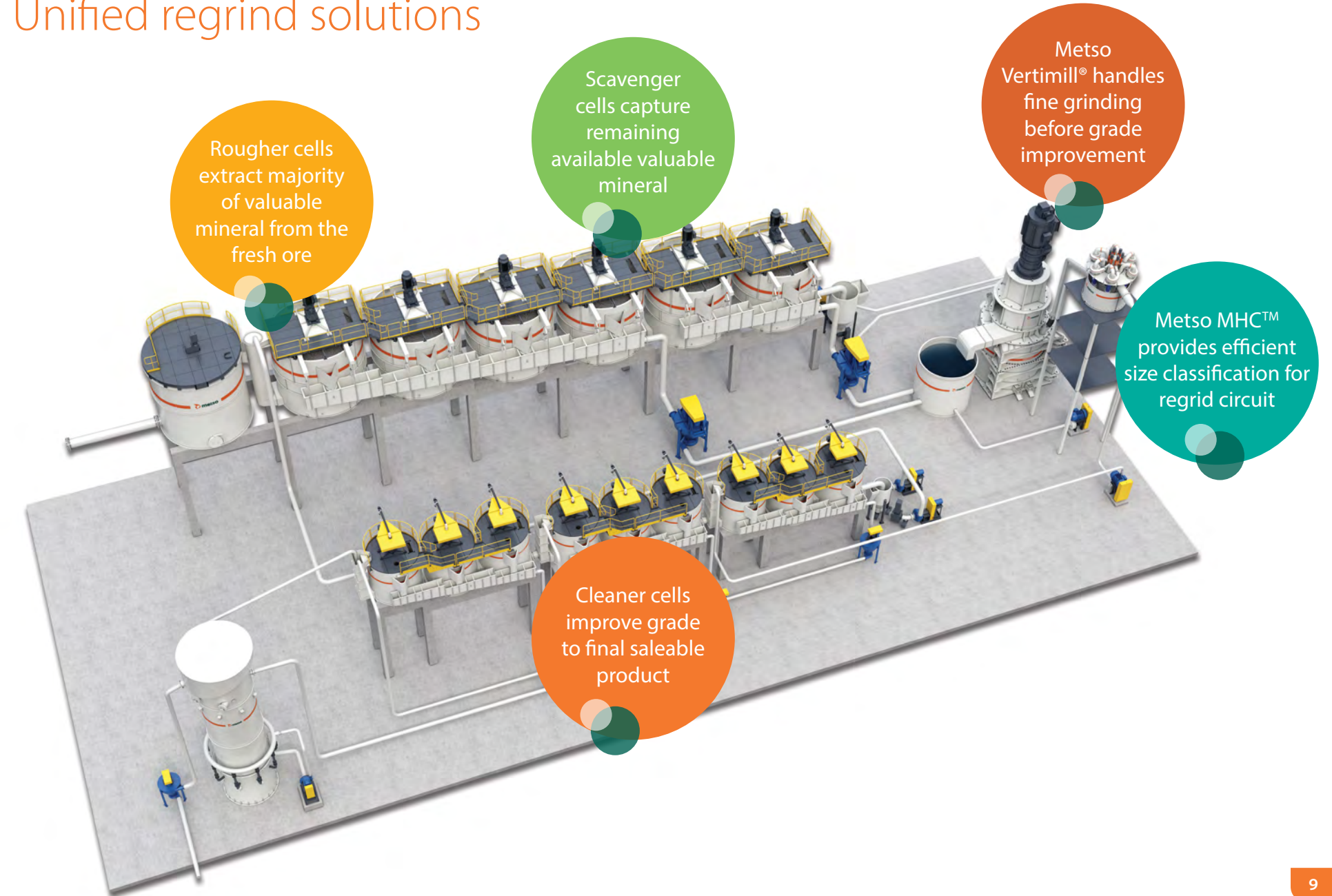
Vol. (m <sup>3</sup> )	Diameter	Height
0.8	1100	1100
3	1850	1845
5	2150	2095
10	2700	2590
15	3080	2890
20	3370	3150
30	3800	3470
40	4240	3950
50	4500	4180
70	5000	4640
100	5650	5350
130	6150	5800
160	6500	6400
200	7100	6650
300	8150	7610
600	10300	9770



RCS™ flotation machines are available in sizes 0,8 m<sup>3</sup> to 600 m<sup>3</sup>



## Unified regrind solutions



## Promising results

### RTB Bor, Serbia

Together with Metso, the Serbian RTB Bor mine renewed the processing plant at its largest site, VelikiKrivelj. The result was a higher throughput and better recoveries with less energy consumption per ton of processed copper.

#### Challenge

Outdated flotation cells due to obsolete automation, adding major bottlenecks to the production goals.

#### Solution

Complete RCS flotation plant was commissioned with advanced automation and process controls.

#### Result

RTB Bor improves recovery by more than 20% while reducing operating costs at the VelikiKrivelj concentrator plant

➤ [metso.com/showroom/rtb-bor](https://metso.com/showroom/rtb-bor)

➤ [metso.com/rcs](https://metso.com/rcs)



20%  
improved  
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## Promising results

### Hindustan Zinc Limited, India

HZL is a multi-metal mining conglomerate, engaged in the mining of lead, zinc and silver. Metso has been providing solutions for the mining company taking the collaboration to the next level.

#### Challenge

HZL was facing quality problem regarding lead-zinc grades & recovery.

#### Solution

Metso supplied 68 RCS flotation machines which have given better yield and improved results. Installed plant with 1.5 MT capacity, which is achieving close to 2 MT now.

#### Result

Flotation cells are designed to handle fluctuations in capacity. Even at higher capacities, recoveries of 89% lead and 91% zinc are achieved. At these recoveries, concentrate grades of 55% and 51% are achieved for lead and zinc, respectively. With Visiofroth, changes in the flotation cell are identified very quickly, making it possible to quantify the change in bubble size, colour and velocity

➤ [www.youtube.com/watch?v=tePUBtelyTE](https://www.youtube.com/watch?v=tePUBtelyTE)

➤ [metso.com/rcs](https://metso.com/rcs)



89% lead  
and  
91% zinc recovery

Through our knowledge and experience, we work with our mining and aggregates customers to create solutions that enable them to attain their objectives. We call this **The Metso Way**, which focuses on creating value to our customers.

The Metso Way is built upon:

### Knowledge –



We have deep knowledge about our customers' business environment, processes and challenges

### People –



Our committed and highly competent people make the difference to our customers

### Solutions –



We create the technology and services required to meet our customer needs



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