Excellent performance, maximum flotation recovery
Metso Beneficiation Solutions

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

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.

Delivering a combined value with our Beneficiation Solutions

Maximizing Ore and Water Recovery is our ultimate goal and promise

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

- Increased uptime
- Maximized recovery rate
- Maximized throughput
- Reduced operating costs

Proven solutions, Expanded value

Solutions to achieve maximized recovery results

RCS™ flotation concept

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 slimes. RCS flotation technology provides excellent air dispersion, producing fine even sized bubbles. Maximum flotation recovery and performance have been achieved by careful attention to the tank design.

**RCSTM flotation machines are available in sizes 0.8 m³ to 600 m³**

**DV™ flotation mechanism**

The latest DV™ (Deep Vane) flotation mechanism design improves air dispersion and bubble size distribution. The patented protected DV™ mechanism impeller consists of a unique arrangement of vertical vanes with straight lower edges and air dispersion shelf. The mechanism design produces powerful radial slurry pumping to the cell wall and gives strong return flows in 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 delinate slurry flotation and entrainments. 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.

**RCS™ flotation concept**

- Increased uptime
- Maximized recovery rate
- Maximized throughput
- Reduced operating costs

**Proven solutions, Expanded value**
As raw materials and other resources become scarcer, plants look for ways to be more efficient and productive. Digital tools, such as advanced process control and optimized control systems, maximize recovery and reduce energy demands by improving quality management during operation. Strong R&D within Metso and active collaboration with recognized research institutes keeps us at the forefront of innovation. Our Capabilities include, among others, the OCS® and OCS-4D® software for advanced process control and the VisioFroth™ technology for flotation circuits.

Optimizing Control Systems

OCS® and OCS-4D® are among the most cost-and time-effective proven tools for improving metallurgical plant performance, continuously maximizing plant throughput & metal recovery, and optimizing production costs. These solutions use model-based fuzzy expert control methodologies, which can include vision and acoustic information. Since 1990, Metso has provided the industry with optimizing control systems for grinding and flotation circuits with successful applications in Europe, North & South America, Africa and Asia.

VisioFroth™ technology

VisioFroth™ 4, the latest version of 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. Continuous monitoring and analysis of all flotation cells combined with next-generation algorithms generates an increase of floated minerals and a higher froth recovery. VisioFroth™ is currently the world market leader, with more than 1400 cameras installed in more than 60 plants.
Promising results

RTB Bor, Serbia

Together with Metso, the Serbian RTB Bor mine renewed the processing plant at its largest site, Veliki Krivelj. 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 plan.

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 Veliki Krivelj concentrator plant.

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 problems regarding lead-zinc grades & recovery.

Solution
Metso supplied 68 RCS flotation machines which have given better yields 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 changes in bubble size, colour and velocity.
Maximizing recovery with 2000+ installations worldwide

At Metso, we know that the only real measure of our worth is in the results we deliver to our customers. Metso has the resources to bring you a full range of capabilities. Right where you need us, whenever you need us.

- Copper
- Lead/Zinc
- Platinum
- Others (cobalt, pyrite, oil sands, magnetite, gold, kieserite, nickel molybdenum, silver, phosphate, calcium carbonate, molybdenum, silica)
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