

Eliminating erosion starts from the inside

Neles™ WearBlock™ solutions



Extend valve life in the most wear-intensive applications

Wear by erosion, corrosion or abrasion is a silent killer in processes where media flows through valves and pipes. As the effects of wear mount up, so can costs. Neles™ WearBlock™ solutions maximize reliability and uptime when moving forward with wear-intensive applications.

Neles valves equipped with WearBlock solutions have been proven to work in the most fierce operating conditions. Our unique Metal Matrix Composites (MMC) have surpassed all customer expectations, helping extend the effective operating life of valves where they once were subject to regular and frequent failure.

At the same time, these wear surface solutions are saving time and money

by retaining optimal performance longer and extending service intervals considerably. An investment into superior wear protection is sure to pay itself back rapidly. In some measured cases the operational lifetime of a single valve has gone from only months to several years.

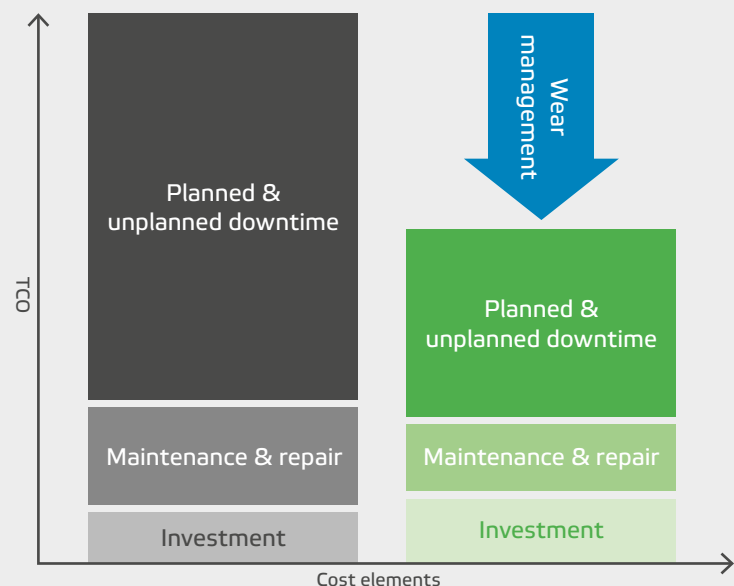
In addition to extending valve life and helping avoid expensive unplanned shutdowns resulting from catastrophic valve failure, the ex-

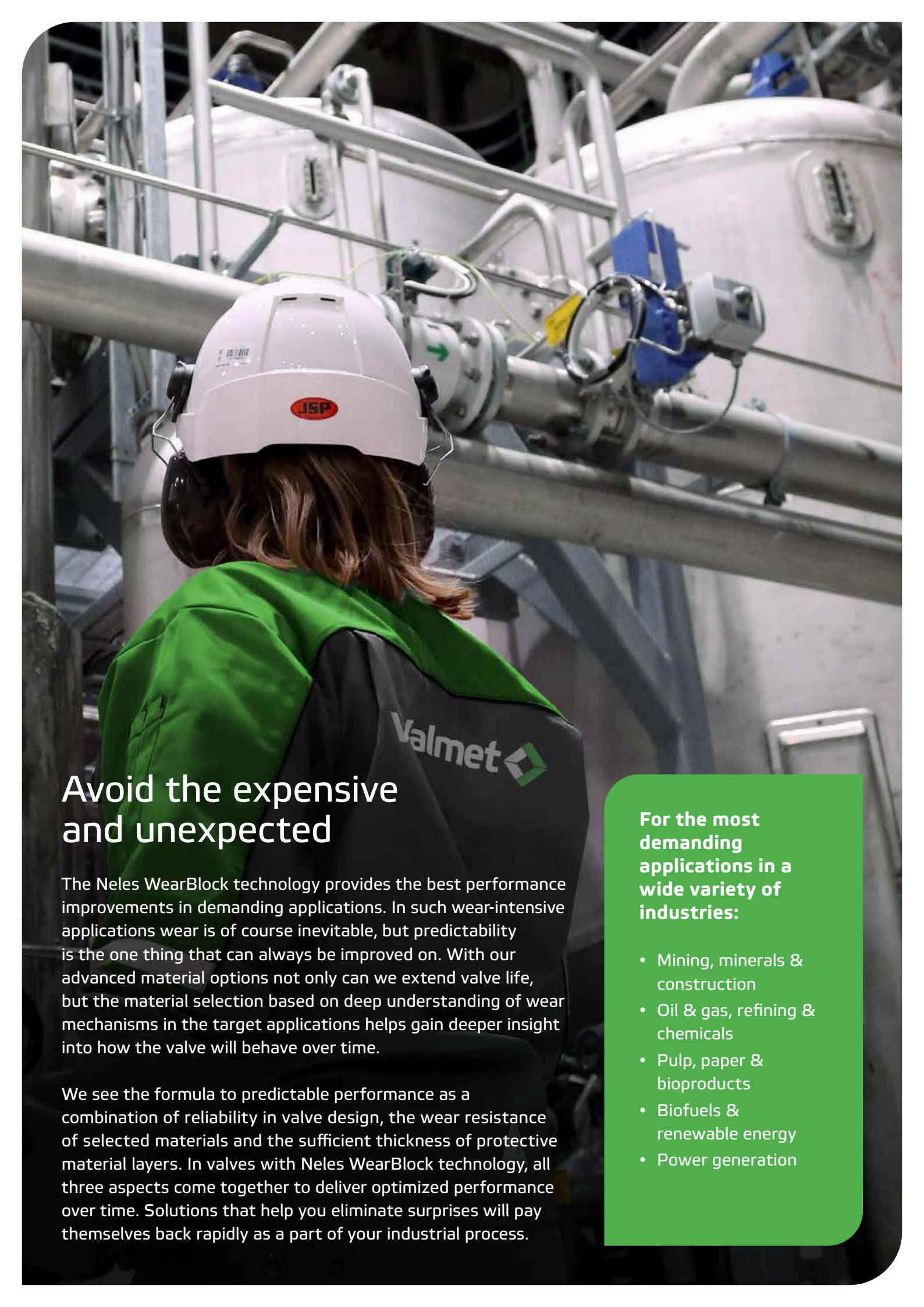
tended periods between planned and scheduled service shutdowns contributes to the optimized Total Cost of Ownership (TCO) of WearBlock valves. This wear-resistant design delivers a new level of durability, reliability, safety and long-term predictability.

Why should you choose WearBlock?

- Improved TCO and ROI
- Extended valve life
- Maintained optimal performance
- Longer service intervals
- Improved on-site safety
- Minimized risk of unplanned failure
- Minimized environmental risks

Time + Money = Total cost of ownership





Avoid the expensive and unexpected

The Neles WearBlock technology provides the best performance improvements in demanding applications. In such wear-intensive applications wear is of course inevitable, but predictability is the one thing that can always be improved on. With our advanced material options not only can we extend valve life, but the material selection based on deep understanding of wear mechanisms in the target applications helps gain deeper insight into how the valve will behave over time.

We see the formula to predictable performance as a combination of reliability in valve design, the wear resistance of selected materials and the sufficient thickness of protective material layers. In valves with Neles WearBlock technology, all three aspects come together to deliver optimized performance over time. Solutions that help you eliminate surprises will pay themselves back rapidly as a part of your industrial process.

For the most demanding applications in a wide variety of industries:

- Mining, minerals & construction
- Oil & gas, refining & chemicals
- Pulp, paper & bioproducts
- Biofuels & renewable energy
- Power generation



Solid WearBlock armoring

Unbreakable bond between valve construction and MMC wear protection material

- Advanced powder metallurgy used to bind two materials together
- Allows for thicker layer of metal matrix composite (MMC) wear protection on the wear surface. More robust than a coating.
- No open seams or weld-clad defects that are known for risk of fracture and failure
- Optimized performance meets extended service life for valves in demanding applications

Eliminating the risks of coating detachment.

Case: Extending valve life in handling of catalyst fines



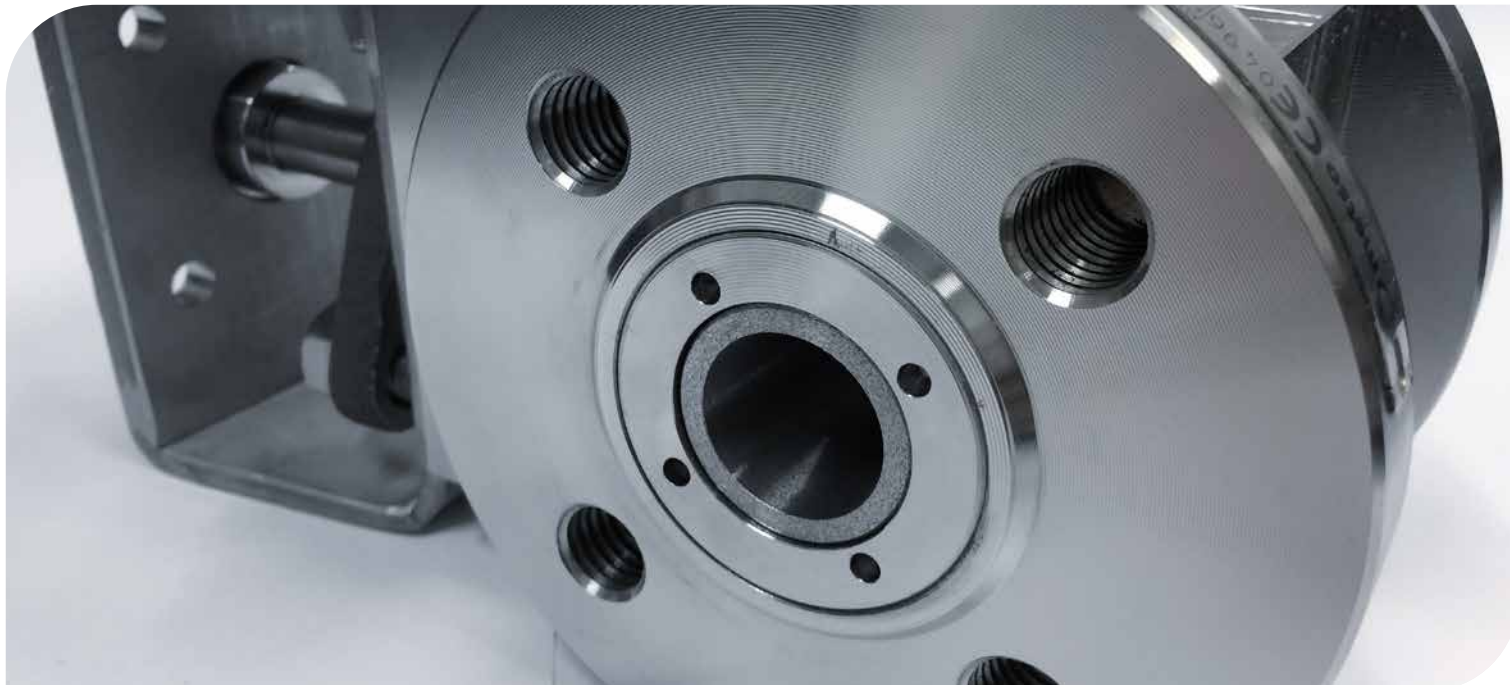
Challenge

Heavy erosion caused by blow-out of catalyst fines (+200 C) resulted in the failure of the original steel valve bodies every 1-3 months.



Results

WearBlock valves with 5-15mm of MMC material on wear surface has helped extend valve life from 3 months to 25 months. Also, maintenance work and HSE risk situations have been reduced by >90%.



Changeable WearBlock inserts

Unique Metal Matrix Composite (MMC) inserts that widen the application range of E-series ball valves

- Metal matrix composites combine the hardness of ceramics with toughness of metals
- Improves on ceramics in terms of elimination of hydrothermal degradation, resistance to thermal shocks and electrical conductivity
- Safe and reliable alternative for ceramic inserts in ceramic ball valves
- Reliability and extended valve life contribute profitability in both continuous and batch type processes

Improving on the current industry standard.

Case: Smooth, long-lasting performance in autoclave applications



Challenge

Thermal shocks and hydrothermal degradation can initiate cracking of ceramic plugs and balls, especially when crystallizing medium or build-up of solids increase valve's operating torque, and the required load-bearing capacity of trim materials respectively.



Results

MMC parts lasted the entire scheduled 18-month period before replacement with no visible damage or decrease in performance.



WearBlock accessories – Protection beyond the valve

It is not enough to mitigate the risk of leaks and emissions in the valve, when the biggest risk often lies where it joins the pipeline. Wear does not just take place within the valves, but throughout the pipeline where the media flows.

Neles WearBlock valves and accessories have been proven to perform under a wide range of demanding process conditions. There is a long list of industrial processes that benefit from our wear protection solutions. Our composite material parts achieve the optimal balance between mechanical reliability and wear resistance – a kind of unique robustness.

In addition to the valves themselves, especially vulnerable are of course the joints and the segments of pipeline immediately following the valves. These parts of the pipeline in particular deserve the same level of attention

and wear protection as the critical control valves themselves. Safety and sustainability are improved with solutions such as extended bushings that protect the gasket and flanges where leaks and emissions are typically caused by wear.

We also offer a range of WearBlock pipeline parts to provide erosion protection in turbulent and erosive flow conditions. These cylindrical or cone-shaped segments are designed for use downstream of the control valve and utilize the same durable metal matrix composite (MMC) material as our WearBlock valves.

We deliver reliable flow control solutions to all



Examples of where WearBlock improves valve durability:

Mining, minerals & construction:

- Metal slurries
- Acid leaching autoclaves
- Gypsum handling
- Cement production

Pulp, paper & bioproducts:

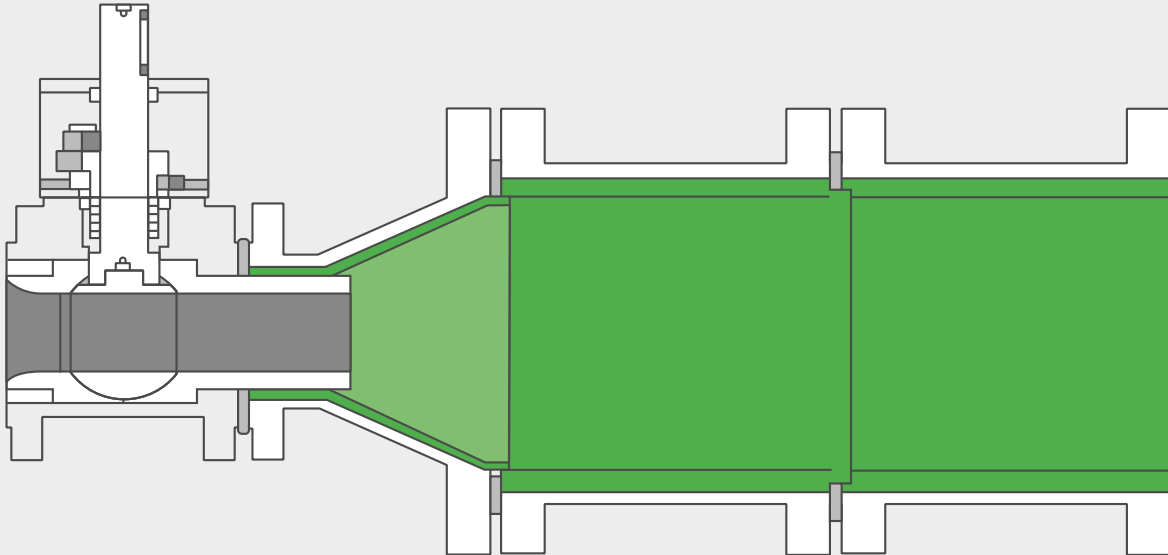
- Lime mud control
- Kaolin control
- Carbonate handling
- Black liquor feed
- Recovery boiler

Biofuels & renewable energy:

- Ejector valves
- Discharge valves

Neles WearBlock for pipelines

Wear protection extends beyond the valve, to the adjoining pipeline sections and joints.



process industries



Power generation:

- Quench water control
- Fly ash removal
- Flue Gas Desulfurization

Oil & gas, refining & chemicals:

- Catalyst regeneration
- Slurry oil control
- Syngas scrubbers
- Desulfurization units
- Black powder erosion

...and many more



Valmet's professionals around the world work close to our customers and are committed to moving our customers' performance forward – every day.

Valmet Flow Control Oy

Vanha Porvoontie 229
01380 Vantaa, Finland
flowcontrol@valmet.com
+358 10 417 5000
valmet.com/flowcontrol

