

# Advanced equipment and techniques help maximize precious metals recovery

*The "science and art" of maximizing PGM recovery—and nearly seven decades of successful experience*



Continuous catalyst sampling system



Rotary kiln



Dual electric arc furnaces double pyrometallurgical processing throughput to help assure maximum recovery of remaining PGMs in spent catalysts—including rhenium.



Weighing and documenting incoming materials

Multi-deck vibratory screen



Rotary sampler



This baghouse eliminates air pollution and captures precious metal particulates prior to atmospheric discharge.



SA-BINs™ secure containers store spent PGM bearing catalysts for fast and hassle-free shipping directly to our refining facilities.



Point-to-point global transportation and logistics



Analytical laboratory

# Recovery and refining precious metals

*With response and responsibility*



**Value added advantages for your business, total environmental compliance for your protection... and outside the box thinking for your needs**



**METAL CORPORATION**  
Learn more at [sabinmetal.com](http://sabinmetal.com)

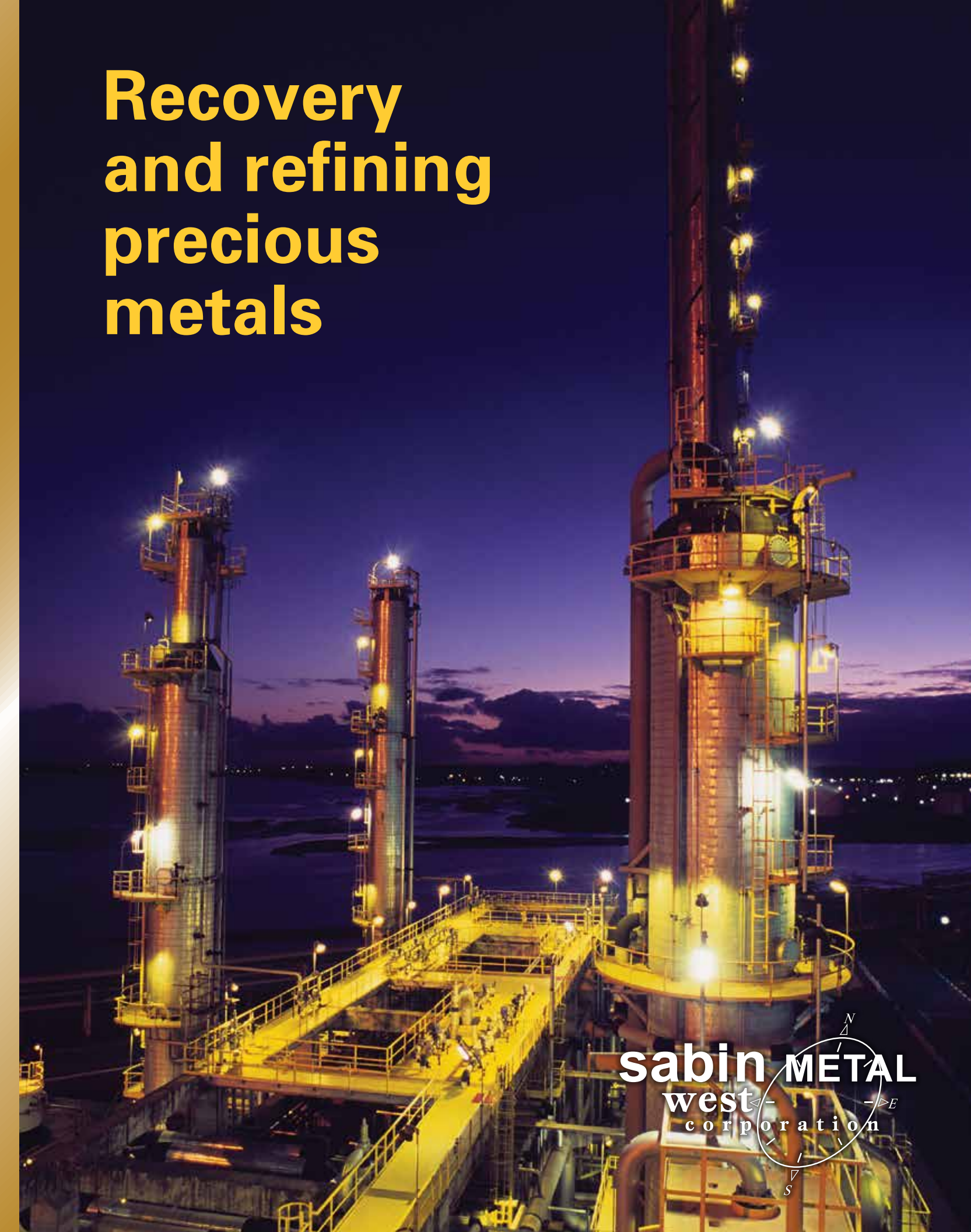


Platinum • Palladium • Rhodium • Ruthenium • Rhenium • Gold • Silver

*Processing facilities and technical service offices around the world*

4-14/1K Copyright © 2014 Sabin Metal Corp. Printed in U.S.A.

# Recovery and refining precious metals



**sabin METAL**  
west-  
corporation



# Recovery and refining of precious metals from hydrocarbon, petroleum, chemical, and petrochemical processes

*Sabin recovers PGMs and other precious metals from spent catalysts with soluble and insoluble alumina, silica-alumina, and zeolite*

- PGMs (platinum, palladium, ruthenium, and rhodium), rhenium, gold, silver, and other precious metals
- Pellets, beads, extrudates, and monolithic structures
- Waste by-products associated with catalyst processes

Sabin Metal Corporation is the largest domestically owned, secondary precious metals refiner in North America, serving a worldwide customer base with over 500,000 sq. ft. under roof. For nearly seven decades our *technical innovations, conservation policies, and responsive service* have helped maximize returns for PGM catalyst and other precious metal users around the world. We've achieved these goals by providing *value added services* along with the peace-of-mind that comes from working with an environmentally responsible refiner.

Let us put our experience, expertise, and proven performance to work for you. We'll provide you with the industry's fastest processing turnaround time (to reduce metals costs), fair, straightforward treatment, and extraordinary standards of service. We invite you to join the thousands of organizations we've helped enhance profits, reduce costs, and avoid needless and wasteful environmental problems.

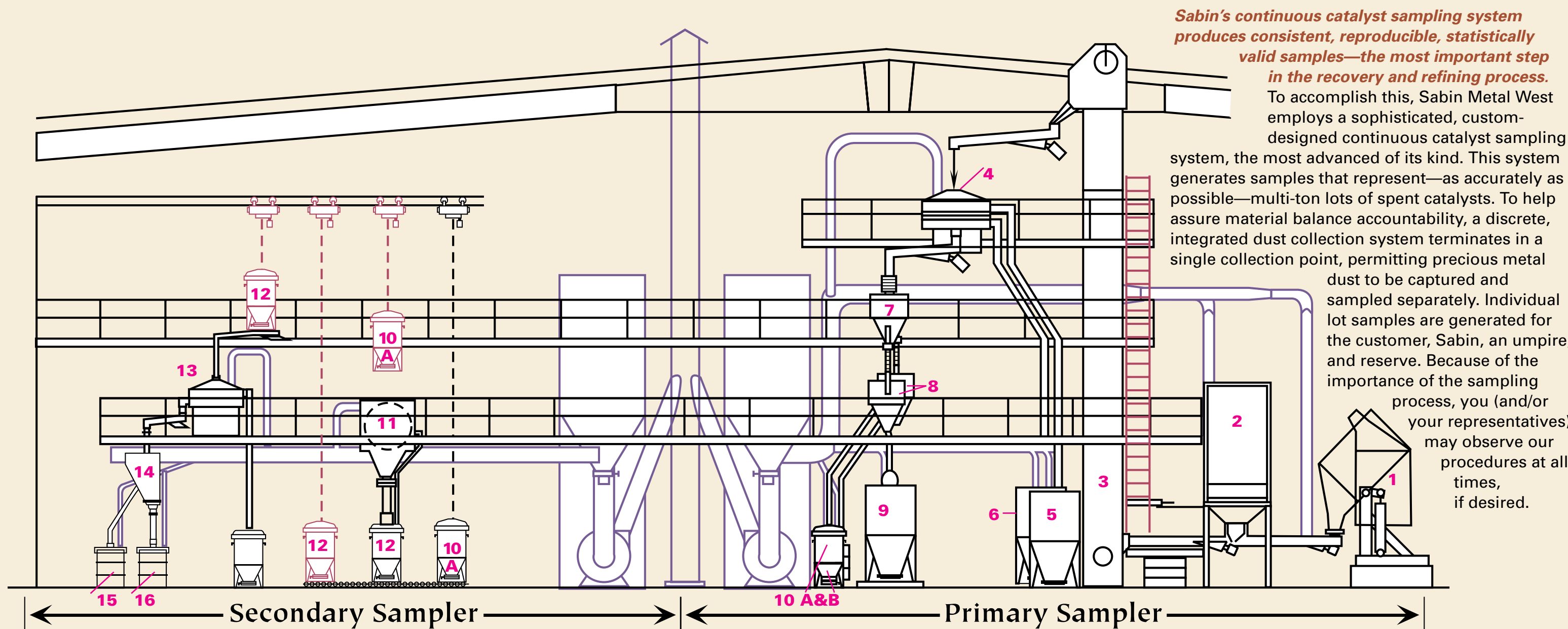
*Tell us what we can do for you.*

## Sabin's recovery and refining facilities help assure maximum returns

Precious metal recovery and refining at Sabin Metal West's 130,000 sq. ft. processing facility is accomplished with a wide variety of equipment including rotary, crucible, and electric arc furnaces, kilns, roasters, thermal processors, pulverizers, granulators, screens, blenders, auto samplers, reactors, dissolvers, precipitators, electrolytic cells, filter presses, and other specialized equipment and/or processes. Pyro-metallurgical and hydrometallurgical techniques are employed to achieve maximum precious metals recovery at minimum processing costs. Sabin's equipment, facilities, and technology—combined with nearly seven decades of experience—help assure your satisfaction with our services.

# Sabin's sampling procedures...the keys to added value

*Proper sampling is critical for determining the value of your spent catalysts*



*Sabin's continuous catalyst sampling system produces consistent, reproducible, statistically valid samples—the most important step in the recovery and refining process.*

To accomplish this, Sabin Metal West employs a sophisticated, custom-designed continuous catalyst sampling system, the most advanced of its kind. This system generates samples that represent—as accurately as possible—multi-ton lots of spent catalysts. To help assure material balance accountability, a discrete, integrated dust collection system terminates in a single collection point, permitting precious metal dust to be captured and sampled separately. Individual lot samples are generated for the customer, Sabin, an umpire, and reserve. Because of the importance of the sampling process, you (and/or your representatives) may observe our procedures at all times, if desired.

## Sampling spent precious metal-bearing catalysts at Sabin Metal West

After incoming catalyst lots are inspected, weighed, and documented, contaminants are removed in a rotary kiln. From there they are processed through the primary and secondary sampling system, typically in the sequence shown. Our continuous catalyst sampling system reduces spent catalyst lots virtually to the molecular level, a critical process that assures accurate determination of precious metal content.

- |                        |   |                                   |
|------------------------|---|-----------------------------------|
| 1. Drum dumper         | 7. Double cut rotary sampler  | 11. Ball mill                     |
| 2. Sa-bin® receiver    | 8. Two single cut rotary samplers   | 12. Ball mill discharge bin       |
| 3. Bucket elevator     | 9. Intermediate catalyst collection   | 13. Vibratory screen              |
| 4. Vibratory screen    | 10. (A&B) Two primary sample collection bins: one of these will go through secondary sampling, the other is for LOI | 14. Single cut rotary sampler     |
| 5. Oversize collection |   | 15. Secondary sample collection   |
| 6. Fines collection    |   | 16. Secondary catalyst collection |