



CJWINTER
A Brinkman International Group, Inc. Company

Cold Root Rolling: Applications, Uses & Benefits



Cold root rolling is a useful process by which the root of a threaded pipe connection is strengthened, thereby reducing the risk of pipe failure—especially in pipes that experience constant use, high pressures, and exposure to corrosive materials. Cold root rolling has proven to be an effective preventive technique that can save companies significant time and money.

At CJWinter, we are dedicated to producing superior thread rolling solutions for a wide variety of applications and uses. The following guide provides an explanation of cold root rolling, including the process, uses, applications, and benefits.

Cold Root Rolling

Cold root rolling is the process of burnishing the root radius of a previously cut thread to extend the lifetime of pipe thread connections by increasing the fatigue life of the material at the root of the threads. During the treatment process, the root radius of each cut thread on a steel pipe is burnished with a hardened roller, which alters the atomic structure of the steel from a crystalline structure to a stronger interlocked structure, thereby creating internal compressive stress that significantly increases the pipe's durability.



In addition to internal structural changes, cold root rolling smooths imperfections in the surface of the material that could make it more prone to chemical corrosion. As a result, the cold root rolling process produces a more sturdy and long-lasting pipe thread connection that is highly resistant to corrosion, stress, and the general wear and tear that occurs in high-pressure and high-saturation environments.

At CJWinter, we have developed innovative tools to roll box and pin connections which are compatible with virtually all equipment, including popular lathes and controls like Fanuc, Weiler, and Mazak. Our tools do not require an external power device or accumulator, and can be easily installed using our Error Proof Loading System. This means that you can use the cold root rolling process to strengthen connections on previously cut threaded connections.

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Cold Root Rolling Uses & Applications

Cold root rolling is useful in a variety of applications, but is most commonly employed in the oil and gas industry to facilitate reliable threaded pipe connections. It is critical that the pipes used for oil and gas infrastructure be maintained in good working order to ensure the safety of both workers and the environment without untenable expenditures.

As with equipment in any industry, prevention is preferable to repair. A failed connection in an oil or gas pipeline can cost as much as \$250,000 per day. With offshore platforms, these costs can multiply significantly when one considers the cost of cleanup, repairs, and lost production time. It is therefore imperative that offshore drill string assemblies and pipeline systems use the most advanced technology to enhance the durability and service lifetime of pipelines and components. As the most advanced technology in the industry, cold root rolling is the best enhancement option available on the market today.

While cold root rolled threaded pipe connections have proven useful in offshore drilling, on-shore drill operators have also begun to recognize the benefits of cold root rolling. This interest has led to a number of on-shore uses, including:

Extended Reach Drilling

Extended reach drilling entails directional drilling of especially long horizontal wells. Extended reach wells are easily described by a ratio of at least 2:1 for the measured depth (MD) to the true vertical depth (TVD). These wells are often constructed to reach distant reservoirs in areas where oil and gas companies wish to avoid an excessive infrastructure and operational footprint.



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Multilateral Wells

Multilateral wells consist of two or more lateral wells that originate from one main “mother well.” This configuration allows one well to obtain material from multiple reservoirs and is particularly useful in areas with complex geology, where the cost of drilling multiple wells can be prohibitive. Multilateral wells are often drilled to generate oil and gas from separated or targeted sections of depleted, faulted, layered, or heavy oil reservoirs.

Horizontal Well Operations

Any oil or gas well that is constructed at an angle of 80 degrees or more to a vertical wellbore is considered a horizontal well. Horizontal well operations have grown increasingly common in oil and gas drilling, as they allow operators to obtain oil and gas from oddly shaped or hard-to-access reservoirs.

Whether used for on-shore or offshore applications, cold root rolling is perfect for any threaded connections and pipes that undergo a high amount of stress.



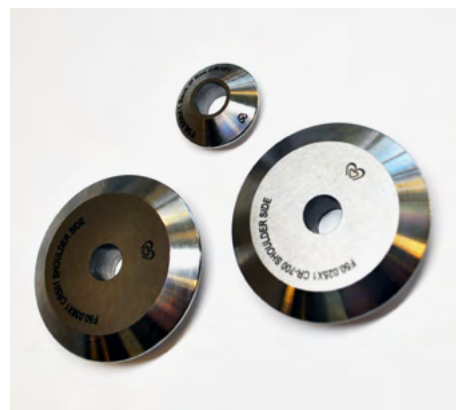
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Benefits of Cold Root Rolling

Cold root rolling offers a wide variety of benefits that make it ideal for use in applications that require resistance to high pressure and corrosive materials. The primary advantages of cold root rolling include:

- **Greater strength.** Cold root rolled steel is altered on an atomic level, for a dislocated, interlocked structure with significantly greater tensile strength and greater resistance to cracking under pressure.
- **Extended lifetime.** The strengthened material allows cold root rolled pipes and connections to function in extreme conditions for longer periods of time. In some studies, cold root rolling can extend the life of connections by 3–5 times the standard connection lifetime.
- **Higher stress resistance.** The cold rolling treatment process creates internal compressive stress that allows the treated connection to handle tensile stress more effectively. The internal stress strengthens the material, thereby allowing cold rolled pipes and connections to withstand significantly higher levels of pressure generated during day-to-day operations.
- **Improved corrosion resistance.** Cold rolling smooths scratches and imperfections from the root of the threaded connection, which significantly reduces the risk of chemical corrosion.
- **Reduced repair costs.** The cold root rolling process increases the strength and durability of the treated material, which reduces the risk of connection failures and the associated cost of repairs and downtime.

Today more than ever, oil and gas extraction are being performed in increasingly hostile environments. Cold root rolling has become a critical process in the establishment of safe and resilient systems that can tolerate harsh operational circumstances. Extreme conditions in offshore facilities and complex well applications require extremely reliable threaded connections to ensure optimal profitability. Not only do these benefits drastically reduce the cost of service and repair, they also allow for a safer, more reliable system.



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CJWinter Solutions

Since 1956, CJWinter has delivered superior commercial-grade tools to customers around the world. In today's manufacturing environment, thread rolled parts are ubiquitous throughout a wide range of applications and industries ranging from oil & gas, to automotive components, power tools, electronics, and construction parts.

As an established industry leader in the production of high-quality cold rolling tools, we guarantee the most competitive pricing and the fastest turnaround in the industry. We have used our extensive expertise to innovate customized tools for use in the petroleum industry, which makes us the only cold root rolling provider to offer a self-contained, commercially available tool that complies with:

- ANSI/API Specification 7.2:2008
- ISO 10424-2:2007
- DS-1 Fourth Edition, Volume 3.33.6.

CJWinter is pleased to provide in-house factory customer support and field support. To learn more about our cold root rolling process, tools, and services, [contact us](#) or [request a quote](#) today!



Mission Statement

CJWinter will support a worldwide demand for precision tooling and technical support services by providing quality products, innovative ideas and using the leading edge of technology. Critical to accomplishing this is a profound respect for both our employees and customers.

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For more information about CJWinter and our thread rolling solutions, [visit our website](#) today.



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