

INNOVATIVE REFINING SOLUTIONS

J&L FIBER SERVICES

J&L REFINER FILLINGS – A SUPERIOR APPROACH TO REFINING PROCESS OPTIMIZATION

Fiberline-focused technology, service, and solutions that optimize your process

Around the world pulp, paper and board mills are turning to one company for the products and know-how that help them achieve optimum refiner system performance – J&L Fiber Services, a Precision Castparts company.

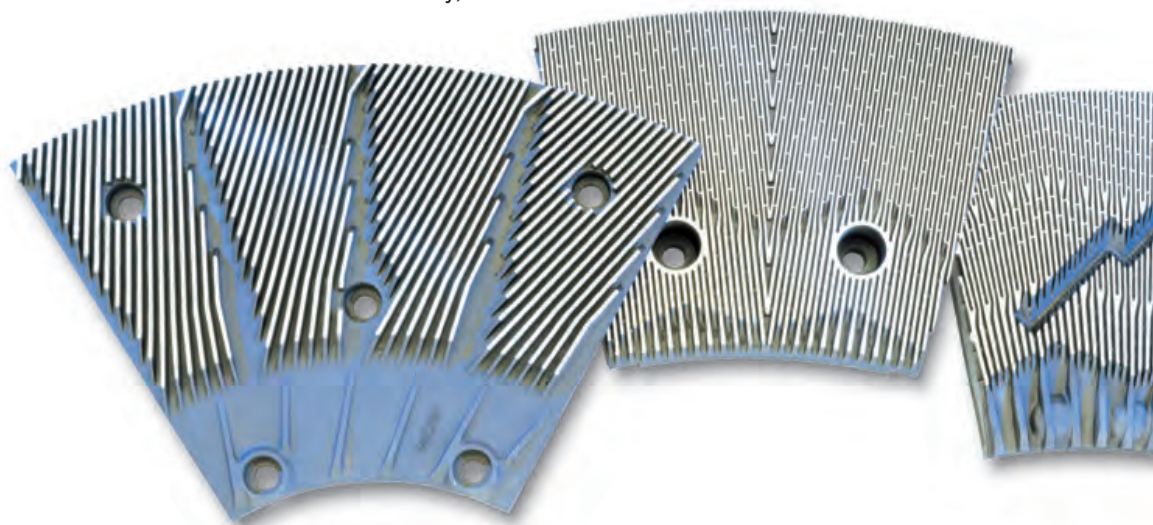
No wonder. For more than 30 years, J&L has defined the highest standards of quality plate engineering. Our selection of pattern designs and advanced alloys is the widest in the industry, and the result of a systematic approach to fiberline optimization that helps mills lock in peak levels of fiberline efficiency. We carefully analyze and research every aspect of plate design and performance so that all of our products excel in the rigors routinely encountered in pulp, paper, and board production.

Our engineering and manufacturing capabilities are among the most modern in the industry,

and enable us to design and fabricate precision fine-bar patterns. Our technical support is second to none, allowing us to support our products and your mill with the most knowledgeable team of fiberline specialists in the industry. Plus we're part of Precision Castparts Corp. (PCC), a leading developer and manufacturer of investment castings for the aerospace industry. PCC's resources give us access to the most advanced casting technology in manufacturing.

Expertise that solves process challenges

We can help your company achieve measurable improvements to virtually every aspect of the wet-end application. We make a comprehensive, systematic evaluation of the entire process, including



J&L offers innovative refiner plate pattern and alloy combinations for high consistency and low consistency applications.

J&L's quality program ensures that all products meet – or exceed – the industry's standards for performance and durability.



in-depth analysis of flow, consistency, power characteristics, and additional process variables. Then we help your mill identify the steps it can take to achieve optimum performance. We'll guarantee the results.

Field-tested engineering

J&L engineers can draw from an international database of customer applications using a number of plate designs, alloys, and furnishes. Then we employ advanced solids modeling and CAD/CAM software to create patterns that best meet your specific refining challenges.

You never need settle for pattern designs that aren't ideally suited to your process optimization goals. In addition to our broad selection of existing plate designs, we can create a custom-engineered solution to meet your needs.

Advanced alloys

The widest selection of alloys in the industry helps ensure an ideal match of plate composition to the needs of your process.

These alloys include C40, the 100% unbreakable stainless steel which has become the industry standard for paper mill refining.

And C90, combining the breakage resistance of C40 with 35%-50% greater wear resistance.

Harder stainless steels are also available for applications that require superior bar-edge retention combined with high degrees of cavitation resistance. Plus, our JL series of white irons address specific wear-resistant failure modes to ensure longer plate life. J&L's ongoing alloy development has resulted in a number of unique alloys, providing greater flexibility to match individual mill requirements.

Put our expertise to work for you

J&L is your single source for solutions throughout the refining process. Talk to your J&L representative about ideas and solutions that help put your mill on the path to continuous process improvement and increasingly higher levels of optimization.

Technical and Field Service Support

The focus of our technical specialists is fiberline optimization. We analyze and evaluate both process design and the results, and help you implement long-lasting improvements that benefit your process for years to come.

Our comprehensive range of services include:

- In-depth refiner system audits
- Custom product design and alloy development
- Technical field service
- Customer education & training

Seminars

J&L's educational seminars are customized to address your mill's special needs. The seminars are an opportunity for your operating, technical, and maintenance personnel to lay the foundation for future optimization goals and achieve a thorough understanding of the latest advances in refining technology.

Roundtables

Roundtable sessions give your technical personnel the opportunity to meet with peers and discuss common problems, solutions, and the latest advances in refining technology.

Supply Plan Programs

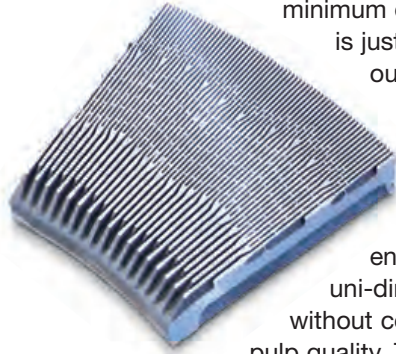
We'll help you establish a comprehensive supply plan program to help your mill avoid productivity losses as a result of inadequate plate supply.

Scrap Recycling Program

To help reduce the costs and headaches associated with plate storage and disposal, J&L will purchase used refiner plates at competitive scrap rates. It's a simple program that even includes J&L-supplied scrap baskets

REFINER FILLINGS FOR HIGH CONSISTENCY APPLICATIONS

Our broad selection of high consistency plate patterns gives mill operators the freedom to match plates to the precise needs of their application. We design refiner fillings for virtually any high consistency refiner in the industry. Plus, our designs are engineered for optimum quality, long life, and minimum downtime. Here is just a sampling of our offering.



Stabilizer™
Advanced design delivers the energy savings of uni-directional plates without compromising pulp quality. The Stabilizer is ideal for newsprint, LWC, and SC pulping applications. Improved runnability and load stability also significantly reduce plate clashing for longer plate life.

Conical Disc Fillings

Turn to J&L for conical refiner segments, including the CD70 and CD76.

Our ongoing program of continuous development also means an expanded selection of alloys and plate patterns.

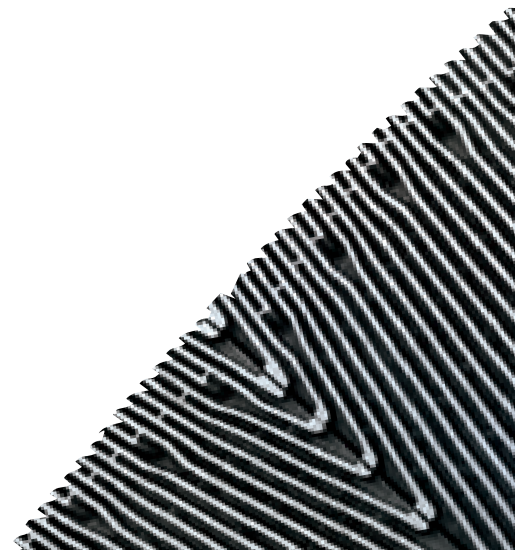


Quick-Release Plate Removal System

Now you can change out plates faster than ever before with our Quick-Release Plate Removal System. Innovative design incorporates a threaded soft-tip bolt that tightens against the plate holder until the plate releases. The result: fewer man-hours spent trying to remove stuck plates and a lot less downtime.



J&L's investment in manufacturing technology pays off in improved products and satisfied customers.





Double Overhung Refiner Plates

Patented outer ring design actually overlaps the inner ring, providing a longer plate profile as well as a 30% increase in continuous refining surface area. Improved loadability and load stability also contribute to better bonding strength for optimal fiber development.



Steam Groove

Unique design accommodates improved steam handling in secondary, reject, and tertiary applications. The J&L design improves fiber flow through the refiner bars without carrying unrefined fiber along with the steam. The J&L design decreases load swings, keeps vibration at a minimum, and reduces thrust-loading needs.

Custom Pattern Making

When mill applications call for custom plate patterns, J&L's advanced pattern-making process allows creation of sophisticated design concepts. J&L utilizes advanced solids modeling techniques, as well as CAD/CAM and finite element analysis to create plates ideally suited to specific process applications.



ACHIEVING OPTIMUM PERFORMANCE IN LOW CONSISTENCY REFINING

Turn to J&L for the industry's broadest selection of alloys and patterns specially engineered for low consistency applications. Once you add the expertise and support of our knowledgeable team of process optimization specialists, you'll see why no other company offers you as many opportunities to maximize your mill's optimization results. Furthermore, our continuous-improvement approach to mill analysis is your assurance of comprehensive application support with the top technology for your application.



J&L refiner fillings are produced in our state-of-the-art casting facility, ensuring consistent product quality and perfor

Process optimization – your goal, our strength

Did you know you can also turn to J&L for a total system analysis? We'll nail down strategies and solutions that will help improve your entire process. With our help your mill will realize significant productivity gains, including:

- Superior quality
- Lower operating costs
- Maximized efficiency
- Longer plate life
- Improved feeding, higher throughput
- Improved paper machine runnability

The most complete product selection in the industry

Our wide selection of cast, fabricated and remachineable plate patterns means we'll have the plate your refiner needs to perform at top efficiency.





DynaFlo™ Curved Bar

The newest innovation from J&L, DynaFlo, is the result of advanced flow analysis. Flow transition zones enhance a smooth, uninterrupted flow from the plate's ID to OD. DynaFlo's unique design improves feeding capability and delivers equal fiber quality (intensity) at higher capacity.

Conical Fillings

Flexible design capabilities help us develop the ideal filling for your mill's specific needs. Fabricated refiner fillings mean we can supply virtually any original equipment manufacturer's model refiner in the industry.

Flared Bar/Groove Plate Design

Our innovative, never duplicated flared bar pattern features an expanded inlet for better feeding and improved transition from the plate's ID to OD. The plate's superior flow characteristics contribute to higher capacity without compromising fiber quality.

Alloy Research & Development

C40, the industry's first unbreakable alloy, was a J&L innovation. We followed that up with C90, an unbreakable alloy with 35-50% more wear resistance. And our industry-leading commitment to innovative designs and materials continues. Ongoing development efforts are fueled by comprehensive analysis of actual mill conditions and failure modes. To ensure our plates meet or exceed your performance standards, our researchers engage in used-plate analysis. They conduct trials based on actual refining conditions, and confirm prototype performance standards in controlled mill site trials.





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