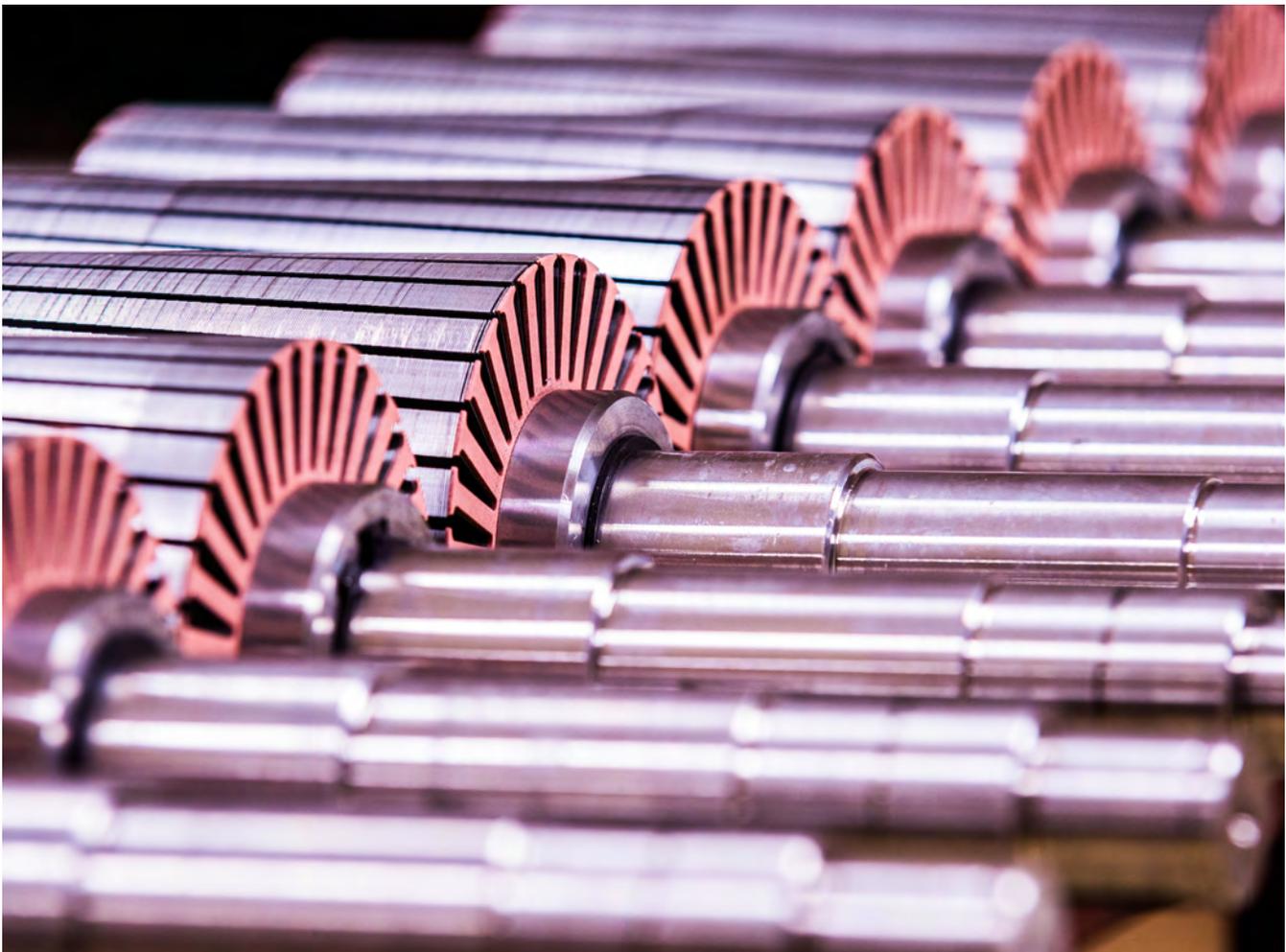


Comprehensive Guide to Precision Motor Laminations for Engineers

Engineers with part blueprints in hand often face the challenge of finding a partner who can transform their concepts into precise, manufacturable laminations. The performance of electric motors relies heavily on the quality of rotor and stator laminations, making the choice of manufacturer a critical decision.

Thomson Lamination Company (TLC) has specialized in motor laminations since 1964, offering high-precision stamping, laser cutting, in-house die/tooling development, and full-service manufacturing support. While TLC does not design parts, their expertise lies in manufacturability, efficient production, and end-to-end execution. With proven experience in working with thin-gauge steels, exotic metals like cobalt, and demanding geometries, TLC consistently meets performance, quality, and lead time expectations.

This guide explains the processes and considerations behind producing precision laminations, highlighting why engineers across industries choose to work with TLC.



Why are Rotor and Stator Laminations Important?

Laminations are thin layers of magnetic alloys stamped into specific shapes and then stacked together to form the magnetic core of an electric motor. This core directs and controls the flow of magnetic fields, enabling the motion that powers the motor.

The benefits of lamination stacks include:

-  **Reduced Energy Loss**
By minimizing eddy currents, laminations decrease wasted energy within the motor.
-  **Increased Efficiency**
Better management of electrical losses improves overall motor performance.
-  **Improved Performance**
When cobalt is used, laminations enhance torque generation and allow for higher power output.
-  **Support for High-Frequency Motors**
Thinner laminations produce lower eddy currents and can run at high frequencies with reduced losses.
-  **Customization**
Laminations can be tailored to application-specific requirements, making them suitable for a wide range of motor designs.

Unlike general-purpose stamping shops, lamination specialists such as TLC provide the tight tolerances, advanced tooling knowledge, and careful material handling needed to work with thin-gauge steels and exotic alloys. TLC focuses exclusively on rotor and stator laminations, optimizing every stage of the process, from die design to stack assembly, to ensure application-specific performance and long-term reliability.

Choosing the Right Manufacturing Process: Stamping vs. Laser Cutting

Selecting the right production method depends on application requirements, material type, and production volume. TLC offers both high-speed stamping and precision laser cutting to accommodate a full range of needs.

High-speed stamping is the most cost-effective solution for large-volume production. It excels at:

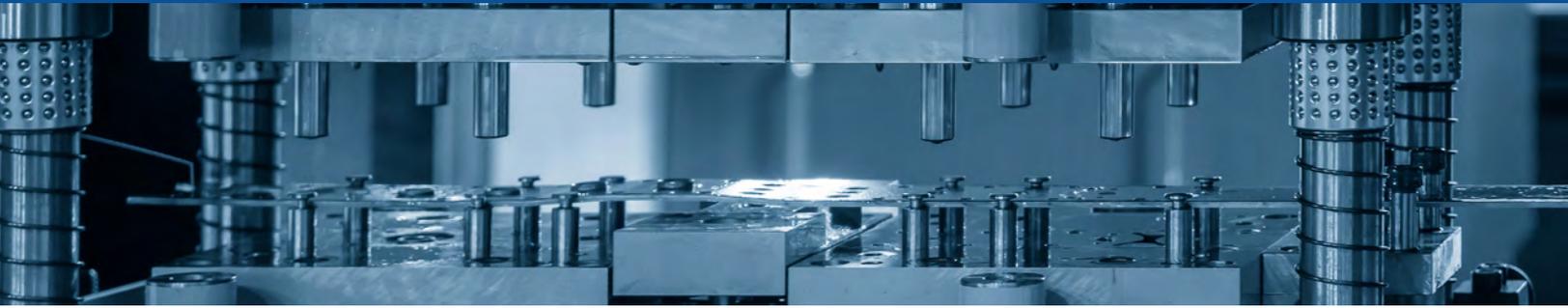
- Achieving Tight Tolerances
- Maintaining Consistency over Long Production Runs
- Delivering High Output Rates Once Tooling is in Place



Laser cutting is ideal for applications that require flexibility and precision. It's ideal for:

- Complex Geometries
- Rapid Prototyping
- Short Runs, Without the Expense of Custom Tooling

Each method has tradeoffs. Stamping is faster for high volumes but requires upfront tooling investment. Laser cutting provides flexibility but is slower per part. TLC applies these methods strategically, factoring in material choice, part geometry, and the project's stage in development.



Custom Dies and Inserts: Building for Accuracy and Efficiency

Every high-volume lamination project begins with a well-designed die. TLC builds custom dies in-house, ensuring both quality control and reduced lead times.

Key advantages of TLC's die capabilities include:

- Design Flexibility**
Dies can incorporate specialized notching or inserts that aid in bonding, thermal expansion control, or alignment.
- In-House Development**
By producing dies internally, TLC accelerates project timelines while maintaining consistent quality.
- Proprietary Dies**
TLC has the ability to create proprietary tooling, such as carbide progressive dies and master insert dies, for unique customer requirements.
- Breadth of Options**
With over 1,500 dies in service, TLC can handle a wide range of lamination geometries and requirements.
- Material Expertise**
TLC's extensive experience with thin-gauge steels and exotic metals ensures dies are optimized not just for shape, but for yield, durability, and downstream performance.

Beyond Stamping: Planning for Post-Processing, Assembly & Repeatability

Precision lamination manufacturing does not end at stamping. TLC offers a full suite of post-processing services such as annealing and heat treating. These processes relieve stress and enhance the structural integrity and magnetic properties of laminations, particularly for ultra-thin specialty alloys rich in cobalt and nickel.

Our team also provides stack assembly and repeat run planning, including die setups and material sourcing, to shorten delivery timelines and simplify future orders. We carefully manage transitions from prototype to production, paying careful attention to concentricity, bonding, and the careful handling of delicate materials.



Why Engineers Choose TLC

Thomson Lamination Company is not a general stamping shop. Our team's entire focus is on rotor and stator laminations, allowing us to achieve precision and consistency that few competitors can match.

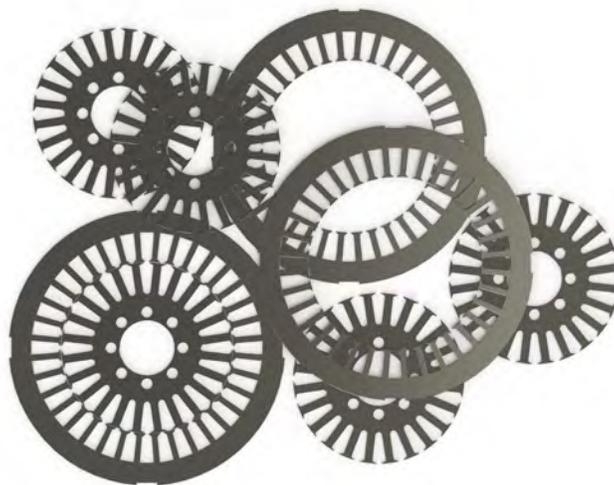
Engineers turn to TLC for a variety of reasons, including:

- Proven expertise with cobalt and thin-gauge steels
- Experience resolving manufacturability issues
- Competitive material pricing through a stable supply chain
- Reduced lead times, even for complex projects
- Secondary processes available (heat treating, stack assembly, machining etc.)

By collaborating early in the process, TLC helps engineers identify potential challenges, optimize manufacturability, and avoid costly errors. With decades of experience in stamping, laser cutting, die building, and post-processing, TLC transforms challenging designs into dependable production parts.

Engineers trust TLC to get it right the first time, whether the project involves high-frequency motors, complex part geometries, or exotic materials.

[Contact us today](#) or [request a quote](#) to learn how Thomson Lamination Company can support your next motor lamination project.





About Us

Thomson Lamination Company, Inc. (TLC®) was established by John B. Thomson in 1964 to meet the demand for high-end specialty, or niche-market stamped electrical parts with extremely tight tolerances. This includes producing laminations for mission-critical rotating components, annealed at high temperatures in controlled atmospheres. From its modest beginnings, our plant has grown into 76,000+ square feet of the most modern production facilities and equipment in the lamination industry.



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