



CUSTOM IS STANDARD

From the first design concept into development engineering through ramp up and onto reliable volume production, Spang Engineered Solutions has all the engineering, material sourcing, manufacturing and logistics tools to support your project.

PRODUCTS

- ◆ POWER INDUCTORS
- ◆ DIFFERENTIAL INDUCTORS
- ◆ PFC CHOKES
- ◆ COMMON MODE FILTERS
- ◆ HIGH FREQUENCY SWITCHING TRANSFORMERS
- ◆ 3 PHASE INDUCTORS & TRANSFORMERS
- ◆ LINE FILTERS
- ◆ REACTORS
- ◆ CUSTOM COMPONENTS
- ◆ BOX BUILDS

INDUSTRIES



Spang

Founded in 1894

MAGNETICS

High Quality
Core Materials

Spang
ENGINEERED SOLUTIONS

Innovative, Custom
Wound Solutions

Spang Power Electronics

High Power
Systems and Testing

SES
South

- Military and Aerospace Components
- AS9100D and ISO9001 Certified
- DDTC Registered

SES
Phoenix West

- Warehousing for large-volume manufacturing from SES China

SES
Phoenix North

- High frequency magnetics and coax assembly
- AS9100D and ISO9001 Certified
- DDTC Registered

SES
Pittsburgh

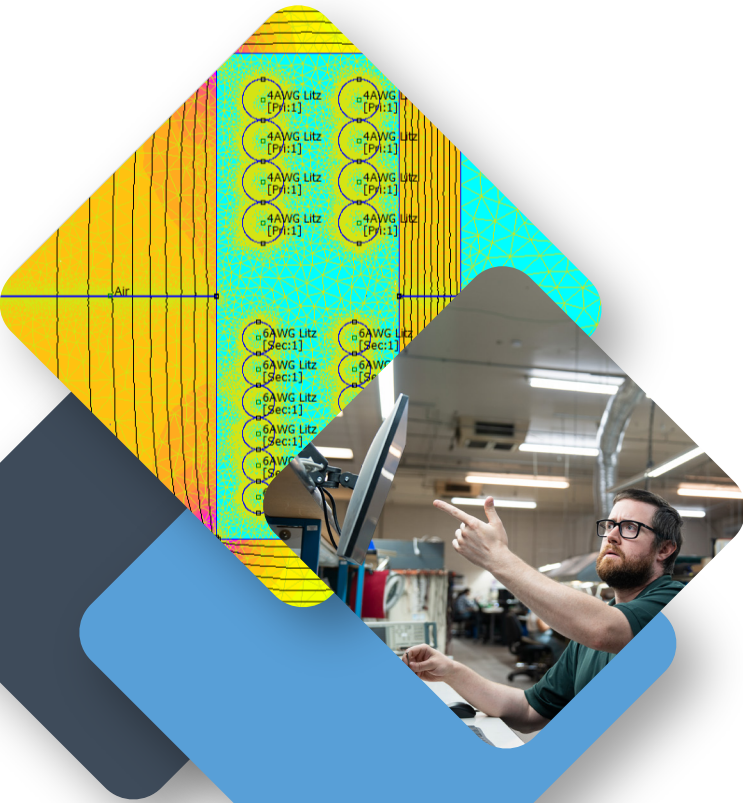
- Small, medium, large, and foil winding production
- Prototyping
- UL 1446 Electrical Insulation Systems Certified
- DDTC Registered

SES
China

- ISO9001 Certified
- UL 1446 Electrical Insulation Systems Certified

DESIGN

- ◆ Simulation and design tools developed by our knowledgeable engineers
- ◆ Advanced techniques to make products both unique and manufacturable
- ◆ Custom core and bobbin design with available 3D printing
- ◆ Wide range of capability:
 - Magnetics covering the frequency spectrum from line frequency to hundreds of MHz
 - Power levels spanning from few VA to many kVA
 - Design capability from sensors to power transformers
 - Extensive manufacturing knowledge including toroid, bobbin, foil, and shaped wire winding



MANUFACTURING

- ◆ Global sourcing with expertise in obsolete or hard-to-find components
- ◆ Option of lower-cost China production or US production's expedited fulfillment at any of our 4 US manufacturing locations
- ◆ Wide variety of epoxies, adhesives, and varnishes available
- ◆ Capabilities include, but are not limited to:
 - Surface mount and through-hole magnetics, as well as larger chassis mounted options
 - Planar magnetic design and manufacturing
 - Complex wire winding, including heavy gauges of shaped magnet wire
 - Impregnation and potting using a variety of compounds
 - Thermoplastic and thermoset injection molding
 - Lead-free or isolated Pb-Sn soldering and tinning
 - Complete module assembly
 - Globally integrated Quality Management

RIGOROUS PROCESS CONTROL & TESTING

- ◆ Dedicated test protocol and process control plan for all parts, including:
 - Inductance, including inductance under load (L)
 - Quality factor (Q)
 - SRF and Capacitance (C)
 - DC resistance (DCR)
 - Turns ratio and frequency response
 - High voltage safety and dielectric strength testing (IR and Hipot)
 - Impulse testing
 - Mechanical conformance
- ◆ State-of-the-art, in-house testing equipment
- ◆ Fully configured to comply with ITAR, RoHS, REACH, and ISO9001 AS9100D





Spang ENGINEERED SOLUTIONS

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