

DESIGN

PART

formulating success

What Defines Quality?

Know what you need and how to get it.

*features + cost
expectations*

lifecycle

Zero defects

Quality = ?

~~*PRICE?*~~

~~*Consistency*~~

Eastern Edition - April 2014

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Southern company ensures quality through multiple capabilities and quality control

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When Quality Rules Supreme

Southern company ensures quality through multiple capabilities and quality control systems

By Rebecca Carnes

With an array of in-house processes from grinding to powder coating, as well as vision systems in place to monitor parts, Southern Spring & Stamping, Inc., is able to ensure the consistency that its customers say is foremost on their minds when it comes to quality expectations.

Southern Spring & Stamping, with two locations in North Carolina and Florida, offers compression, extension, and torsion springs, as well as wire forms, stampings, four-slide products, sheet metal fabrication, and CNC machining.

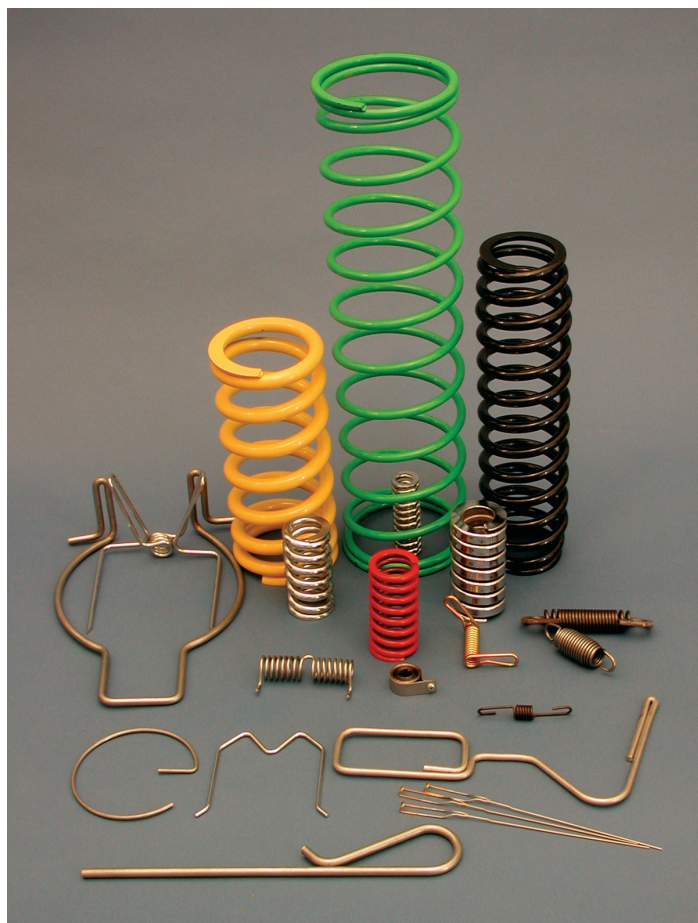
Its versatility extends not just to its main offerings, but also to its in-house capabilities, which include grinding, assembly, heat treating, wet electrostatic painting, powder coating, silk screen printing, color-coding, and MIG, TIG, and spot welding.

It is this range of offerings which helps enable Southern Spring & Stamping to provide customers with a consistent, high-quality product because the company controls such a wide variety of elements that go into the parts. Although some finishes are performed by locally approved suppliers, there's very little that they outsource. The company can control many processes from in-house tool and die making through to final inspection. The company can also provide full assemblies, handling an entire product for a single customer.

One customer, in particular, was having issues with the assembly process of its springs that were going into commercial scales, cutting off one or two coils of the springs and ultimately altering the function and performance of the spring. Southern Spring & Stamping suggested putting an adjusting mechanism on the product, and the more the company studied the product, the more it became apparent it could manufacture all of the components that went into the product.

"They ended up handing over the entire product to us, so we now make everything in-house and we put it in their box finished and ready to go. We ship it to their shelves, complete. And as their customers place orders, they just take the product off the shelf. We went from just making the spring to now making the stamped components, machined parts, and doing the whole assembly," said John Newman, national sales manager for Southern Spring & Stamping.

It's hard to find a spring, stamping, and sheet metal manu-



Southern Spring & Stamping, Inc., produces a wide variety of customized springs and wire shapes, including compression springs, extension springs, torsion & double torsion springs, Belleville springs, clock springs, and wire forms. Photo courtesy Southern Spring & Stamping, Inc.

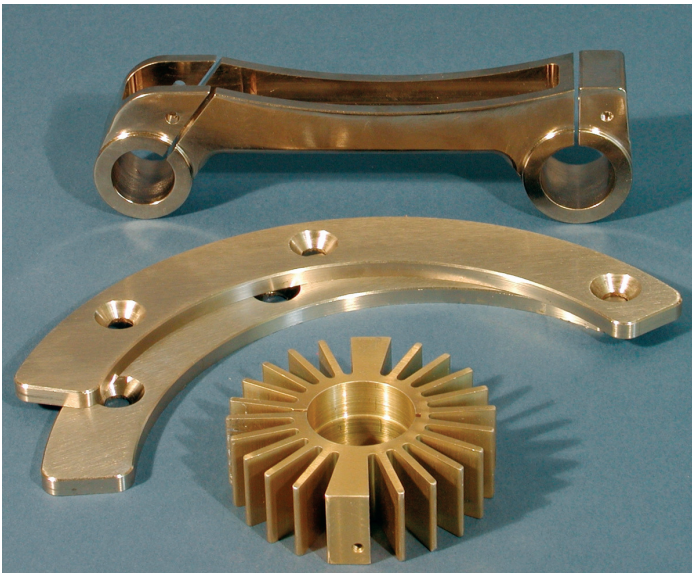
facturing house all-in-one with almost 60 years of experience, Newman stressed, adding that this capability range allows them to "far exceed many of our competitors," he said. The company can produce all of the individual parts that are commonly found in most metal assemblies, and this wide range of products allows customers to reduce their supplier base.

When Newman started with the company, he noticed everyone would call the company just "Southern Spring," which left the impression that they only did springs. Newman visited his existing customer base and explained that Southern Spring & Stamping is the company's full name and that they also manufacture stampings, four-slide components, and sheet metal fabrications. The existing customers were interested and started asking for other parts besides springs to be made.

"So we ended up just tapping into an existing customer base and offering them more options, and some of them were thrilled because they could consolidate their supplier base. Why should they call three different people when they can call one?" Newman said.

High Quality Leads to Reshoring

Able to produce one piece to millions, Newman commented that the company's largest production run last year was 23 million pieces for a consumer product that required stampings for a scented stick device that was sold in big box retailers. The part had been previously made in China and was "rusting in the packaging on the shelf," Newman said.



The versatility that Southern Spring & Stamping, Inc., offers with its wide variety of products and in-house services allows the company to ensure a consistent, quality product. Its CNC machining capabilities with customized programming ensure optimization of set-ups and reduction of cycle times. Photo courtesy Southern Spring & Stamping, Inc.

The part was reshored to Southern Spring & Stamping, and is just one example of the company's dedication to quality that often results in reshored parts.

With the company being ISO certified, ITAR registered, and AS9100 compliant, Southern Spring & Stamping is known for its high quality, Newman said.

"It is this high quality that has brought jobs back from overseas. In fact, we have seen a surge of reshoring over the past few years. We have an open door policy and urge our customers to tour either facility to better understand our manufacturing processes and what it takes to produce their product," he said.

"This quality standard starts with the high level of workmanship and pride that my colleagues possess. Without sounding cliché, the employees are truly our biggest asset. Our high retention can be seen on the wall of photos with employees having 25 years or more with the company. It's this same consistency that becomes another key element in maintaining a higher quality product," Newman said.

One customer complained to Newman that his company's prices were high compared with what they're seeing from China. "But then I see a big barrel of parts right next to their production line," he said. Turns out those parts were the bad parts coming in from China with serious quality issues, rendering the parts unusable. Newman asks these customers to consider the total costs related to such waste.

"A year later, they finally come back to us (after going to China) and say that they've been discarding sixty percent of the parts because when put into the assembly, they wouldn't fit or wouldn't operate properly. They'd have to throw them out and it doesn't make sense for them to ship them back," Newman said. "So suddenly they're realizing we're close to double the cost, but that's actually going to be savings if they're using one-hundred percent of our parts."

Part of that assurance of quality that results in reshored parts is giving superior customer support and design assistance

that ultimately saves money. Although the company doesn't design parts, it offers solutions to existing designs. This is especially effective when the end use of the product is known.

"That's when we can get more involved and determine what elements of the design are necessary or what can be improved," Newman said. "There have been times when, once we knew the end application, we completely changed the design and the customer was thrilled with the product. It's something where the more eyes you have on something, the better the design. Sometimes an engineer that's working on something can overlook certain aspects."

Ensuring Quality

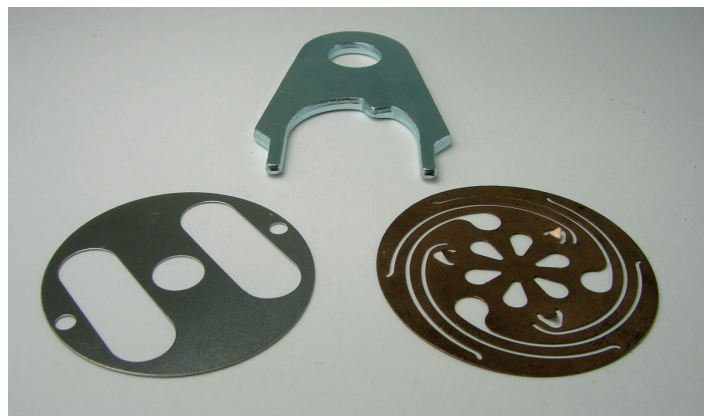
Each facility—one based in Venice, Fla., and the other in Stokesdale, N.C.—has incorporated the use of vision systems in the company's quality control departments to further ensure the accuracy and measuring capabilities of the tight tolerances the company is able to deliver.

"When we're doing extremely tight tolerances, rather than using traditional electro-mechanical sensors, we've now gone to vision systems or cameras that actually take a snapshot and measure the part and can do it more rapidly so we can end up increasing our production rate," he said. "These parts are coming out at a rate that's five to ten times faster."

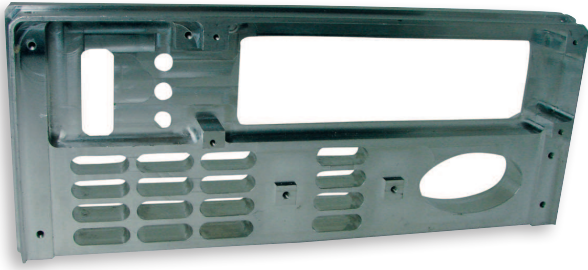
The company had one instance where a customer complained about breakage. To the naked eye, the part looked fine, but the vision system revealed small, hairline fractures at some stress points. Southern Spring & Stamping adjusted its tooling in-house and manufactured the part slightly differently so as to avoid the stress points. The problem was completely resolved, but prior to incorporating the vision systems, the company often could not tell why a part was having a problem.

"It's essentially like using a microscope to take your measurements. So we're not only being able to measure at a much smaller increment or a higher resolution, but we're also visually seeing the quality of the part," Newman said.

The vision system is used for the springs, stampings, and sheet metal for production and final inspection. "There's a variety of ways to use them (vision systems). With some, we can be measuring parts, like the free length of a spring, as each part is being made. We might be producing 20,000 parts per hour, so it's coming out fast and you can barely see each part.



The company manufactures precision stampings, producing parts with a variety of alloys from common to exotic. Tooling is fabricated in house and allows for the adaptation of components from prototypes to high production tooling. Photo courtesy Southern Spring & Stamping, Inc.



Southern Spring & Stamping, Inc., also offers sheet metal fabrication and provides a full-quality inspection department that utilizes vision systems. The company is ISO certified, ITAR registered and AS-9100 compliant, and parts can be run to commercial tolerances or to military specifications. Photo courtesy Southern Spring & Stamping, Inc.

It looks like a waterfall. Yet, the camera is taking measurements that quickly,” Newman explained.

The company (www.southernspring.com) utilizes CNC machines, as well as older equipment that has been updated with CNC controls. They are capable of meeting a full range of requirements, from prototypes to high-volume production. Through customized programming, the company can optimize set-ups and reduce cycle times. Some operations, including four-axis machining, pallet changer, 3-D solid

modeling, 3-D machining, and thread milling, are performed utilizing certified processes and can be monitored by statistical process control.

For stampings, the company offers options for both low- and high-volume production. Progressive dies and four slides incorporate more robust tooling when a high production rate is desirable. Because tools are produced in-house, the quality can be controlled from beginning to end, while ensuring the tool is maintained throughout the life of the part. For lower volumes, the company offers in-house tool options or “soft” tooling that can be produced whereby the tool costs are substantially lower, making it more suitable for one- to two-piece prototypes. The stamping process can involve blanking, punching, pressing, embossing, tapping, bending, flanging, and coining. The more intricate and detailed the part is, the more the company is up for the challenge, Newman said.

Sheet metal fabrication can often incorporate similar processes as a stamped part. These products more often than not are used as face plates, enclosures for electronics and cabinetry to house other components. The company then incorporates inserts, hardware, and fasteners to secure the internal components. The in-house powder coating and silk-screen printing process provides value-added benefits and delivers a durable and aesthetically-appealing finished product, Newman said.



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Custom Springs, Wireforms, Stampings & Sheet Metal Products

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Electronics
Telecom
Medical
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Compression, extension and torsion springs, stampings, fourslide parts, progressive dies, sheet metal fabrication, machining, grinding, shot peening, powder coating, painting, welding and silkscreen printing

Southern Spring & Stamping, Inc.

ISO 9001 Certified & ITAR Registered

401 Sub Station Road
Venice, FL 34285 • Toll Free: 800-450-5882
Contact Brad Moore bradm@southernspring.com



Proudly Made in the U.S.A. Since 1957



2089 US Hwy. 220
Stokesdale, NC 27357 • Phone: 336-548-3520
Contact John Newman john@southernspring.com

www.southernspring.com