

2025 Shot Peener of the Year Dr. Langdon Feltner



THE 2025 SHOT PEENER OF THE YEAR award goes to Dr. Langdon Feltner, a rising voice within the shot peening community whose work is reshaping how the industry approaches variability, sensing, and digital integration.

A recent doctoral graduate of Purdue University, Feltner has co-authored over 10 publications across both academic and industry-facing venues and has presented research at major conferences, most recently the International Conference on Shot Peening in September 2025. Through his work with Purdue's Center for Surface Engineering and Enhancement (CSEE), he has helped to strengthen the connection between academic theory and industrial application. His contributions demonstrate a rare balance of theoretical insight and practical applicability — hallmarks of a future leader within the surface enhancement industry.

JOINING THE SHOT PEENING INDUSTRY

Feltner's foray into shot peening began during his year-long senior design project with American Axle and Manufacturing in 2021–2022. What started as a scoped academic project quickly evolved into a career-defining pursuit.

“For most people, a senior project ends when you turn in the final report,” Feltner reflected. “I want to express my gratitude to Dr. Mark Gruninger for allowing me the opportunity to continue to work in this industry.”

That early work introduced Feltner to the complexities of shot peening, while his continued research with advisor Dr. Paul Mort—and in collaboration with CSEE's network of industrial partners—shaped his technical and intellectual development. Those experiences revealed not just the scientific and process-level challenges of shot peening but its potential as a field still ripe for innovation.

A THESIS ON STOCHASTICITY AND VARIABILITY

Feltner completed his doctoral defense on November 19th, 2025. His dissertation investigates stochastic behavior in shot peening processes — or, in simpler terms, variability that lies beyond direct process control.

“The goal of my dissertation,” he explains, “is to understand the role of stochasticity in shot peening processes— everything from cycle-to-cycle variability in component performance to micro-scale fluctuations in residual stress and surface finish.”

His work provides vital insight into quantifying and modeling these unpredictable elements to better predict performance outcomes. Building upon his expertise in computational modeling, he developed a reduced-order process flowsheet that couples media degradation and recharge dynamics with real-time residual stress prediction. The model offers a new path toward data-driven process optimization and improved reliability in industrial applications.

HOPES FOR THE FUTURE OF THE INDUSTRY

Looking ahead, Feltner hopes to see the shot peening community more closely integrated with the advanced manufacturing movement. He envisions a future where shot peening evolves in step with data-driven, intelligent production systems—an interdisciplinary effort linking materials science, automation, and process control.

“There's a broader national initiative—led by organizations like the DOE, NSF, and DOD—to modernize manufacturing through data-driven, intelligent systems,” he said. “When we

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align shot peening research with those strategic priorities—embracing tools like digital twins and autonomous process control—we help secure the future of the industry.”

REFLECTIONS ON THE AWARD

Receiving the Shot Peener of the Year award came as a surprise for Feltner.

“It’s an elite club,” he said. “When you look back at the list of recipients dating back to 1992, you see the most influential people in this industry. You never expect to be honored with an award like that. I’m just very grateful for the opportunity to have received it.”

He extends his thanks to his advisory team at Purdue, The Shot Peener Magazine, as well as the entire EI team for encouraging his research endeavors. He also acknowledges the support of CSEE and the member companies that provide the collaborative environment essential to continued progress—their perspective and feedback have shaped his research.

“This dissertation turned into something more illuminating than I could have imagined ... we’ve put together a very creative perspective on the shot peening process, while staying grounded in industrial practice and focused on applicability,” he said.

For Feltner, this recognition isn’t just a milestone — it’s a reminder of the collective effort driving the shot peening industry forward.

“I hope people see this award as forward-looking — a symbol of where we’re going as a community, not just where we’ve been.” ●



Dr. Langdon Feltner with previous Shot Peener of the Year award recipients.

View His Dissertation

To read Dr. Feltner’s dissertation, visit <https://feltner515.github.io/homepage/>

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