



# inScythe LLC

Sharpening Insight  
Harvesting Performance

Contact:  
[johnwillis@inscythe.com](mailto:johnwillis@inscythe.com)  
513-305-2074  
[inscythe.com](http://inscythe.com)

Engineering Consulting for:

- Design Problem Solving
- Manufacturing Problem Solving
- Problems with Scale-up of New Products in Manufacturing

Expert consulting services backed by 30+ years of experience across highly regulated and competitive industries





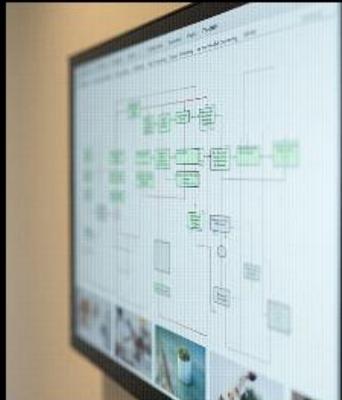
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## Our Driving Purpose

### Our Vision



No problem is too hard to solve. With your experts and our innovative methods anything is possible except violating physics.

### Our Commitment



We will help you understand your business and products better, solve your hardest problems, and eliminate waste.

### Our Values



We prioritize integrity, collaboration, and innovation in every project. No project is too large or too small for us to tackle with you.

## Services We Offer:

### Manufacturing Engineering consulting:

- Meet New Product Launch Goals – meet timelines, scale volume seamlessly by finding root causes for technical problems *instead of just tightening specs and increasing costs*
- Cut Cost in Manufacturing and Assembly – increase product quality, process capacity, and process yield, *and* decrease scrap and all costs by finding root causes *instead of inspecting in quality and increasing costs*

### Design Engineering consulting:

- Seamlessly Launch – Design products with deeper understanding of how and why they work *with no need to tighten specs during manufacturing transition*
- Increase Profit on New Products – understand your product design with advanced DOEs to both improve market performance *while simultaneously reducing production costs*

### How can we do this?

- We use advanced statistical engineering techniques (such as DOE) to design tests that reveal knowledge about your products and processes and we've been doing this for over 30 years.



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## Case Study #1 Optimizing Scale-up of New Products in Manufacturing

### The Problem:

A new display product was being introduced into manufacturing. A new process was planned requiring a 2-month shutdown and a \$4M capital investment to change the base chemistry of the process. A manager in the plant challenged the need for the chemistry change even though the Japan based development team asserted that the new product **was impossible** without the shutdown and new equipment investment.

### The Resolution:

inScythe developed a series of advanced DOEs (Design of Experiments) that found hidden interactions between the process settings and the chemistry of the original production process that enabled the original production process to be used to manufacture the new display product with minor process changes and no change to the base chemistry of the process.

### The Results:

- Saved \$55M in potentially lost product sales
  - Production shutdown for only 2 weeks to make minor changes vs the planned 2 months
- Saved \$3.9M in budgeted capital investment
  - Only \$100K was required to make changes to the original production process





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## Case Study #2 Problems with Scale-up of New Products in Manufacturing

### The Problem:

A major golf company was way behind in scaling up the manufacturing of their newly designed carbon fiber composite golf club driver. The launch was at risk because of problems related to the fine finish over the carbon composite. A small number of pits in the finish were experienced during the prototype phase of the project, but as manufacturing was scaled at the component supplier, the defect rate went way up and first pass yield was below 5%.

### The Resolution:

inScythe was called in to fix the finishing process at the component supplier but noticed that the root cause of the problem was pits in the carbon composite before sanding. The supplier claimed that eliminating pits in molded composite **was impossible**. inScythe led the supplier team in a series of DOEs in the composite molding process that uncovered significant interactions and solved the problem at the root cause.

### The Results:

- Pits were nearly eliminated at the carbon fiber molding stage leading to a first pass yield at finishing of over 90%
- The new product launch was saved with production reaching planned capacity within 2 weeks





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## Case Study #3 Problems with Scale-up of New Products in Manufacturing

### The Problem:

A medical device manufacturer was unable to scale up manufacturing of a coated surgical needle. The coating would not perform as designed even though no problems were encountered in the prototyping phase. A full-scale production line was put in place including mixing, coating, drying, and curing phases but the manufacturer could not figure out what process settings or even phases of production were leading to the failures.

### The Resolution:

inScythe was called in to help and worked with the team to set up a large-scale screening DOE that spanned across all process phases. This DOE included some innovative process step simulations to overcome places where the process had fixed settings for factors the team thought might be important to include. The screening DOE made the root cause stand out clearly and the process was quickly fixed, validated, and put into production.

### The Results:

- The product was launched on time with sufficient launch inventory at planned manufacturing capacity.





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## Case Study #4 Manufacturing Problem Solving

### The Problem:

A major consumer products manufacturer purchased a component supplier's equipment and process and brought it in-house as a cost-savings measure. The supplier set up the equipment and trained the in-house personnel. Once in place and operating, the scrap costs were twice as much as those budgeted by the project, and the project to bring the supplier process in-house, was being considered a failure.

### The Resolution:

inScythe worked with the production teams to find that process controls were not well understood and running the equipment was seen as “an art” by the original supplier. inScythe then led the manufacturing team through a series of DOEs that identified multiple previously unknown interactions between process controls. Once these were understood the process settings were optimized and scrap dropped drastically.

### The Results:

- Process scrap was reduced by over 70%
- \$400K/year ongoing scrap cost savings
- The cost-saving project to bring the supplier process in-house became an overwhelming success, paying off the investment in half of the predicted time.





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## Case Study #5 Design Problem Solving

### **The Problem:**

A medical device manufacturer had complaints about the complexity of attaching a disposable surgical device to their ultrasonic engine, which was a piece of capital equipment that had to be sterilized in-between surgeries. This drawback had limited sales of the device. They had attempted to incorporate the ultrasonic engine into the disposable device but this would make the product prohibitively expensive.

### **The Resolution:**

inScythe guided the development team through DFM/A sessions, DOEs and analytical studies to prove the cost of the ultrasonic engine could be reduced by 90%. Then, aided the team in analyzing the market needs and data and proved additional changes to the device design would allow them to position it as a premium device in the market with extreme ease-of-use and much higher utility during surgery

### **The Results:**

- Product sold 3x predicted volume in first 3 years.
  - Over 50% of new revenue was from surgeons that had never used this product line before due to previously poor ease-of-use
  - Product adopted for use in the most complex and time-extended cancer surgeries, allowing a premium price strategy





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## Case Study #6

### Design Optimization of New Products with Advanced Analytic tools and DOE

#### The Problem:

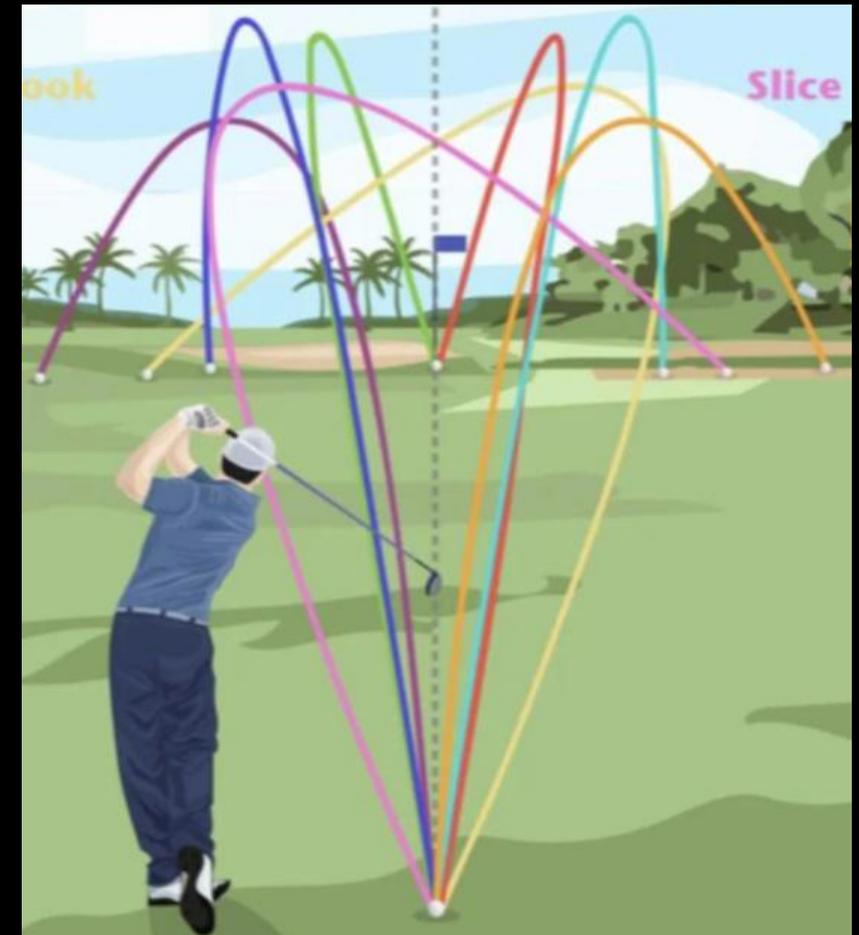
A major golf company was using Advanced Analytic tools such as FEA (Finite Element Analysis) to design their golf clubs, allowing them to simulate hitting a golf ball both perfectly and off center or with hook/slice, and accurately predict the distance and how far off-target the ball would land. But, even with these tools they were unable to discover design modifications leading to performance improvements for their next generation of planned clubs.

#### The Resolution:

inScythe was able to show them that even though their tools were accurately predicting performance of new designs, their simulations only gave them open-form solutions and did not help them understand which design parameters were important to meet their design goals. inScythe designed a DOE that was performed in the FEA system that gave them a closed-form solution revealing critical interactions they could control with the design to optimize performance of the club.

#### The Results:

- In the very first trial of this method, design changes were made that increased average distance by 2%. But more importantly, the impact of off-center and hook/slice hits was reduced by 25%, marking the largest improvement in “forgiveness” ever, and making this club truly easier-to-hit-the-ball-straight for the average golfer





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Principal: John Willis

I work with engineering, design, and manufacturing teams to solve the toughest problems that slow down product development, drive up costs, or strain teams. Whether it's a breakdown in a process, a design stuck in iteration loops, inability to transfer design into manufacturing or a project veering off track—I bring structure, clarity, innovation, and decades of hands-on experience to help you get unstuck—and move forward with confidence.

I am a former Navy Nuclear Engineer, have a B.S. Physics from Cal Poly, over 30 years of cross-industry experience (regulated class II medical devices, electronics, sporting good) and 15 issued patents as a Six Sigma and Design for Six Sigma Blackbelt and Master Blackbelt. I've led multimillion-dollar R&D projects, led problem-solving efforts in high-stakes environments where results matter and helped businesses solve long-term problems that the experts had deemed impossible to solve. Whether in the lab, on the line, or in the boardroom, I will help your people deliver better outcomes—faster.

