



# The SPE Press

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August 2017

The Southern California Section of the Society of Plastics Engineers  
Local information on resources and education available to plastics professionals

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## PRESIDENT'S MESSAGE

Happy summer to all Southern California SPE members!



I am **Ashley Spittle** and I am proud and motivated to be your new President of the Southern California Section of SPE. It is truly an honor to have been nominated and trusted by the board of SPE to take on this esteemed position. I am earnest to spend the next two year term enriching this society through finding new opportunistic channels, utilizing all of our strengths, and building on our fun, future oriented culture.

My career into the plastics industry was at a time an unknown journey. After studying Biology at Mount St. Mary's University, I was on track to applying to a Physician Assistant program. In the meantime, I was looking for a temporary job and was referred to the Horn Company, a super-regional, employee owned, Specialty Chemical Distribution Company. I began work in their customer service department, quickly moved into a Sales Coordinator role, and now I have been an outside Account Manager for the last 3 years. I work within Horn's Advanced Materials SBU which services the epoxy, polyurethane, rubber, and plastic markets.

In 2015 I served as the President of SPE's Next Generation Advisory Board. NGAB consists of young professionals from all sectors of the plastics industry with a mission to connect new generations with each years' innovated technologies, as well as provide students and young professionals with engaging and fun events to help them be more involved with all different outlets SPE has to offer.

With my continual development at Horn and prior experience with NGAB, I am ready to not only uphold SPE's primary objective to promote the scientific and engineering knowledge relating to Plastics, but also increase our member involvement and enthusiasm by working hard to provide members with applicable technical seminars and engaging networking events that I hope will create an inclusive culture for all our members.

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## TECH TIPS

### SIX SIGMA – AN IMPROVEMENT SYSTEM

*By Victor Okhuysen, PhD, Prof of Manufacturing Engineering Cal Poly Pomona University*

Continuous improvement has become a mode of life for any manufacturing enterprise including plastics manufacturing. In this mode of continuous improvement many approaches and trends (and some would call fads) have emerged and become part of our manufacturing lexicon. For instance, philosophies such as Total Quality Management, Just In Time, Lean Manufacturing and Six Sigma as well as more specific tools and methods such as Poka-Yoke, SPC, Single Minute Exchange Die (SMED), DMAIC cycles, fishbone diagrams, etc. In this article I will explore what Six Sigma (6 $\sigma$ ) is and how it has evolved and been used.

Six Sigma (6 $\sigma$ ) started as a statistical quantification of process capability. Simply put, your process variation at 6 $\sigma$  should be equal or smaller than the tolerance band for the feature. This would lead to a defect rate of less than 3.4 parts per million. In order to achieve six sigma levels of quality, thus, it is necessary to improve process capability to this level. In reality, a manufacturing facility will determine the proper 'sigma level' for the desired capability based on product specifications. Six sigma techniques are then applied to reduce process variability.

A six sigma effort will typically include a DMAIC (Define, Measure, Analyze, Improve and Control) cycle.

- In the Define step the project goals are determined. These can be reduction in variability, production time, cost, etc.

- In the Measure step the relevant raw data will be collected. For instance, scrap rates, time studies, part weights, cycle times, melt temperatures, etc.

- In the Analyze step the raw data will be analyzed and there are many tools that are used in this process. The most common tools include statistical (ANOVA, Gage R&R, Taguchi methods), graphical (pareto charts, flowcharts, ishikawa/cause-effect/fishbone diagrams), "5 why" analysis, Root cause analysis, Value Stream Mapping, among many others. It is important to note that many of these tools are used in improvement efforts independent of six sigma efforts as well, which leads to confusion of what six sigma is.

- In the Improve step the process is changed based on the results of the Analyze step. This could be a change in raw materials, procedures, equipment, training, facility layout, etc. The solution to be implemented in the improve step will generally provide a return on the investment that is justified with the data and results from the previous two steps. In this manner it is easier to avoid money losing initiatives, particularly when equipment purchase or major layout changes are executed. In fact, GE claimed to have executed six sigma projects that contributed over one billion dollars to profits.

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-In the control step the systems and tools are put in place to ensure that the changes will remain effective. For instance fool-proofing (poka-yoke) and SPC (Statistical Process Control) tools are put in place.

The body of knowledge for application of these tools is extensive and led to the development of specialists within organizations. Certifications that cover this body of knowledge have been developed by various entities including by some companies for internal purposes. It is important to note that for this reason the standards for each certification will vary. However, they generally do overlap. The American Society for Quality (ASQ.org) offers a set of certifications related to six sigma. The most common certification levels are a “Green Belt” and “Black Belt”. The Green Belt typically involves the basic tools used in Six Sigma including some of the statistical tools as well as in depth knowledge of the DMAIC process. Green Belts are expected to work under the supervision (in six sigma issues) of a Black Belt. The Black Belt certification includes team and leadership concepts as well as more depth in the general body of knowledge with regards to tools.

Six sigma is often confused with other process improvement and system management philosophies such as TQM and Lean Manufacturing. For example, cycle time reduction is often a goal of six sigma efforts, so what does cycle time have with the original definition of reducing product variability? Well, not much, but the tools used in six sigma efforts can be readily used for other goals thus leading to “lean-sigma” efforts. In these cases companies have undertaken lean manufacturing improvements by using six sigma tools and methodologies. Again, some of the tools are complementary and commonly shared with the goal of improving processes. The reality is that many of the process improvement methodologies such as TPM, QRM, Lean, Six Sigma and TQM have overlapping methods, tools and objectives.

In conclusion, six sigma is an improvement system based on the DMAIC cycle with many associated tools. These tools can be used to improve many processes and products within a manufacturing facility. If these skills do not exist within your facility to pursue these continuous improvement projects hiring or developing green/black belt certified personnel can be a route to acquire these skills. My recommendation would be to someone who is already a plastics processing professional obtain these certifications if needed.

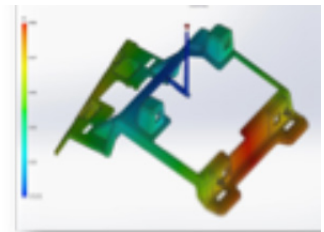


**GET TO KNOW...****MISSION PLASTICS: Partnering with Customers to Deliver Quality Parts, On Deadline**

As Mission Plastics has done for 35 years now, their molding engineers and production experts continue to set the highest injection molding standards for reliability and performance. Mission regards each customer relationship as a partnership – one based on collaboration, responsiveness and trust – to deliver the best outcomes possible. Mission is an industry leader in custom injection molding and precision tool-making, who manufactures a wide variety of complex and sophisticated components for their medical, automotive and commercial customers. They're both ISO 9001 and ISO 13485:2003 certified, and they operate out of their 163,000 square foot facility in Southern California, with 58 molding machines of various tonnage capacities – 7 to 720 ton – with 90% equipped with robotics, and an automated/bar coded distribution center.

**Mission's Project Management Team Leaves Nothing to Chance**

All Mission projects are managed through a multi-phase, project development and production process by its Project Management Team – from designing tools, to mold validation, to production precision, to customer advocacy – this Team of experienced, cross-functional specialists focuses and commits to every customer, and every project. At each phase, the Team designates a team member as a single point of contact to ensure quality and speed, leaving nothing to chance or doubt; instead bringing peace of mind to Mission's customers.

**Tool Design, Build, and Approval – ensuring DFM standards are met**

From the simplest to the most complex mold designs, Mission's design team has built them all. And having your plastic components professionally reviewed for manufacturability ensures that they can be cost-effectively produced with consistently high levels of quality. Mission provides advanced engineering and design support to the building of tools.

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### **Part/Tool Process Development and Validation – expediting through critical path management**

Managing and coordinating mold manufacture, validation, all production processes and QC, are critical to mold/part quality and staying on schedule to deliver to production expectations. Using the latest in scheduling technologies and tools, including cloud based collaborative timelines, the Project Management Team defines and manages to the plan for mold manufacture, process development, in-house validation and production delivery – all to deliver to customer needs and expectations.

### **Production Process and Proficiency – technology and reporting ensures success**

Mission's precision injection molding facility uses the latest in Computer Integrated Manufacturing Processing, including integrated MRP, Production and Process Monitoring, and SPC systems to deliver repeatability, accuracy and conformance to specification. Real-Time Project Reporting has been perfected at Mission. This technology-aided process manages all resources to time and delivery and it communicates important data to the Project Management Team and all stakeholders – the key is to track and monitor all facets of a project in production to anticipate issues, and support agility and flexibility where needed to meet the latest production requirements of the customer.

### **Eliminating Surprise – enhancing the customer experience**

Mission's Project Management Team assigns a customer service advocate to oversee all P.O. requests, from accuracy to scheduling – with continuous and frequent communication of status to each customer and to all Mission stakeholders. Each day, the goal for the Team is to anticipate issues, troubleshoot questions quickly, respond responsibly, and contribute to the success of all projects in design or production at Mission – accessibility, approachability, and responsiveness is the hallmark of Mission's reputation. The end result: success without surprise, because at Mission, relationships matter. For more information, contact Gil McMoran, Director of Marketing and Sales, Mission Plastics, Inc., 909-731-4086, [gmmoran@missionplastics.com](mailto:gmmoran@missionplastics.com).

## EDUCATION

# The College of the Extended University, Cal Poly, Pomona Plastics Engineering Technology Certificate Program

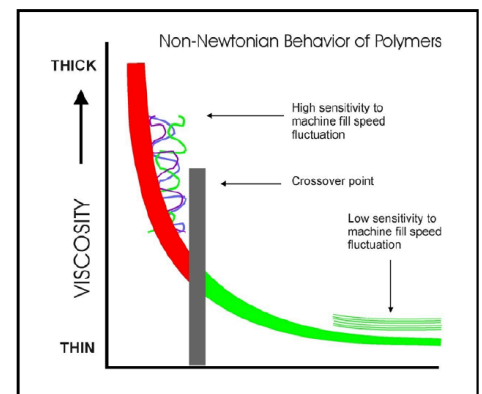
## Scientific Injection Molding Fall 2017

The course emphasis is on scientific approach to a somewhat complex injection molding process in order to simplify and eliminate basic misunderstanding about processing techniques employed today throughout the industry. Students will learn the importance of understanding polymer basics, material flow properties, viscosity-shear rate curve, and major plastics variables in molding, decoupled molding techniques, data analysis and interpretation.

The course will cover fundamental and scientific approaches to material drying, venting, cooling, use of regrind, how to prepare universal set-up sheet, cycle time optimization, tooling considerations, etc. Use of modern tools and techniques such as mold flow analysis, cavity pressure transducers, and data acquisition tools along with troubleshooting techniques will also be covered.

### Course Content:

- Polymer Basics, Plastics Materials and Flow Characteristics
- Part Design Fundamentals
- Overview of Basic Injection Molding Process
- Drying, Material Mixing, Coloring, Regrind Usage
- Major Process Variables
- Decoupled Molding, Universal Set Up Sheet
- Process Optimization techniques
- Tooling Considerations, Venting, Cooling, Ejection
- Cycle Time Optimization and Troubleshooting Techniques
- Mold Flow Analysis
- How to Improve Productivity
- Modern Injection Molding Operation



**Dates:** Saturdays, September 16<sup>th</sup> and 23<sup>rd</sup> 2017 **Time:** 8:00 AM to 5:00 PM

**Location:** Cal Poly Pomona, Bronco Student center (Lyra Room)

**Instructor:** Vishu H. Shah, Consultek Consulting Group [www.consultekusa.com](http://www.consultekusa.com)

### Registration:

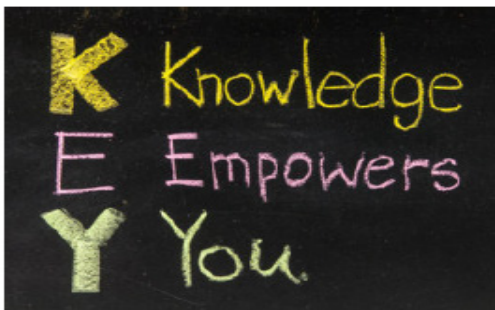
<https://www.cpp.edu/~ceu/professional-development/courses-and-certificates/engineering-manufacturing/plastics-engineering-technology-certificate.shtml>

For more information, contact: College of the Extended University 909-869-2288

Or Instructor: Vishu Shah 909-465-6699 [vishu@consultekusa.com](mailto:vishu@consultekusa.com)

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Over 1500 plastic professionals have taken advantage of this unique opportunity to enhance their career by devoting few Saturdays of their time to listen, learn and apply the knowledge acquired and get ahead of the pack. The information presented is all hands-on, practical and ready-to-apply. By design, excessive technical jargons and equations have been avoided.

Earn your valuable "Plastics Engineering Technology" Certificate Today.

#### ***Comments Provided by Students***

- Great course, very instructional...love the PowerPoint notes.
- The instructor uses examples that are relevant to my industry/field.
- The overall explanation of the basics of Plastics was very clear and concise, explained in plain English without having to use big and sophisticated words to explain theory or function.
- The course's major strength was instructor's ability to relate to real life experience.
- Very Practical – I highly recommend to anyone new to plastics industry.
- Hand-outs are great, I refer to them on regular basis.
- Great job! Very knowledgeable and very thankful for the time you took for teaching.

#### **About the certificate program:**

Plastics engineering encompasses the processing, design, development, and manufacture of plastics products. Cal Poly Pomona offers one of very few programs in Southern California devoted to the plastics engineering industry. This program will provide you with an in-depth look at plastics engineering technology from a technical and non-technical view.

This three-course certificate program provides practical instruction in materials, processing, product design and tooling. The practical knowledge gained on the aspects of Plastics Engineering technology can be applied to all sectors of the industry including manufacturing, design, sales, and customer service.



## MEMBERSHIP SPOTLIGHT

### SoCal SPE Wants YOU to Become a Member

The SPE Southern California Section is, for a limited time, offering one FREE registration to a single, exclusive local technical event for those who sign up for an SPE Membership! To be eligible for this special offer, visit our website [www.socalspe.org](http://www.socalspe.org) to check out the event calendar and register as an SPE Member! Once a member, you will be sent a voucher to bring to the SoCal SPE event of your choice! Offer also applies to expired memberships. Don't let this opportunity pass you by, become an SPE member today!

For questions, contact Ashley Price at 562-217-1377 or [aprice@ethorn.com](mailto:aprice@ethorn.com).



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## Why Join SPE?

Whether you're a plastics scientist or engineer, a business owner, marketing/sales expert, or any other professional in plastics, SPE membership can help you advance your knowledge and your career. The information you need to increase efficiency and productivity, develop your career, and add to your company's bottom line is literally right at your fingertips.

The Society of Plastics Engineers is home to nearly 20,000 plastics professionals in more than 70 countries around the world. SPE is the "go to" resource for plastics technical information.

### Each Month, we will explore one of the six key benefits of becoming SPE.

- Plastics InSight – A customized to your need Weekly Newsletter
- SPE Material database – Access "Tons" of material in the world of Plastics
- Registration Discounts – on over 40 conferences and local meetings and events
- Plastics Engineering Magazine – Free subscription to leading
- SPE Online Technical Library -
- **Education Cost Assistance through SPE Foundation**
- The Chain – Where Plastics Professionals connect and get answers

Last month, we explored key benefit of being a member – a free subscription to Plastics Engineering magazine.

This month we will talk about another key benefit of being a member – Education Cost Assistance through SPE Foundation.

The SPE Foundation funds programs and projects that support the education of plastics and polymers worldwide.

### Scholarships

The SPE Foundation offers numerous scholarships to students who have demonstrated or expressed an interest in the plastics industry. They must be majoring in or taking courses that would be beneficial to a career in the plastics industry. This would include, but is not limited to, plastics engineering, polymer science, chemistry, physics, chemical engineering, mechanical engineering, and industrial engineering. All applicants must be in good standing with their colleges. Financial need is considered for most scholarships.

More Information

### Grants

Through educational grants programs, the SPE Foundation strives to provide students of all ages with the means to explore the science and technology of plastics and polymers, and for programs/projects at educational institutions that will benefit the members of the Society of Plastics Engineers, the plastics industry, and/or the general public.

Check it out for yourself: [www.socalspe.org/scholarships](http://www.socalspe.org/scholarships)





In this new section of our Newsletter, all SPE members are and their employers are welcome to post Position Wanted or Seeking Employment three times per calendar year at no cost. All Newsletter advertisers are also welcome to post advertisement six times per calendar year.



MRM is looking for several people to add to our growing family. If you happen to know someone who might fit the bill, please let me know.

Inspector - hands on inspecting parts, analyzing data and doing CPKs  
LSR processing technician

#### TECH CENTER LEAD

In search of individual to lead operation of molding tech Center. Looking for working supervisor whose duties will include ordering materials, scheduling jobs, directing employees, processing new molds as well as production molds, customer support and ensuring quality standards are met. Prospective applicants must have strong molding background. Experience with LSR injection molding a plus. Pay commensurate with experience.

#### DATA ENTRY SPECIALIST

Orange County mold maker seeks a data entry person to assist with the inspection procedure in the Quality Lab. The candidate must be proficient in Word, Excel and Windows 10, must be able to read engineering drawings and understand geometric tolerancing. Position requires candidate to load the proper programs, collect inspection data, prepare reports and verify its accuracy.

Contact: Geralyn Anderson - [geri@mr mold.com](mailto:geri@mr mold.com)

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## SPE Southern California Leadership



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**2016-2017 YEAR CALENDAR**[www.socalspe.org](http://www.socalspe.org)**SEPTEMBER 2016**

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

September 15

Evening Technical Meeting

**Robots, Collaborative**6:00 PM  
Jagerhaus, Anaheim**MARCH 2017**

S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

March 23

**EDUCATION NIGHT 6 PM**  
TBD  
Norwalk**OCTOBER 2016**

S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

October 20

**Plant Tour**6:00 PM  
Torrance, CA**APRIL 2017**

S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

April 20

No Events

**NOVEMBER 2016**

S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

November 14

**Molding 2016 Workshop**Milacron Tech Center  
Irvine**MAY 2017**

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

May 8-9-10

**SPE ANTEC**Hilton  
Anaheim**DECEMBER 2016**

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

December 6

**SPE Networking Reception**  
Featuring Greg LeMond**JUNE 2017**

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

June 22

**Annual Golf Outing****JANUARY 2017**

S	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

January 19

Evening Technical Meeting

**Advances in Silicone**  
**Technology for Medical**  
**Applications**

Jagerhaus, Anaheim

**JULY 2017**

S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Happy 4<sup>th</sup>!**FEBRUARY 2017**

S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

February 16

Workshop

Autodesk/Moldflow 2016

TBD  
Irvine**AUGUST 2017**

S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

No Events

\*All meetings are held on third Thursday of the month unless otherwise noted