

# Industrial Engineers Australia(IEA)

Incorporated as Institute of Industrial Engineers Australia(IIEA) in 1959  
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**Industrial Engineering is concerned with the analysis, design, improvement, installation and management of integrated systems of human resources, data, finances, materials, equipment, and energy as safely as possible with minimum impact on the environment, delivered within a holistic methodology.**

**INDUSTRIAL ENGINEERS MAKE IT HAPPEN BETTER**

The three key objectives of the IIEA are:-

1. TO UNDERTAKE AN ACTIVE AND VARIED PROGRAM FOR MEMBERS
2. TO PROMOTE AND ENHANCE THE TRAINING OF INDUSTRIAL ENGINEERS
3. TO PROMOTE AND CAMPAIGN FOR INDUSTRIAL ENGINEERING OPPORTUNITIES WITHIN INDUSTRY

## NEWSLETTER 14-September/October 2022

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### **FROM THE EDITOR-David Karr(CP Eng, FIIEA)**

Welcome to the first issue of the IEA newsletter for the 2022/23 year. We are back again for another interesting update of IE and the IEA.

We are continuing to have varied and interesting Industrial Engineering(IE) Articles.

We are back on deck after the first F2F/Hybrid AGM/IE Conference in Melbourne.

For the newsletter to be relevant, it is essential that there be interesting and pertinent IE articles.

At the recent AGM/IE Conference it was decided to **REQUEST AT LEAST ONE IE RELATED ARTICLE FROM EACH MEMBER EVERY TWO YEARS.**

This will allow our members to contribute to the organisation and to pass on their experiences.

As a trial, it is requested that ALL members whose surnames starting with A,B or C. It would be appreciated if you could, provide an IE article detailed or just an A4, to the editor at [editor@iea.org.au](mailto:editor@iea.org.au) by **November 30<sup>th</sup>**.

Thanks to all those members who have already provided interesting IE articles.

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#### *Introduction*

Five S can be used in any environment including the factory floor, warehousing and storage, workshop and the office. Many companies implementing lean manufacturing start with a 5S program to remove the workplace clutter and improve workflows between processes.

#### *Basic Principles*

The 5S system is based around five Japanese words all starting with the letter 'S' and hence has been given the name "5S".

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## FROM THE PRESIDENT-David Karr(CP Eng, FIIEA)

Welcome to the next issue of our quarterly newsletter.

We welcome our new members:-

- Craig Biasizzo
- Carroll Matthew
- Ilessanmi Afolabi Daniyan
- Adrian Douglas
- Jasmine Gill
- Johannes Van Niekerk

I wish these new members well and will contribute actively to IE and the IEA.

We'll just back from the first F2F/Hybrid IEA AGM/IE Conference in Melbourne on Saturday 1<sup>st</sup> October.

We had 12 members/guests attending F2F and 6 online. The online attendance was disappointing, but impacts due to extra public holiday and school holidays were evident.

New and existing members of the IEA Board include

David Karr	President, Membership, Newsletter and WA Division
Prabhu Subbiah Ramdoss	Treasurer, NSW Division
Cameron MacKenzie	Secretary
Mansi O'Keeffe	Programs, QLD Division *
Mohan Ganavarapu	Overseas Director
Matteo Vinci	Webmaster *
Abdul Mazid	Victoria Division *
Chin Hak WongCH	Singapore

\*New Board Member

Pawel Podsiadlo was appointed to the Education Subcommittee

The first IE Conference in over 3 decades was held after the AGM. A detailed discussion on the following topics was undertaken:-

- Defining IE-What is IE Today
- Training of IE's and the skills required
- Promoting IE in industry, academia and government bodies

The Menti app was utilised

A short presentation by David Karr on his IE experiences in the workplace was delivered. Takeaways were

Dealing with People  
Analysing new challenges  
Using various IE techniques such as project planning  
Impact of digitisation  
Consensus decision making  
Impact on the Environment.....

The discussion on Defining IE-What is IE Today resulted in the following outcomes

# What is Industrial Engineering Today



Some of the defining roles of IE were expected such as

- Improvement
- Optimisation
- Work Assessment
- Integrating Systems
- Data driven Management
- Continuous Improvement
- Holistic view

Other findings included

- People involvement
- Circularity
- And an interesting suggestion Engineering Management

Interestingly there are several Australian Universities that deliver qualifications in along the lines of Engineering Management. The IEA needs to follow this up via the Education Subcommittee.

# What skills do Industrial Engineers need?



The IE Skills discussion resulted in

Communications clearly being the priority Skill  
Other skills included

- Future Planning
- Data Analytics including mathematical modelling
- Financial Management
- People skills including empathy, patience and flexibility
- Collaboration
- Consensus Decision Making

With the recent work undertaken with Curtin University, Perth, it was evident that the skills required by IE's is changing.

The need to be competent in "non traditional" IE skills, is becoming more and more evident. This analytical skills include being able to use basic IE abilities and to morph them into the needs of modern organisations.

# How to promote IE in Industry, Academia, Bureacracy, Public



The Promotion of IE in Industry, Academia, Bureacracy and the Public resulted in the need to:-

Network

Create strategic Alliances

Collaborate and co-operate with industry and public bodies

Promote IE in Academia, Industry and schools

ID uniqueness and value of IE

Work with other professional bodies such as EA

WHERE TO FROM HERE

Each of the Board members have been given goals. Its up to us to deliver.

Whether it be a varied program, active division events(eg WA BBQ), continuing the IE skills requirements, promoting IE in industry academia or professional bodies.

Good luck for a productive 2022/23

David Karr(CP Eng, FIEEA)-Federal President

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## FROM THE DIVISIONS



**WA Division**-David Karr(CP Eng, FIIEA)-acting

The WA Division recently undertook a very successful webinar on 1<sup>st</sup> September with 135 attendees(>360 registrations). The webinar entitled Rio Tinto's Automation Journey by Dr Chris Ware.

The presentation plotted Rio's journey from concept in 2007 with Autonomous Hauling Solutions (AHS) (autonomous haul packs) to 2021 with Autonomous Water Trucks. Also included was the introduction of Autonomous Drilling and Trains.

Rio have also indicated that they would be open to a visit to their world renowned Remote Operating Centre(ROC) at Perth Airport(for NON Mining IE's and engineers), in late January or February.

The next event will be a F2F BBQ at David Karr's estate in the Swan Valley on Sunday 13<sup>th</sup> November.

A webinar entitled Game Theory-A Practical Application is planned for later this year or early next year.

### **Victoria Division**

Abdul Mazid has been elected Victoria Division President. Over the next year events(F2F/Hybrid) will be undertaken.

Also the renewal of the link with EAVIC will be followed up.

### **Queensland Division**

Mansi O'Keefe the newly elected Board member and Queensland President is planning a varied events calendar starting with a webinar on Discussing Lean methodologies in the Disability sector. More to come

### **NSW Division**

Prabhu Subbiah Ramdoss recently re-elected to the Board, is planning an interesting events for the year

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## [Productivity Improvement Strategies in the Apparel Manufacturing](https://www.onlineclothingstudy.com/2017/05/productivity-improvement-strategies-in.html)

By Guest Author -May 28, 2017 (Reference <https://www.onlineclothingstudy.com/2017/05/productivity-improvement-strategies-in.html>)



This is a guest submission from **Bairy Venkata Ugendhar**.

The productivity improvement is a sought after topic in the apparel manufacturing sector. Normally, the production team and industrial engineering team think and do things for improving the current productivity level and maintain the benchmark productivity. Everyone should think of productivity improvement in their shop floor for many reasons. Some of the benefits includes

- Increased profit margin
- Reduced manufacturing cost
- Better production planning
- Increased capacity
- Reduced lead time

So, what can you do to improve the productivity level on the shop floor? You should develop a productivity improvement strategy and act upon that to meet your productivity goal.

As per the Bairy, the following strategies of operations should be deployed by a factory to improve shop floor productivity. He follows these steps to in his shop floor.

1. Review the style in question to be loaded, 3 weeks in advance.
2. Review availability of machines for the style as per plan.
3. Consolidate operations and machines as per plan.
4. Review methods of manufacturing for each operation of the style.
5. Brainstorm whether it can be improved better theoretically.
6. Set all the required machinery and attachments as per quality requirements stated by buyer involving best technicians/best mechanics/best IEs. This activity to be completed 2 weeks in advance to loading the style.
7. Prepare a simulated layout and arrange machinery as per simulated layout with all work aids and/or attachments etc.
8. Prepare standard worksheets in local languages so that operator can understand and follow the instructions and procedures.

9. Prepare a skill matrix of the planned line for the planned style for allocation of operators to each operation(s).
10. Pick up operators from the running lines by replacing with floaters and induct them in the new style which is set in Pre-Production zone.
11. All the experts involve in educating operator with respect to handling/ method/quality to be followed and practiced on the actual fabric (around 100 pcs cut in actual production fabric) to get the confidence of live production.
12. Monitor each and every operator on daily basis for the quality, efficiency and plotted on a graph as a visual tool to act on for further actions to improve.
13. All operators should be trained to required skills and quality levels to achieve productivity ( efficiency and effectiveness).
14. All the 100 pieces are checked at the end of the line and offered for AQL.
15. If passed for AQL, all the passed pieces should be sent for packing for shipment.
16. This entire steps are started 3 weeks in advance to production start date and completes the quick changeover process and is ready to run production as the operators and machine are getting transferred one by one as and when old style operations gets completed one over the other.

By the time the last operation of running style completed, the last operation of the new style gets started soon after it and by the time it comes out of the last machine to end table for checking, quick changeover happens automatically.

Quick changeover team hand over the process to production teams (planned lines) and works with them for 3 more days to settle if any minor issues.

Now the next step is ramp up of each operation from the start date of the production in the planned line starts from the day -1 and monitored to improve further to set targets.

Above process is suitable for both high volumes and low volumes since the process is set externally 3 weeks before the start of production and cost effective as it reduces the changeover time drastically by quick changeover principle, facilitates skill development to operators, boost confidence in operators on actual fabric as it is shippable, quality improvement takes place which in turn reduces reworks and rejects on planned lines.

Overall leads to cost effective and productive lines.

***About the author:** Bairy Venkata Ugendhar is working as Senior Manager, Operations at Quantum Clothing India Pvt Ltd, an associate of Brandix Visakhapatnam, Andhra Pradesh, India. Prior to joining Quantum Clothing, he held managerial positions in many organizations in the apparel industry.*

Image Source: Youtube/exiid international

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## [CHRIS HEYDE AWARD WINNER 2022](#)

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### **INDUSTRIAL ENGINEERS AUSTRALIA CITATION TO DANIEL KULAWIEC(FIIEA, BE) 2022 CHRIS HEYDE CITATION**

Citation by Bob Watson(FIIEA)

At the recent IE AGM, the 2022 Chris Heyde Award was presented to Daniel Kulawiec(FIIEA,BE) by David Karr on behalf of Bob Watson(FIIEA) on Saturday 1<sup>st</sup> October.



One of Daniels achievements, has been his stewardship of the Institute's compliance with the regulations of the Australian Securities and Investment Commission (ASIC). Prior to Daniel's intervention the Institute had serious compliance issues. Daniel's advocacy resolved our situation. Daniel's ability to resolve membership and administration problems enabled him to improve the Institute's standing with the Institute of Engineers Australia in relation to membership, finance and administration.

As a team Daniel and his wife, Inna, undertook, on a voluntary basis, for a period of time secretarial and administrative duties for our Institution. Daniel also liaised and assisted with the Institute's external auditors. This activity was very time consuming undertaken for over a ten year period saving the Institute considerable audit fees.

At Federal Council meetings, over a period of fifteen years, Daniel made a significant contribution to the direction the Institute has taken. His input in the area of strategic direction was outstanding. Daniel's ability to understand the diversity of the five state divisions enabled him, on many occasions, to negotiate solutions.

Daniel graduated with a Bachelor of Engineering with first Class Honours in Manufacturing Engineering (Industrial Engineering) from the University of NSW in 1993. His undergraduate results were recognized with Daniel receiving both the University medal and the Institute of Engineers medal. In 1994 Daniel became a Graduate member of the Institute of Industrial Engineers. His service to industrial engineering commenced later that year with his first appointment to the NSW Divisional Board of the IIE. Since then Daniel also served with both the Queensland and Victorian Divisional Boards before being elected to the Federal Council in the early 2000's.

Daniel has practiced industrial engineering for a number industries and companies, including manufacturing, mining, chemical processing and business management. However the bulk of his career has been with Telstra where he now holds a senior executive position. Daniel has used his roles in Telstra to promote the industrial engineering mindset such as establishing centres of process excellence and supporting the introduction of quality management frameworks, as well as establishing a number of graduate programs.

It is with recognition and pride that his proposer and seconder nominate Daniel Kulawiec to be elected by Federal Council to the prestigious office of the 2022 Chris Heyde Fellowship.

Citation proudly authored by Bob Watson(FIIEA) 'Chris Heyde Fellow'.

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## Application of 5S Productivity Improvement Tools in the Workplace

S. Radha Krishnan FMS UK, MIE Aust, EuroIEng, Grad DP UK. Deceased

Consultant in Industrial Engineering & Productivity Sciences; IIE Director & Federal Treasurer



### Introduction

Five S can be used in any environment including the factory floor, warehousing and storage, workshop and the office. Many companies implementing *lean manufacturing* start with a 5S program to remove the workplace clutter and improve workflows between processes.

### Basic Principles

The 5S system is based around five Japanese words all starting with the letter 'S' and hence has been given the name "5S".

**Seiri:** Sort. Asking what is actually needed in an area. If you don't use it, get rid of it or store it in the allocated area. Then, define how much is needed and identify where it should be placed and place what is left in a logical manner.

**Seiton:** Set in order. Locating where everything is to be used and organized for a smooth workflow. Often quoted, as: 'a place for everything and everything in its place'. This stage includes actions such as colour-coding, labelling and methods of easy identification.

**Seisou:** Shine or sweep. Developing methods for a clean layout as it is easy to recognize something out of place or a source of defect.

**Seiketsou:** Standardize or define standards. Ensuring things stay tidy, methodical and clean.

**Shitsuke:** Sustain. Developing a system of constantly assessing performance, and challenging for improved methods.

While 5S systems have been used by Japanese companies since the 1980s, many Australian companies are only just introducing these concepts into their continuous improvement initiatives.

Predominantly used in the manufacturing sector, they can now be found deployed in diverse industries such as banking, mining, construction, utility and many other industries.

### How Does 5S Work?

Lean manufacturing initiatives will often identify bottlenecks in operations and the use of a 5S activity should take place to improve the throughput of that manufacturing or service operations.

A team can be formed to review the Work place layout and workflows following some initial training on traditional Work Study principles. As with all lean tools, 5S is about eliminating waste and maximizing value added work. 5S uses its process to create and maintain an organised, clean and efficient environment setting that enables the highest level of value added performance

This means eliminating search, travel, transporting materials, and inventory.

It achieves its ends by organization and orderliness, eliminating unwanted materials and establishing self-discipline.

Training will often include the completion of a workplace assessment and an audit using criteria of the 5S. Action will be identified during this audit to streamline the workflows. This is often followed by a Priority task-any item not required is removed, or 'tagged' pending a decision where it should be stored. Excess material/equipment is often sold off, recycled or removed to its rightful place.

This is part of the 'Sort' process. Once any surplus items have been removed, the team can then decide where, how much and how remaining items should be stored. This often includes colour-coding, installation of storage systems, labeling, etc. This is known as 'Set in order'.

A clean up and often a new coat of paint is applied in the next step 'Shine'

This step, if implemented properly, will install a sense of pride in the work place.

The next step is to 'standardise' methods for maintaining the workplace in the new condition-Maintenance standards (no oil leaks or spillages), cleaning standards and frequencies, lubrication standards, storage standards etc. Most organizations neglect to do this stage and often find that their plant/ process back to the original state over a period of time.

The final step is to develop a method of 'Sustaining' improvements in the work place.

This is often done through a series of ongoing assessments and audits carried out by the Continuous-improvement Teams supported by management.

### Impact on safety

Implementing a 5S program will also improve safety and reduce the risk elements associated with a work place even though 5S does not focus on safety directly.

Many organisations have now included safety into their 5S programs and now call them "6S" or "5S+1" programs.

### Conclusion

Many lean companies will use 5S to improve productivity in bottleneck operations and/or to balance workloads between processes. This will often result in lead-time reduction.

### Bibliography

Management Services Hand Book

Management Consulting by International

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