



SUSTAINING AND ADVANCING PE INDUSTRY

Precision Engineering (PE) is the fundamental building block of manufacturing. From nano-scale dimensional semiconductor chips to the tough drill bits used in oil exploration, the PE sector is critical to the electronics, aerospace, automotive, marine & offshore and medtech industries. Its role in the Singapore industrial landscape is evident as the PE industry employs a quarter of the local manufacturing workforce.

Mission

PE COI aims to help PE companies leverage technologies for innovation to sustain and advance their businesses.

Core Capabilities

- Liquid Forging and Hybrid Forming
- Powder Injection Moulding
- Rotary Forming
- Severe Plastic Deformation
- Anti-microbial and Anti-bacterial Coatings
- Surface Micro-forming
- Metal and Polymer 3D Additive Manufacturing
- Micro and Macro Machining
- Mass Surface Finishing
- Laser Surface Texturing and Modification
- Functional Coating/Vapour Deposition/ Electrochemical Process
- Corrosion Characterisation and Protection
- Laser Aided Additive Manufacturing
- Arc and Solid-State Welding
- Metal Micro Joining
- Welding of Dissimilar Materials
- Hybrid Laser-Arc Welding
- Polymer Joining
- Precision Machine Design, Characterisation and Control
- Robot Mechanism Synthesis, Design and Analysis
- Mobility Platform Technologies
- Optics and Image Processing

Roles



Showcase and Promotion

- Showcase Material, Process and Product Innovation
- Promote Business Model and Operations Innovation
- Organise overseas mission trips, roundtables and networking sessions



Knowledge Transfer

- Offer specialist skills training: Precision Engineering (PE) Workforce Skills Qualifications (WSQ) Graduate Diploma courses
- Organise annual conferences, seminars and workshops



Technology Transfer

- Develop capabilities and Intellectual Property on process and automation technologies
- Transfer technologies to the local PE industry



Industry Development

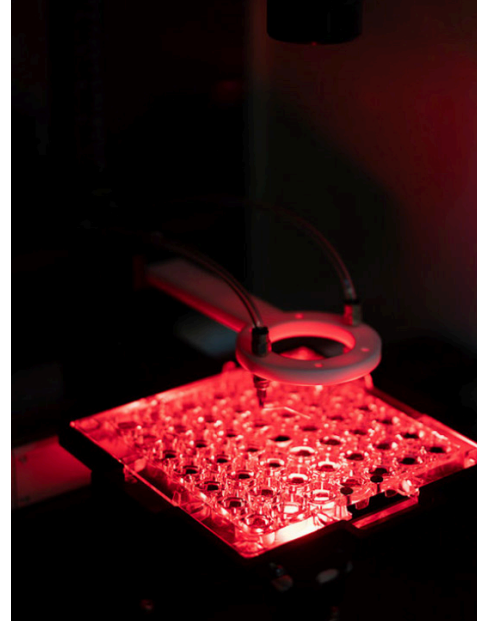
- Create industry initiatives to help local PE companies to venture into high growth industries
- Provide advisory support and consultancy

SUCCESS STORY

Development of Competitive Capabilities in Optics and Optical Equipment

With the support of SIMTech, Wavelength Opto-Electronic (S) Pte Ltd has transformed from being a maker of optics components to a developer cum manufacturer of high-value optics and optical equipment and solutions, which were used in a wide range of products, from contact lenses and mobile phones to medical and surveillance equipment.

Notable collaborations include the development of automated contact lens inspection system and the development of the first-of-its-kind miniaturised laser calorimeter to measure the absorption coefficient of various lens and mirrors. The collaborations helped the company to advance their technical capabilities and hence, to capture new business opportunities.



“Collaborations with SIMTech on R&D and new product development over the years have been instrumental in helping Wavelength climb the value chain rapidly, transforming it into a high-value systems provider. Company’s turnover expanded from US\$2.6 million in 2007 to around US\$30 million in 2017. Its workforce has also grown from 30 to 250 employees over the same period,”

Mr Robert Huang, Founder and CEO, Wavelength Opto-Electronic (S)

Technologies Available for Transfer

- Hybrid Direct Metal Deposition for Large Format 3D Printing
- 3D Additive Manufacturing of Metal Parts
- 3D Additive Manufacturing of Polymer Parts
- Hybrid LAAM for Large Format 3D Printing
- Hybrid Machining for Large Format 3D Printing
- Functional Coatings for Glass
- Functional Coatings for Ceramics
- Protective Coating against Wear
- Protective Coating against Corrosion
- Corrosion Evaluation of Materials
- Corrosion Protection of Materials
- Advanced Machining Dynamics Analysis for Productivity
- Advanced Machining Dynamics Analysis for Quality Improvement
- Technology Development for 3D Marking
- System Development for 3D Marking
- Technology Development for Surface Feature Engraving
- System Development for Surface Feature Engraving
- High Temperature Toughened Adhesives for Biomedical Industry
- SIMTech Scalable Mobile Platform
- Freeform Lens Design
- Freeform Lens Fabrication
- Engineering Design for Manufacturing

Initiatives



3D Additive Manufacturing (3D AM)

To demonstrate design and process capability to provide a platform for quicker adoption of 3D AM technology



Structural and Functional Materials Manufacturing

To upgrade the processing technologies' capabilities for structural and functional applications



Surface Engineering

To upgrade and develop capabilities in surface technologies with innovative solutions for protective and functional coatings applications



Optics and Image Processing

To support the industry in design and manufacturing of optical components, modules and imaging processing systems through new innovations and technologies



Equipment Operating System Design

To support the industry in upgrading their equipment system design with the latest mechatronics technologies



Dental and Medical Device Technology

To create new innovations for the development of medical devices and strengthen the PE industry by localising suppliers for multinational companies



Infection Prevention and Sterilisation

To exploit various surface technologies to protect people, medtech devices and materials against infections and contamination



Welding

To help companies in the adoption of advanced welding technologies through a Learn-Practise-Implement approach

