Makino is the global leader in machine tool technology, with a full line of high-performance Machining Center, CNC Wire and Die Sinker EDM systems serving Parts Machining, Die & Mold, Automotive, Electronics & Aerospace industries.

We have a long history of introducing innovative solutions that boost productivity and profitability. By integrating visionary digital technology with premium performance machines, Makino helps companies fundamentally transform. Recently Makino Asia has decided to pursue Metal Additive Manufacturing industry and seek for technology breakthrough in below projects which are most critical process in AM value chains.

**EDB-IPP PhD Opportunities for August 2019 Intake**

**Project 1: Numerical simulation of DED process**

Numerical simulation of the DED process is an effective means to identify reasonable manufacturing parameter sets for producing high quality crack-free components. Temperature field distributions caused by the moving laser beam and the resultant melt pool on the substrate need to be simulated and compared.

**Project 2: Parameter optimization and property evaluation of metal parts manufacturing using DED process**

Laser power, travel speed, working distance, and initial substrate temperature were varied to alter the shape of the laser deposited material. The resulting geometries need to be analysed through metallography and optical profilometry.

**Project 3: In-situ processing monitoring of DED process to identify parts defects**

One major challenge of implementing DED process for production is the lack of understanding of its underlying process–structure–property relationship. The objective of this research is to characterize the underlying thermo-physical dynamics of the DED process, captured by melt pool signals, and predict porosity during the build.

**Project 4: Generate optimization of CAM system in DED process**

Driving a DED process requires highly specialized 5 axis toolpaths that control exactly how and where material is deposited, while avoiding any localized overbuild. This research is to develop a dedicated DED CAM system to create, control and simulate deposition strategies.
Requirements:

- Singapore Citizens or Singapore Permanent Residents only
- Eligible for PhD studies with a Bachelor degree in related disciplines (minimum 2nd class honours upper or Honours (Distinction))
- High motivation for spearheading research and development
- Able to structure and manage cross-disciplinary projects
- Self-driven & self-motivated, able to initiate & drive projects/ideas independently
- Passion for AM industry
- Knowledge of AM machine and CAD/CAM/CAE system

Support provided:

- Full sponsorship for PhD studies under the EDB-IPP scheme with Makino
- Makino provides and drives industry project with student through close supervision by academic partner
- Monthly salary and CPF contributions pegged at prevailing employer’s contribution rate
- Other terms and conditions are subject to offer details provided by Makino upon confirmation


How to Apply:
Interested applicants please send your CV including education history, research experience and undergraduate CGPA to Ms Ng Suan (suan.ng@ntu.edu.sg), indicating the project you are applying for.