



## **Technical Talk**

Organised by

The Joint Branch of the RINA and IMarEST (Singapore)

### **Maritime Industry and Industry 4.0.**

by

**Charles Foo**

C.Eng., CMarEST., P.Eng., FIMarEST., FRINA., FSNAMES

**Dave Kinraid**

Euro.Ing., C.Eng., CMarEng., FIMarEST. Hon.F.SNAMES

**Date :** 25 August 2021, Wednesday

**Time :** The webinar will begin at 7:00 pm and end at 8.00 pm (SGT)

To register your attendance, please click the web-link below:

<https://www.eventbrite.sg/e/technical-talkdinner-maritime-industry-and-industry-40-registration-165882861103>



## Synopsis

So much is heard about Industry 4.0, (today's reach of the original Industrial Revolution in the 1800's - Industry 1.0), and Singapore's usage of it that the Authors thought it worth comparing today's Maritime Industry in its Global context with Industry 4.0. and using a similar notation which we have called Maritime 4.0. to enable the comparison.

The Maritime Industry's vast change moving forward in the last two/three decades into the age of digitisation has given it great impetus, advantages and improvements worldwide. It is acknowledged that 90% of world trade is carried by ships. The ship is the lynch pin.

Internet 4.0 is the onshore trend towards automation data exchange in manufacturing technologies and processes which include Cyber Physical Systems, the Internet of Things, Cloud and Cognitive computing and Artificial Intelligence. Maritime 4.0 uses all of these in its activities and its progress to the fully autonomous ship.

Is there a distinction between automation in the industry 4.0 concept which is related to the onshore fixed manufacturing, assembly lines of industries and Maritime 4.0 which is a global mix of maritime related differing activities and processes, at sea and onshore more diverse in its application requiring a widespread understanding on how they are put together? The authors have endeavoured to answer this.

## About the Speakers

Charles Foo is a time served engineer trained at the Singapore Harbour Board Dockyard (pre-Keppel). He commenced his career by serving 5 years engineering apprenticeship concurrently doing a day release course in mechanical engineering at Singapore Polytechnic.

He completed his apprenticeship in 1964 obtaining a Diploma in Mechanical Engineering from Singapore Polytechnic. Sea time was gained with The Blue Funnel Line and Fyffes and he gained his Chief Engineers First Class COC Steam and Motor in 1970 and subsequently went on to achieve the UK Extra Chief Engineers First Class COC in 1972.

He joined Lloyds Register in 1970 and he served for 28 years in Lloyds retiring as Senior Principal Surveyor and Chief Representative in China. In July 1998 he joined Keppel as MD of Keppel Hitachi Zosen (KHZ). He was appointed MD Special Projects Keppel Offshore and Marine in 2003 retiring in 2016. He was given the Lifetime Achievement Award. He is a C.Eng., CMarEST., P.Eng., FIMarEST., FRINA., FSNAMEs. He has been Chairman IMarEng (Singapore Branch) and President SNAMEs. His main hobby is writing and has co-authored technical papers with Dave Kinrade.

Commenced his career in the British Merchant Navy as an Engineer Cadet Officer in 1957 with Alfred Holt & Co., the Blue Funnel and Glen Line and through sea service and technical college gained his Chief Engineer's COC Steam and Motor.

He was selected to come ashore in 1969 as an assistant Superintendent Engineer rising to Principal Superintendent Far East in Singapore. He returned to the UK and held various senior technical management positions. In 1989 he joined Denholm Ship Management Ltd. UK and then returned to the Far East as their MD in Hong Kong and Indonesia.

He retired fully to Singapore in 2002 and up to 2015 did consultancy work. Has served as Chairman IMarEng and IMarEST (Singapore Branch) and was given the Lifetime Achievement Award, has been President East Asia division IMarEST and is a lifetime Honorary Vice President IMarEST. He is an Euro.Eng., C.Eng., CMarEng., FIMarEST. Hon.F.SNAMEs. Hobbies include reading, golf, following motor bike and car racing (on the TV) and writing having co-authored technical papers with Charles Foo