

[HSL: Machinery Series – Designing & Specifying Safety Related Control Systems – Buxton, 14 Sept 2017](#)

[Book Course](#)

HSL is to run a 1 day course on Machinery Series – Designing & Specifying Safety Related Control Systems.

14 September 2017

Introduction

Control systems for machinery, whether electrical, pneumatic, hydraulic or combinations there-of, are often required to perform safety-related functions. There are regulatory requirements for these control systems and established approaches for dealing with their design, which are laid out in European Standards. This course will help delegates understand how to specify and design safety related control circuits which comply with the requirements of both the Supply of Machinery (Safety) Regulations 2008 (Machinery Directive 2006/42/EC) and the Provision and Use of Work Equipment Regulations. It explains how these, and other regulations and standards are applied to real-life situations, through the use of examples of how to and how not to do it. The course provides methods and templates developed at HSL to help engineers comply with the relevant requirements effectively and efficiently. The course concentrates mainly on the approach laid down in EN ISO 13849-1:2008, but also gives objective advice on the relevance of other standards such as EN ISO 13840-2: 2012, EN 62061:2015, and other Safety of Machinery standards, such as EN ISO 14119: 2013 on interlocking devices.

The course will also explain the changes in the recently updated standard EN ISO 13849-1: 2015.

Course includes

Who should attend?

Electrical, control and project engineers, whether they be original equipment manufacturers or users involved in specifying control systems on customized machinery / assemblies or significantly modifying control systems on existing machinery / assemblies.

Venue

The course will be run at the HSL laboratory in the spa town of Buxton. Buxton is in the heart of the Peak District and has good links to mainline train stations and Manchester International Airport.

Details of hotels in the Buxton area can be found at www.visitbuxton.co.uk

Cost

The cost of the course is £450 per person (includes course notes, lunch and refreshments).

[Book Course](#)

Please note the invoice option is not available within 4 weeks of the course date, or for overseas customers. If you are selecting the invoice option for payment, it will be mandatory to input a purchase order/reference number as we are unable to process booking forms without this.

For further dates and additional information email: training@hsl.gsi.gov.uk or contact the Training & Conferences Unit at HSL directly on +44 (0)1298 218806.

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[First cargo spacecraft boosts China's space dream](#)



China's first cargo spacecraft Tianzhou-1 blasts off from Wenchang Space Launch Center in south China's Hainan province, April 20, 2017.
[Photo/Xinhua]

China has taken another step toward its goal of putting a space station into orbit around 2022, by sending its first cargo spacecraft Tianzhou-1 into space on Thursday evening.

Atop a Long March-7 Y2 carrier rocket, Tianzhou-1 rose into the air from the Wenchang Space Launch Center in south China's Hainan Province at 7:41 p.m.

China declared the launch a success after it entered designated orbit minutes later.

The cargo ship will dock with the orbiting Tiangong-2 space lab where two Chinese astronauts spent 30 days in the country's longest-ever manned space mission, provide fuel and other supplies to the latter, as well as conduct space experiments before falling back to Earth.

If the Tianzhou-1 mission is successful, China will become the third country besides Russia and the United States to master the technique of refueling in space.

China aims to build a permanent space station that is expected to orbit for at least 10 years, and the debut of the cargo ship is important as it acts as a courier to help maintain the space station.

Without a cargo transportation system, the station would run out of power and basic necessities, causing it to return to Earth before the designated time.

"The Tianzhou-1 mission includes the breakthrough of in-orbit refueling and other key technology needed to build a space station, laying a foundation for future space station operations," said Bai Mingsheng, chief designer of the cargo ship.

Three Dockings

Measuring 10.6 meters long and boasting a maximum diameter of 3.35 meters, the Tianzhou-1 cargo ship has a maximum takeoff weight of 13.5 tonnes, and could carry over 6 tonnes of supplies.

Tianzhou-1 is larger and heavier than Tiangong-2, which is 10.4 meters in length and has a maximum diameter of 3.35 meters, weighing 8.6 tonnes.

Bai said that supplies loaded on the cargo spacecraft are nearly as heavy as the ship's own weight, exceeding the loading capacity of Russian cargo ships in active service.

Tianzhou-1 will dock with Tiangong-2 three times, said Bai. After the first docking, aerospace engineers will test the controlling ability of the cargo spacecraft over the two spacecraft.

The second docking will be conducted from a different direction, which aims

to test the ability of the cargo ship to dock with the space station from different directions.

In the last docking, Tianzhou-1 will use fast-docking technology. Previously, it took China about two days to dock, while fast docking will take about six hours, according to Bai.

Refueling is conducted during docking, a process that is much more complicated than refueling vehicles on land.

The refueling procedure will take 29 steps and last for several days each time.

This means the Tianzhou-1 will stay in space for about six months. It will fall into a designated sea area after fulfilling its tasks.

Supporting space station

Space cargo ships play a crucial role in the maintenance of a space station.

Cargo ships can send all kinds of supplies to the space station which can be an experiment field for developing technology in space.

Huang Weifen, a deputy chief designer of the Astronaut Center of China, said that supplies carried by Tianzhou-1 include goods that will meet the basic living and working needs of three astronauts for 30 days in space, including drinking water, oxygen bottles and nitrogen bottles.

Also onboard include facilities for microorganism tests, and sensors are installed to obtain data such as mechanics and temperature for the future design of the space suit outside a spacecraft.

"We hope to gather relevant data through this mission and accumulate experience for sending material for the future space station," she said.

Vision of space power

Although China has achieved many giant steps in space exploration, the country's space odyssey is far from over as it eyes building its own space station and far beyond that: landing on Mars.

In 1992, the central authority approved a three-step manned space program.

The first step, to send an astronaut into space and return safely, was fulfilled by Yang Liwei in Shenzhou-5 mission in 2003.

The second step was developing advanced space flight techniques and technologies including extra-vehicular activity and orbital docking.

The final step will be able to operate a permanent manned space station.

Chinese scientists said they plan to launch a core module of the country's first space station around 2018, followed by two experiment modules.

The station in the primary stage will be composed of three modules: core module, experiment module I and experiment module II. Each module will weigh more than 20 tonnes and together the three will be structured in the shape of T. The core module will be in the middle with an experiment module on each side.

During its operation, the space station could be linked to one additional cargo ship and two manned spacecraft at one time, and the maximum weight of the whole assembly could reach up to 90 tonnes.

Based on such design, scientists will keep updating capsules in accordance with scientific research and extend their abilities.

With the International Space Station set to retire in 2024, the Chinese space station will offer a promising alternative, and China will be the only country with a permanent space station.

So far, China has successfully launched 11 Shenzhou series spacecraft, including six manned spacecraft that lifted 11 astronauts into space.

The country strives to realize the third step of its lunar program in 2017: sending Chang'e-5 lunar probe onto the moon which will return with samples.

HSL: Machinery Risk Assessment Essentials – Buxton, 12 Sept 2017

Book Course

HSL is to run a 1 day course on Machinery Series – Machinery Risk Assessment Essentials.

12 September 2017

Introduction

The ability to carry out a detailed machinery risk assessment has, for some time, been a key skill required under the Management of Health and Safety at Work Regs. Machinery risk assessment is also now explicitly required by the Supply of Machinery (Safety) Regulations 2008. However many people still struggle to know what is suitable and sufficient to satisfy these regulations.

This training course gives delegates practical hands-on experience of conducting a machinery risk assessment using structured techniques which demystify the process given in BS EN ISO 12100: 2010.

This course assumes a basic level of understanding of machinery safety such as that given in the machinery safety basics course that takes place on the

previous day. Anyone who also needs a thorough understanding of the Provision and Use of Work Equipment Regs should take this course in combination with the Machinery Safety Basics course held on the previous day. Anyone who needs a thorough understanding of the Supply of Machinery (Safety) Regs, should take this course in combination with the designing and selecting safe machinery course held on the following day.

Course includes

- What is the difference between hazard and risk and other definitions
- Hazard Identification process and techniques



- Risk Estimation process and techniques
 - Risk evaluation, what does ALARP mean in practice
 - Assessment, handling and control of hazardous substances
 - Reasonably foreseeable misuse, an introduction to human factors
 - Machine interventions
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- Risk assessment practice

Who should attend?

This course is aimed primarily at machinery users, maintenance engineers, designers and project engineers who need to learn how to carry out risk assessment of existing machinery in use or new machinery in the process of being specified, supplied or under development. This course will also be of benefit to safety professionals who are familiar with the concepts but need to know how machinery risk assessment differs from other workplace safety or risk assessments.

Venue

The course will be run at the HSL laboratory in the spa town of Buxton. Buxton is in the heart of the Peak District and has good links to mainline train stations and Manchester International Airport.

Details of hotels in the Buxton area can be found at www.visitbuxton.co.uk

Cost

The cost of this course is £450 per person (includes course notes, lunch and refreshments).

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HSE: PUWER-Machinery Safety Basics – Buxton, 11 Sept 2017

[Book Course](#)

HSL is to run a 1 day course on Machinery Series – PUWER.

11 September 2017

Introduction

Machinery is used in many sectors to fabricate, handle and package industrial and consumer products. Everyone who works with machinery, whether directly or indirectly, need to understand the basics of machinery safety but not everyone needs to know all the details relating to the design. This course covers those activities regulated by the Provision and Use of Work Equipment Regulations (PUWER) and provides delegates with a thorough knowledge of this legislation. The course will also give practical advice on how to evaluate the safety of existing machines and how to measure and evaluate noise and vibration risks. This course can be taken in combination with the machinery risk assessment essentials course that takes place on the following day.

Course includes

Who should attend?

This course is aimed primarily at machinery users, maintenance engineers, safety officers and project engineers who may find themselves responsible for purchasing machinery or needing to make minor modifications to improve the efficiency or change the use of existing machinery. This course would also benefit anyone who needs a thorough understanding of the provision and use of work equipment regulations.

Venue

The course will be run at the HSL laboratory in the spa town of Buxton. Buxton is in the heart of the Peak District and has good links to mainline train stations and Manchester International Airport.

Details of hotels in the Buxton area can be found at www.visitbuxton.co.uk.

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Cost

The cost of this course is £450 per person (includes course notes, lunch and refreshments).

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