

Scorpio Technology

NEWSLETTER

INSIDE THIS ISSUE

WELCOME

Up, up and away! Take flight with great ideas and inspiration in Scorpio's July newsletter.

Remember, we're here to support you, however we can. Contact us at (03) 9802 9913 or email us at sales@scorpiotechnology.com.au

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PRIMARY STEM: MOTION - FLIGHTS, ROCKETS AND RACERS

Learn and have fun at the same time with motion. We have some great projects and kits to get you started.

BREEZY (Code: BREEZY)	Learn about basic circuits while making a basic 4 wheeled vehicle that uses a motor-driven propeller to make it move.
CAPTIVE AEROPLANE (Code: CAPTIVE & CAPTIVE-NS)	Construct a small aeroplane then suspend it from an overhead point. Launch and it will fly in a circle.
SKY SURFER AIRPLANE LAUNCHER (Code: WM6735)	Test how far your plane will fly with this easy to assemble launcher. Idea booklet included.
4M SOLAR PLANE MOBILE (Code: FSG3376)	Build this solar powered aircraft mobile. Watch it glide around in the sun.
LIQUIFLY (Code: LQ5000)	Water powered rocket. Flies over 30 metres! Pump not included.
THE AERO CAR (Code: HJ1800)	Build an air powered car then race it. Learn about air compression.
AIR POWER ENGINE CAR (Code: FS631)	Discover propulsion via compressed air. Air can drive the vehicle up to 50m in 35 seconds!

Also available a large range of motors, propellers and bits for classroom experimentation. Your class may love the balloon rocket experiment or make and experiment with paper darts. Learning with a fun element!



Check out Scorpio's 2022 PRIMARY STEM CATALOGUE for many great ideas suited to your classroom needs.

Click on link: <https://www.scorpiotechnology.com.au/catalogues>

TEACHER CONFERENCES & WORKSHOPS



Scorpio is attending or supports these Design & Technology teacher activities:

DATTA VIC - Rescheduled to Friday 9/12/2022 "Designing the Future", Banyule Nillumbik Tech School, Greensborough

DATTA ACT – Sat 10/09/2022, TECHnow Conference, Daramalan College, Cowper St, Dickson

**LEARN TO MAKE,
MAKE TO LEARN**

"It is possible to fly without motors, but not without knowledge and skill."

Wilbur Wright (1867 - 1912)

On Dec. 17, 1903, the Wright brothers made history in their Kitty Hawk Flyer with the first powered flight



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Pat McMahon has put together a fabulous resource for teachers on his new website. With over 18 years teaching Robotics and Microcontrollers, as a Victorian Technology Teacher Pat has a wealth of info to share. There are **60 Arduino projects** and **50 Picaxe projects** with **downloadable Pdfs, all FREE.**

Click here: <https://www.patsrobots.com/>



Victorian
Model Solar
Vehicle
Challenge

2022 COMPETITION UPDATE

<https://www.modelsolar.org.au/>

Model Solar Victoria's Challenge is happening again **15-16 October!** Due to groundworks at ScienceWorks, the event is to be held at Brunswick East Primary School, 195A Stewart St, Brunswick East VIC 3057.

There will be a change in the event. **Advanced cars will be racing on a circular track**, rather than the Figure 8 track. This means that the race will be a Pursuit style race – which is an option in the Victorian Regulations (called Style 2). Style 1 is the normal Figure 8 style race.

An updated Simulator package (due to changed running conditions / requirements), can be downloaded from the MSV website or Scorpio can supply on request.

MSV will soon run live video events to help teachers with any challenges they are having. Check out their Facebook page or website for updates. If there is any topic or query that MSV can assist with, please notify VMSV chair Clint Steele at csteele@modelsolar.org.au.

SPACE SCIENCE EXHIBITION IN MELBOURNE: Neighbourhood Earth

Fri 17th June 2022 – Sun 28th August 2022,

Level 4, Emporium Melbourne, 287 Lonsdale Street, Melbourne

Neighbourhood Earth is an award-winning exhibition combining the latest science with cutting-edge technology to create an immersive space experience. Developed by Toto Creative, in conjunction with the U.S. Space & Rocket Centre and NASA's George C. Marshall Space Flight Centre, Neighbourhood Earth uses screens, surround sound and a giant projection-mapped dome to tell the story of space science and exploration in a uniquely profound way. Models and examples of spacecraft, tools and astronaut suits are also on hand to showcase the facts, story and achievements behind space exploration, and encourage visitors to consider its future."

Sessions last 90 minutes, with entry every half-hour. <https://neighbourhoodearth.com.au/>



There were 3 people, and they were all bragging about their country. The first person says, "We were the first in space!"

And the second responds, "Well, we were first on the moon! Beat that!" So, the third person says, "Well, that's nothing. Me and my crew are going to the sun!"

"How are you going to do that?" said the other two.

"Well duh! We are going to go at night!"



Padlock & keys promotion

Padlocks suitable for locking out machinery. Keyed alike.

2.0mm Shackle (Code: PL-5) - Pack of 5, Was \$2.75 **Now \$1.38**

4.0mm Shackle (Code: PLL-5) – Pack of 5, Was \$4.40 **Now \$2.20**

4.0mm Shackle (Code: PLL-25) – Pack of 25, Was \$17.50 **Now \$8.75**

<https://www.scorpotechnology.com.au/tools>



20mm body. 3 keys per padlock



25mm body, 3 keys per padlock

Wire Cable (Plastic coated) (Code: CA2-10)

7 x 7 strand, stainless steel rope, 2mm dia, 10m.
Was \$3.75 **Now \$1.87**

Wire Cable (Plastic coated) (Code: CA2-15)

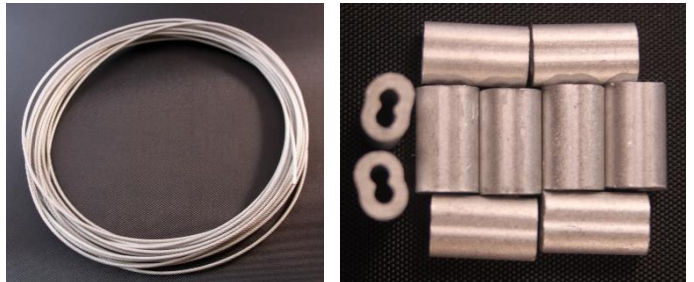
7 x 7 strand, stainless steel rope, 2mm dia, 15m.
Was \$5.25 **Now \$2.65**

Swage (Code: SWAGE)

Swages to suit 2mm wire rope, 13mm long, pack of 10. Was \$2.50 **Now \$1.25**

Crimping Tool (Code: CRIMP)

Large, 600mm crimping tool suitable for crimping swages.
Was \$25.25 **Now \$12.50**





Australian Space Milestones

Written by Anita Vejins

“Look up at the stars and not down at your feet. Try to make sense of what you see, and wonder about what makes the universe exist. Be curious.”

Stephen Hawking (1942- 2018)
Physicist, cosmologist, and author

“The most important thing we can do is inspire young minds and to advance the kind of science, math and technology education that will help youngsters take us to the next phase of space travel.”

John Glenn (1921- 2016)

Third American in space, and the first American to orbit the Earth, circling it three times in 1962



Parkes Radio Telescope, NSW.
(Image: CSIRO)

Australia has been on the forefront of many inventions and innovations including those involved with Space and continues its involvement through research and observations.

In **1945** Australians Joseph Lade Pawsey, Ruby Payne-Scott and Lindsay McCready were involved in the development of radio astronomy. It was the first time radio waves had been used to make an observation not possible with light, and it paved the way for modern radio astronomy.

Due to Australia’s location and political stability it is a favourable place to set up Space operations.

In **1967** Australia’s first satellite was launched from Woomera, SA. The project was given 11 months for design, build and launch of the satellite. The satellite orbited Earth 642 times during 42 days. It revealed new information about the upper atmosphere.

Australia played a key role during the **1969** Moon landing. **Honeysuckle Creek Tracking Station** in the ACT received the footage of Neil Armstrong’s first steps on the Moon and transmitted it to the world for eight minutes. The **Parkes Observatory** took over transmission after that.

The Parkes Radio Telescope and Observatory, in NSW is regarded as one of the world’s leading radio telescopes. It is located in an area with low pollution making it ideal to gaze into the sky.

In 1970 Apollo 13 space mission experienced an emergency. Parkes Observatory was able to track the craft and help the astronauts on board.

In **2018**, Australia officially launched its own space agency **The Australian Space Agency**. Its focus is on private development and businesses.

To date three Australian astronauts have been up in space: Philip Chapman, Paul Scully-Power and Andy Thomas.

Philip Chapman’ was a scientist-astronaut in NASA’S Apollo missions of the 1960s, at the height of the space race between the United States and the former Soviet Union.

Oceanographer Paul Scully-Power studied oceans from space while aboard *Shuttle Challenger* in 1984.

Andy Thomas travelled on NASA’S Endeavour Space Shuttle (**1995**) He flew four missions over 12 years, spending a total of 6

months in space including 141 days aboard the Russian Space Station Mir. Andy took with him on the international mission the watch of aviator Sir Charles Kingsford Smith, who made the first Trans-Pacific Flight In 1928.

Did you know?

- ☑ Australian amateur astronomer Anthony Wesley discovered a mark on Jupiter's surface in 2009. In 2010 he also recorded a comet striking Jupiter.
- ☑ Professor Brian Schmidt received a Nobel Prize in 2011 for his discovery with Saul Perlmutter and Adam Riess that the universe is expanding ever faster. They studied supernovae to measure distances across the universe and discovered that gravity works differently than thought.
- ☑ In 2012 the Canberra Deep Space Communication Complex assisted the *Curiosity Rover* mission on Mars by relaying messages about its landing and operations.
- ☑ Australians working *New Horizon* mission brought the first data and high-resolution images to relay images of Pluto to NASA.
- ☑ Valuable resources may be present on asteroids but it is illegal to claim ownership of any land in outer space. Mining companies can register their interest in a particular asteroid. [Near Earth Object Resource Atlas](#) is constructing a database and map on asteroids that may help the mining industry plan their space mining operations.
- ☑ Researchers at the University of NSW are testing ways to use laser to transfer power to a solar panel so that in the future a solar-powered lunar rover could explore areas that are not reached by the Sun.
- ☑ Researchers at Monash University are listening to Solar sound waves. This information is being used to create a map of the Sun's surface.

Historical NASA rocket launch in the Northern Territory

US space agency NASA (National Aeronautics and Space Administration) launched a rocket from the new Arnhem Space Centre near Nhulunbuy, NT on the Gove Peninsula area on **26 June 2022**.



Map of the launch area at Nhulunbuy. The Arnhem Space Centre site is 31 km outside Nhulunbuy. Credit: Equatorial Launch Australia

Interesting facts:

- 1995 was the last time a rocket was launched from Australia. Launched from the Royal Australian Air Force Woomera Range Complex.
- First time NASA has launched from a commercial port outside the USA.
- The Arnhem Space Centre is owned and operated by a private company Equatorial Launch Australia (ELA).
- The 13m "sounding rocket" is the first of three NASA-designed rockets to be launched from the Arnhem Space Centre to conduct studies that can only be done from the Southern Hemisphere.
- It will not enter orbit but instead collect scientific information into the physics of the Sun, astrophysics, and planetary science related to the southern hemisphere. An X-ray Quantum Calorimeter will measure interstellar X-rays to provide new data to University of Michigan scientists

on the structure and evolution of the cosmos such as trying to capture data on parts of boulders in the Milky Way and particularly the star cluster of Alpha Centauri.

- The rocket travelled 300km in 15 minutes in space. It was visible for about 10 seconds, until just before it exited the earth's atmosphere.
- Two more rockets are due to be launched 4 (Note: was delayed due to weather conditions) and 12 July will conduct astrophysics studies. Those will have a probe to measure ultraviolet light and the structure of stars.



NASA has installed telemetry equipment to facilitate the launch.

Picture: Amanda Parkinson.
Credit: News Corp Australia

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WHAT STEM CAREERS ARE INVOLVED WITH SPACE?

Careers in space are vast, varied and growing in demand. These include:

- **Astronauts**
- **Engineering** in the Space sector include Aerospace, Computer, Materials, Mechanical, Robotics, and Telecommunications Engineers. NASA hires **20** different types of Engineers.
- **Scientists** – Planetary and Space Scientists, Astrophysicists, Biologists, Biochemists and Biophysicists, Geoscientists, Atmospheric Scientists and Meteorologists, Researchers e.g. aerodynamics research
- **Technologists and Technicians** – Telecommunications, Laser, Radar and Sonar, Robotic and Satellite Technologists
- **Specialists** - AutoCAD Operator, Electricians and Quality Assurance Specialists
- **Physicians and Surgeons**
- **Commerce** – Funding projects and accounting type activities

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