Smart Energy Systems and Robotics

Your Mission: You are systems engineers of the future, working at the intersection of clean energy and robotics. Your challenge is to explore how technology can optimise solar energy, harness turbines, and program robots to solve energy challenges. Before arriving at Yarra Ranges Tech School, you must learn the fundamentals of both robot control and sustainable energy systems.

Pre-Visit Activity

Hook	10 mins	**Watch:** • VEXcode V5 Blocks – Getting Started • VEXcode V5 Blocks – Device Setup: Drivetrain
Virtual Robotics	20 mins	**Task:** Use VEXcode VR to program a virtual robot to drive around. • Open the Playground → try **different environments** (Art canvas, Mazes). • Program turns, loops, and sequences. • Bonus: Try to make your robot trace a simple square or circle.
Solar Spark	20 mins	**Scenario:** Imagine you're part of a team designing the **solar-powered city of the future**. • **Research**: How do solar cells turn sunlight into electricity? • **Activity**: Create a quick sketch or infographic of how solar panels could power your robot or a community system (e.g., traffic lights, charging stations, or irrigation). • **Share**: 2–3 ideas on how robotics could make solar systems **smarter** (e.g., sun-tracking panels, cleaning drones, AI-based energy storage).

Post-Visit Activity

VEX in the Real World	10mins	**Watch:** The VEX Worlds Experience (2024) *Focus:* Where can robotics take you? From school labs to international competitions.
Quiz Time	10 mins	Post-SESaR VEX Quiz - Details - Kahoot!
Solar Robot Hack	20 mins	**Task:** In VEXcode VR, program your robot to act like a **solar tracker**: • Try coding a robot that turns toward a target "light source" (e.g., a set point on the grid). • Imagine your robot is adjusting a solar panel for maximum efficiency. • Bonus: Add a sensor input (like distance or colour) to simulate environmental feedback.
Future Energy Pitch	10 mins	In pairs, students prepare a **1-minute energy innovation pitch / poster.** **Prompt**: *"How could robotics and solar energy transform our community in the next 10 years?"*
Reflection	5 mins	• Which skill felt most valuable: coding, problem-solving, or creative design? • How can robotics help solve real-world clean energy challenges? • Would you consider pursuing energy engineering or robotics as a career path?