SDG 4: Quality Education
Expanding Global Quality Assurance Partnerships

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Global Challenges are Increasing at a Rapid Pace
Engineers Make the World a Better Place

They dream, invent, and create things that shape our lives and days, from games and gears and gadgets, to phones and big highways.

They tackle tricky problems, designing smart solutions for how to heal the wounded and ways to cut pollution.

Think telescopes and high-speed trains, the bridge that stands for years; our world is made a better place because of engineers.

What would you create if you were an engineer?
Ocean Garbage Patches

https://www.theoceancleanup.com/
Boyan Slat, Aerospace Engineering student & entrepreneur
Netherlands
HOW IT WORKS
SYSTEM 001

CONCENTRATE THE PLASTIC AND TAKE IT OUT

1. CAPTURE
Natural forces move the system faster than the plastic which allows the plastic to be captured in the center of the system.

2. ACCUMULATION
Due to its U-shape and the screen below, the plastic will collect in the center of the system.

3. EXTRACTION
A vessel acting as a garbage truck of the seas will remove the collected plastic every few months.

4. LANDING
Plastic will be processed on land and sorted for recycling.

https://www.theoceancleanup.com/
The System 001 monitoring system processes, stores and transfers large amounts of data collected by many sensors. This data relates to navigation, environmental conditions, the system's operational status and its integrity. The sensors are linked to five solar-powered electronic pods mounted on the system, all including GPS. The pods communicate to each other via a WIFI mesh network and a satellite connection.

**SAT**  2x SATELLITE POD
The satellite pods enable The Ocean Cleanup team to communicate with the system remotely and retrieve data – including images and GPS locations – from its headquarters in Rotterdam, the Netherlands.

**NAV**  2x NAVIGATION POD
Placed at each end of the system, the navigation pods carry a complete weather station and Automatic Identification System (AIS) - sharing the system's location with other vessels.

**CAM**  1x CAMERA POD
Located in the center of the system, the camera pods are equipped with two high definition cameras. One of which can be remotely oriented for 360° coverage and provide visual feedback from any direction.

**LAN**  9x LANTERNS
To ensure visibility at all times, lanterns are placed every 100 meters, including two indicating the ends of the system. Seven lanterns also feature radar reflectors for added detectability.

**50+ SENSORS** All along the system more than fifty bilge sensors and strain gauges continuously monitor the integrity of the system.
Solving Global Problems require Global Professionals

- 35,000 to 40,000 engineering programs worldwide
- Quality Educational Experience
  - Graduates ready to enter the workforce
  - Accreditation ensures quality educational experience
  - Focus on *Sustainability*
- Partnerships
  - Global STEM organizations
  - Accreditors
  - Industry Advisory Councils/Committees
International Collaboration (ABET example)
Partnerships Among Accreditors

- Bi- and multi-lateral recognition agreements
- International Engineering Alliance (IEA)
  - Working together to advance the educational quality and enhance the global mobility within the engineering profession.
  - Global not-for-profit organization, which comprises members from 41 jurisdictions within 29 countries, across seven international agreements.
Benefits of Mutual Recognition

• Mutual recognition benefits several parties
  – The Graduates: mobility
  – Universities: marketing programs
  – Employers: confidence when hiring graduates
  – Professional bodies: avoids additional evaluation of applicants
  – Accrediting bodies: quality mark for standards and processes

• Graduate Attributes
  – Exemplars of attributes expected of graduates from accredited programs
  – Necessary to “enter the profession”
Graduate Attributes

- Engineering Knowledge
- Problem Analysis
- Design/Development of Solutions
- Investigation & Experimentation
- Modern Tool Usage

- The Engineer and Society
- Environment and Sustainability
- Ethics
- Individual and Teamwork
- Communication
- Project Management and Finance
- Lifelong Learning
Development of the Washington Accord

1989: Original 6
1990s: +2
2000s: +5
2010s: +7
Provisional Status: 8
… and to solve complex Global Challenges

www.un.org/sustainabledevelopment/
Thank You!