What was the Tustin Hangar Fire?

On November 7th, 2023, there was a fire only 3.8 miles away from our school. The devastating Tustin Hangar fire lasted for 24 days.

We were all shocked because the Tustin Hangar was a historical landmark built in 1942 by the United States Navy. It was used to store blimps and had been standing since World War ll. Also, it was one of the largest wooden structures ever built.

Inside of the Tustin Hangar

←—Before the fire

After the fire—→

Why We Selected the Tustin Incident Management Team (IMT)

The fire directly impacted us because it caused all schools in the district including ours to cancel school.

The IMT safely managed the incident by working with firefighters, Health Care Agency, School District, and the AQS (Air Quality Services)

We are thankful for their service, so we selected IMT to research how they use the engineering design process.
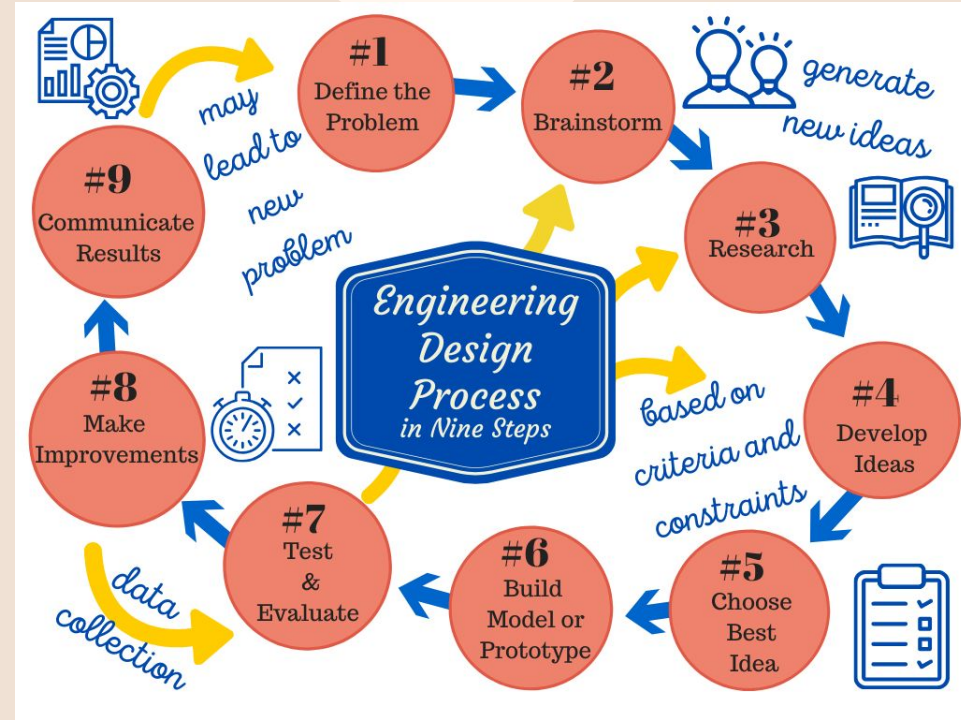
What is the Engineering Design Process?

The engineering design process is a process that many careers or companies rely on to identify and solve problems.

The process consists of nine steps. ➡️

Let's see how the IMT used this process to out out the fire.

Engineering Design Process in Nine Steps

- #1 Define the Problem
- #2 Brainstorm — generate new ideas
- #3 Research
- #4 Develop Ideas — based on criteria and constraints
- #5 Choose Best Idea
- #6 Build Model or Prototype
- #7 Test & Evaluate — data collection
- #8 Make Improvements
- #9 Communicate Results — may lead to new problem

How to put out the fire

1. Define the Problem

Firefighters could not put out the fire like a regular one.

Because the Hangar, built in 1942, had no fire sprinklers, no hose line plumbing, and no access to upper levels.
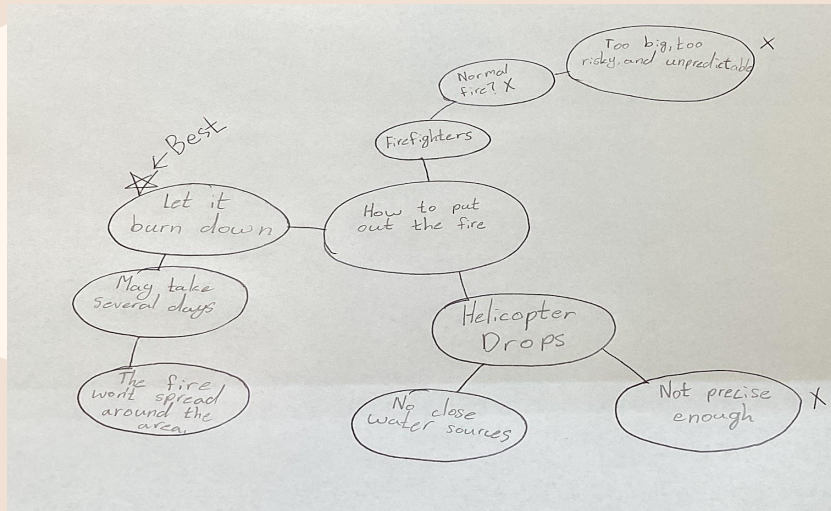
How to put out the fire
2. Brainstorm

Firefighters approaching the fire: too risky
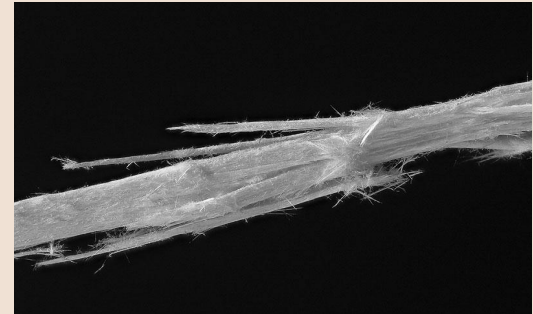
Helicopter drops: can't access the fire itself

Allow it to burn itself out: the safest method to extinguish the fire

Another Problem Occured :
1. Define the Problem 2

While the hangar was burning, **Asbestos** was detected in the air.

Public health became another concern.

Asbestos

3. Research Part 1 :

What is Asbestos?

Asbestos was insulation material that was used to build houses in the 1900s.

Researchers found out that if people breathe asbestos fibers, it increases the risk of serious diseases and even cancer.
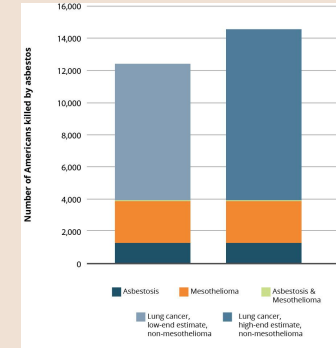
Asbestos in a house

Asbestos
3. Research Part 2

The IMT worked together with air quality services and firefighters to be informed of the harmness of asbestos.

Risk of Asbestos

How to put out the fire
4-5. Develop Ideas 1
Choose Best Idea

The IMT considered putting out the fire instead of waiting for it to burn on its own. This was to prevent asbestos.

1. Use excavators: remove debris to clear roadways to allow water trucks to access the fire.

2. Use water trucks: nozzles and hoses to put out the fire and put them on the far side of the hangar with continuous water sources so it provides water.

Asbestos
4-5. Develop Ideas 2
Choose Best Idea

The IMT announced that they were shutting down all schools in the Tustin District to ensure that everyone was safe from the asbestos in the air.

- Based on the distance from the fire and potential fire debris, the IMT categorized schools into three danger zones: green, yellow, and red

GREEN SCHOOLS (farthest from burn site + no potential fire debris initially found on campus by staff)	YELLOW SCHOOLS (closer proximity to burn site + at least one piece of potential fire debris initially found on campus by staff)	RED SCHOOLS (immediate proximity to burn site)
Arroyo Elementary School	Nelson Elementary School	Legacy Magnet Academy
Foothill High School	Tustin Ranch Elementary School	Heritage Elementary School
Hewes Middle School	Utt Middle School	
Red Hill Elementary School	Tustin High School	
Loma Vista Elementary School	Hillview High School	

How to put out the fire

6. Idea 1- Take Action

- Excavators and water trucks were set-up on December 5th.
- Deconstruction began on December 7th to access the fire
- Everything was completed in 13 days.

Asbestos

6. Idea 2- Take Action

An asbesto test was conducted on each school campus and if the school was clear, the IMT allowed the schools to reopen.

All Tustin Unified schools have been inspected, reduced, and cleared on December 19th 2023.

School Status

Below is the current status of campuses related to clearance for returning to on-campus instruction. The information below is fluid and will be updated as our certified asbestos consulting firm, Envirocheck, clears schools for a return to on-campus instruction.

School Name	Status
Adult Transition Program	Cleared
Arroyo Elementary School	Cleared
Beckman High School	Cleared
Benson Elementary School	Cleared
Beswick Elementary School	Cleared
Columbus Tustin Middle School	Cleared

7. Test and Evaluate

- The fire was put out safely.

- The AQS' work was completed.

- All TUSD schools are open.

- 85% of the residential debris cleanup has been completed.

8. Make Improvements/
9. Communicate Results

The IMT actively announces updated information to the public and shares all daily incidents reports on https://www.tustinca.org/1457/North-Hangar-Fire-Community-Resource-Pag

NORTH HANGAR FIRE COMMUNITY RESOURCE PAGE

UPDATED HEALTH & SAFETY TIPS & INCIDENT PHASE COMMUNITY GUIDE
POSTED DECEMBER 15, 2023

PROTECT YOUR HEALTH BY TAKING THE FOLLOWING STEPS:

1. **Stay informed**
   - Go to tustinca.org for updates on community information and resources.

2. **Avoid touching debris**
   - Report debris related to the incident by calling **(714) 426-2444** or completing a debris reporting form found at: Debris Reporting Form | Tustin, CA (tustinca.org)

3. **Basic health and safety tips***
   Homes/buildings
   - If you still have visible debris from the Hangar incident on the exterior of your home or business,
     i. Avoid touching suspected debris from this incident and report the debris at Debris Reporting Form | Tustin, CA (tustinca.org)
     ii. Avoid landscaping activities (mowing/leaf blowing/gardening) until the visible debris is appropriately removed.
     iii. Follow any guidance provided by certified asbestos consultants (CAC's).
   - Cleaning methods to further reduce risks:
     i. Use wet cleaning methods for windowsills/window screens, balconies, and door entrances. Do not use a pressure washer.
     ii. Use a high efficiency particulate air (HEPA) vacuum.

Thank you IMT for protecting everyone!

Similarities and Differences Between the IMT and Our Team

Similarity

- We used all steps in the design process.
- Solving problems took us both a long time.
- We had to actively work as a team.

Difference

- While they were in step 2 (brainstorming) for the first problem, their second problem occurred.
- While we were in step 6 (building), another problem occurred.
- They only had to go through the process once while we repeated it multiple times.

Robotics and Our Future Career

Cameron: I'd like to be a mechanical engineer. Building, Coding, testing, and working with my peers will prepare me for the future.

Kayla: I have always wanted to become an electrical engineer. By repeatedly modifying our robot, I learned that mistakes help us to learn. Even if hardships come in the future, I will never give up.

Sevithaa: I am dreaming of becoming an engineer. Robotics helped me to build my confidence. Also, I learned that failure is the key to success and to keep on trying no matter what.

Sean: I want to create the cure for cancer in the future. Robotics helps me to train my thinking process. We should always encourage our teammates for a good result.

Researching Websites

- https://www.tustinca.org/765/Tustin-Hangars

- https://ocfa.org/

- https://www.tustinca.org/DocumentCenter/View/11436/OCHCA-Health-and-Safety-Tips

- https://www.tustinca.org/1457/North-Hangar-Fire-Community-Resource-Pag

- https://www.aqsnet.com/index.php/services/environmental-services/

- https://www.tustin.k12.ca.us/tustin-hangar-fire/school-status

- https://www.mesotheliomahub.com/mesothelioma/asbestos/how-to-identify-asbestos/how-to-identify-asbestos-insulation/

- https://aqs-services.com/our-company/