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1. **INTRODUCTION**

Although over 50 years ago, it was first pointed out that human activities affect the global environment, only in the past few years have societies and a few governments started to face this situation responsibly. In the words of Isaac:

It is changing, continuing change, and inevitable change, which is the most important aspect of the western age. No rational decision should be made by considering not just the universe as it is now but also the universe as it will be. "

Thus, when defining the activities of the mechanical engineer and his social role, we must take into account the repercussions that the decisions of this professional will have, not only on the present situation but also in the future.

Since the early 20th century, technological changes have emerged at an increasing rate, inevitably affecting human, economic, social, and environmental conditions worldwide.

These changes have had an impact on education, provoking a reconfiguration of higher education studies including technological degrees at the faculty level and mainly in engineering, specifically, mechanical engineering. This paper focuses on how these changes affect the Mechanical Engineering profession in the Mexican context.

1. **The Role of Mechanical Engineering**

Mechanical engineering arose during Europe's Industrial Revolution of 1848, although its roots may be traced back thousands of years across the globe. Engineering is one of the most diversified fields of study.

It is a discipline of engineering that entails using physics, engineering, arithmetic, and biomaterials concepts in the design, manufacturing, and functioning of equipment. Mechanical engineering has varying degrees of Manufacturing engineering, metallurgical engineering, and civil engineering all have some crossover. aeronautical engineering, computer-aided design, analytical chemistry, operations research, and other modeling techniques.

To design and manufacture engine systems, mechanical engineers must have a strong understanding of mechanics, kinematics, physics, electrical engineering, and computer modeling. Engineers should be computer literate, having CAD (computer-aided design) and CAM (computer-aided manufacturing) skills (computer-aided manufacturing). to create and analyze their ideas, as well as monitor client satisfaction (computer-aided manufacturing).

Computers have changed the way mechanical engineers operate today, allowing them to complete complex studies in minutes rather than days or weeks. Mechanical engineers, on the other hand, will still require important manufacturing machinery, materials, and powerplants to create a complete proof of contribution, and they will be required to use mathematics and trigonometry when dealing with the more sophisticated and intellectual aspects of the job.

2.1. Mechanical engineering conceptualization

Before the development of mechanical engineering as we know it today, physicists were in charge of applying theories and conducting experiments to address everyday human problems. Their scientific experiments led to the creation of relatively basic devices one by one. The time and resources saved by these machines attracted the attention of industry, and it was recognized that they were valuable, increasing in demand for increasingly complicated equipment and gadgets. Indeed, the Industrial Revolution begun as a consequence of developments in technology. And as a result of the gradual entry of equipment into the marketplaces, which over time allowed them to develop into successful factories and businesses?

More advanced machine invention and usage have an inherent challenge in that it necessitates a separate profession, resulting in Mechanical Engineering, which, based on physical principles, permits the construction of useful technologies for humanity.

Because information was available on a larger scale during the 19th and 20th centuries, knowledge grew. The discovery and extension of knowledge of structural matter, electromagnetic phenomena, chemical elements, laws of motion, and energy transformation processes led to a larger specialization of the study.

However, even with these advancements in science, many of today's subjects, such as the fundamentals of physics, were unknown until the early nineteenth century; and it was the same engineers who recognized the potential of this scientific field for application in problem-solving that modern mechanical engineering arose.

Mechanical Engineering is a professional activity concerned with the design, construction, and operation of systems that convert thermal energy to useful mechanical forms, such as steam engines, internal combustion engines, and so on, and necessary devices to convert those engines' output power to the desired form.

More recently, Jaime Cervantes de Gortari, president of the Mexican Association for Mechanical Engineering [3], stated that the role of mechanical engineering in the next 20 years "will create innovative technology which enables growth in the economy while also promoting long-term sustainable development of resources such as energy and water."

Both statements emphasize that Mechanical Engineering is directly related to the application and development of equipment to create and transform any type of energy and use it in a process, leading us to conclude that the professional activities involved in Mechanical Engineering and energy transformation and application have a strong relationship.

But how does the magnitude of environmental deterioration and energy use impact scientific progress and conceptualization?

1. **MECHANICAL ENGINEERING'S IMPORTANCE**

Mechanical design engineering is a vast field that involves the design, analysis, construction, and maintenance of machine elements using concepts, engineering is a term, and mathematics. It is one of the most extensive and oldest types of all engineering disciplines.

Some of the main activities that involve mechanical engineering include applied mechanics; Entropy, transport phenomena, thermal expansion, manufacturing technology, and a variety of other subjects are covered. It is applicable in the fields of technology, science, exploration, and military activities. Sources across the world indicate that mechanical engineering speeds in the areas of aerospace engineering, automotive engineering, mechatronics, Applied Mechanics,

Marine engineering, manufacturing engineering, mechanics, acoustics, structural engineering, etc. Production, rail networks, burning, materials, and robots are the most prevalent engineering specialties. Combustion of (mechatronics) with areas such as computers and control engineering is very paramount.

Mechanical engineering is deemed the mother of all engines you see on the market today. It was developed beginning in the early 1917s when steam engines existed and have now been converted into the railway and now electricity generation. Several points indicate the importance of mechanical engineering amongst all other branches.

1. Mechanical engineering is one of the longest and perhaps most diversified of engineering. fields of engineering since it encompasses mechanical system analysis, testing, design, manufacture, control, operation, and maintenance.

2. Engineering Mechanics It also covers all elements of converting thermal energy into productive work, as well as the technology that does this.

3. Engines, generators, elevators, and even air conditioners have all been made possible because of mechanical engineering. Mechanical engineering may be found in a variety of items, including vehicles, airplanes, and refrigerators. This is useful technology in our contemporary society; it allows us to carry out a range of actions regularly with reasonable ease.

4. Mechanical Engineers Have A High Starting Wage: Mechanical engine wages and remuneration are excellent, with some excellent incomes.

5. Mechanical engineers are very skillful with multiple engineering skills as they are tagged as jack-of-all-trades. environmental Their knowledge covers the areas of computer applications, electricity, structures, mathematics, and physics and some level of understanding of social, environmental, and economic factors. On a worldwide level, there are several opportunities: There are also engineering courses available in the subject of mechanical engineering, as there is no country that does not require engineers, as seen by the large number of engineering courses available. Many mechanical engineering courses are given in other nations, providing chances for students from all over the world to acquire admission to such schools for skill development and academic careers.

7. Mechanical courses come in a wide range of subjects: There are an estimated 900 mechanical engineering courses offered, with such a diverse range of educational options. As a result, if anybody is interested in studying, there are more options available.

1. **Mechanical engineers come in a variety of shapes and sizes, as shown below:**

**Engineers who work in the automotive industry**

Automotive researchers are focused on classic features such as suspension, as well as airflow and alternative fuels, in order to improve automotive abilities. Automotive research professionals are focused on the development of compact automobiles, trucks, buses, motorcycles, and off-road vehicles. They try to develop new products, improve existing ones, detect problems, and handle engineering concerns.

**Engineers who work on HVAC systems**

Transmission or thermal physics is a mechanical engineering educational emphasis. For aircraft, trains, vehicles, computer rooms, and schools, heating and cooling systems experts design atmospheric technologies (systems that manage the temperature environment within specified restrictions). They create tests that show how people and technology interact, as well as quality assurance procedures. Building energy losses are calculated with the use of computers, flame analyzers, and pressure transducers.

**Robotics Engineers**

A robotics engineer is a behind-the-scenes architect in charge of building robots and robotic systems that can perform activities that humans cannot or do not want to undertake.

The majority of robotics engineers' effort will be spent on robot designs as well as the procedures that will allow the robot to perform effectively. Robotics engineers, particularly in the manufacturing industry, use new ideas to make activities safer, easier, and more efficient.

**Engineers who work with materials**

Engineers in the fields of pneumatics, biochemistry, electrical engineering, municipal engineering, nuclear engineering, and aviation materials engineering strive to solve problems in a range of technological fields. They achieve this by inventing, manufacturing, and assessing innovative materials that meet certain physical, electromechanical, and biological requirements. Polymers, minerals, nonmaterials (extremely small things), ceramics, and combinations are studied for their elemental makeup, structures, and mechanical uses based on its intended purposes.

**What is the workplace of a mechanical engineer like?**

The nature of the employment will be determined by the area in which you choose to operate. Mechanical engineering is a large field that works with mechanical challenges on a daily basis, with scientists dealing with mechanical physics, tremors, pressures, rotations, and velocity on a daily basis.

Mechanical engineers are needed in a wide range of sectors, including aviation, automobile, petrochemical, construction, military, semiconductors, products, maritime, materials and metals, pharmaceuticals, rail, and utilities.

Mechanical engineers can work in within and without the engineering business in non-engineering positions. Economics, administration, legislation, the army, administration, medical, exploration, technological marketing, technical consultancy, technical publishing, science journalism, and education are all examples of these fields.

From creating a leg brace to building a new child's toy, a mechanical design education gives access to a wide range of industries and endeavors.

Engineers spend the majority of their time in professional environments. Engineers can visit workplaces on ad hoc basis if a problem or set of tools necessitates his personal attention. Machine operators typically work extra hours, with some working up to 60 hours each week.

Summary:

Mechanical engineering has long been the backbone of all engineering specializations, encompassing the first steam engines, locomotive engines, automobile industries, factories, and other mechanical systems.

It has also ushered in a new era of power generation for both industrial and home uses. Mechanical engineering has also improved the maritime sector, ranging from classical stream engines to electro-mechanical engines, resulting in the development of unmanned surveillance ships.

We might also talk about how electromechanical principles have influenced the evolution of robots. A wide range of job opportunities have come from technical training and competitive skill development in the area. This is only one of many reasons why mechanical engineering is considered the mother of all engineering specialties.

CONCLUSION

The article looks at some different concepts within the mechanical engineering discipline. It is possible to deduce that this discipline is strongly linked with the design and development of systems that involve energy transformation into mechanical energy or useful work. It was shown the important role of this engineering professional in the scientific and technological innovations related to energy transformations. For this reason, it is important to promote specialized training for the design of equipment that uses energy and material resources efficiently.

The recent energy crisis has forced us to a more rational use of this resource, so these professionals use their knowledge and skills to contribute to the development of innovative equipment and processes that contribute to a better and more responsible use of energy and material resources. Accordingly, it is important that the mechanical engineer be prepared to follow standards and adapt to the existing mechanical and process systems.

But, in the same way, it is important that a professional be able to innovate and use his skills to be adapted to different circumstances and apply his knowledge to develop technology that sustainably solves society's necessities. Finally, it is important to point out that in Mexico, for so many years, the mechanical engineering curriculum has been focused on promoting knowledge and skills related to industrial management and process administration.

These skills are highly important, but it was observed that the energy field has been neglected, perhaps because it is thought that this knowledge is poorly used during the professional performance of mechanical engineering.

This situation has been changed, and now the subjects related to the energetic field are a priority of the mechanical engineering career. It is also suggested to involve the students in the development of projects related to energy-saving, emission control, and the use of renewable energy. All the proposals shown in this paper are focused on developing a professional capacity to meet the current social and world demands in a sustainable manner.

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