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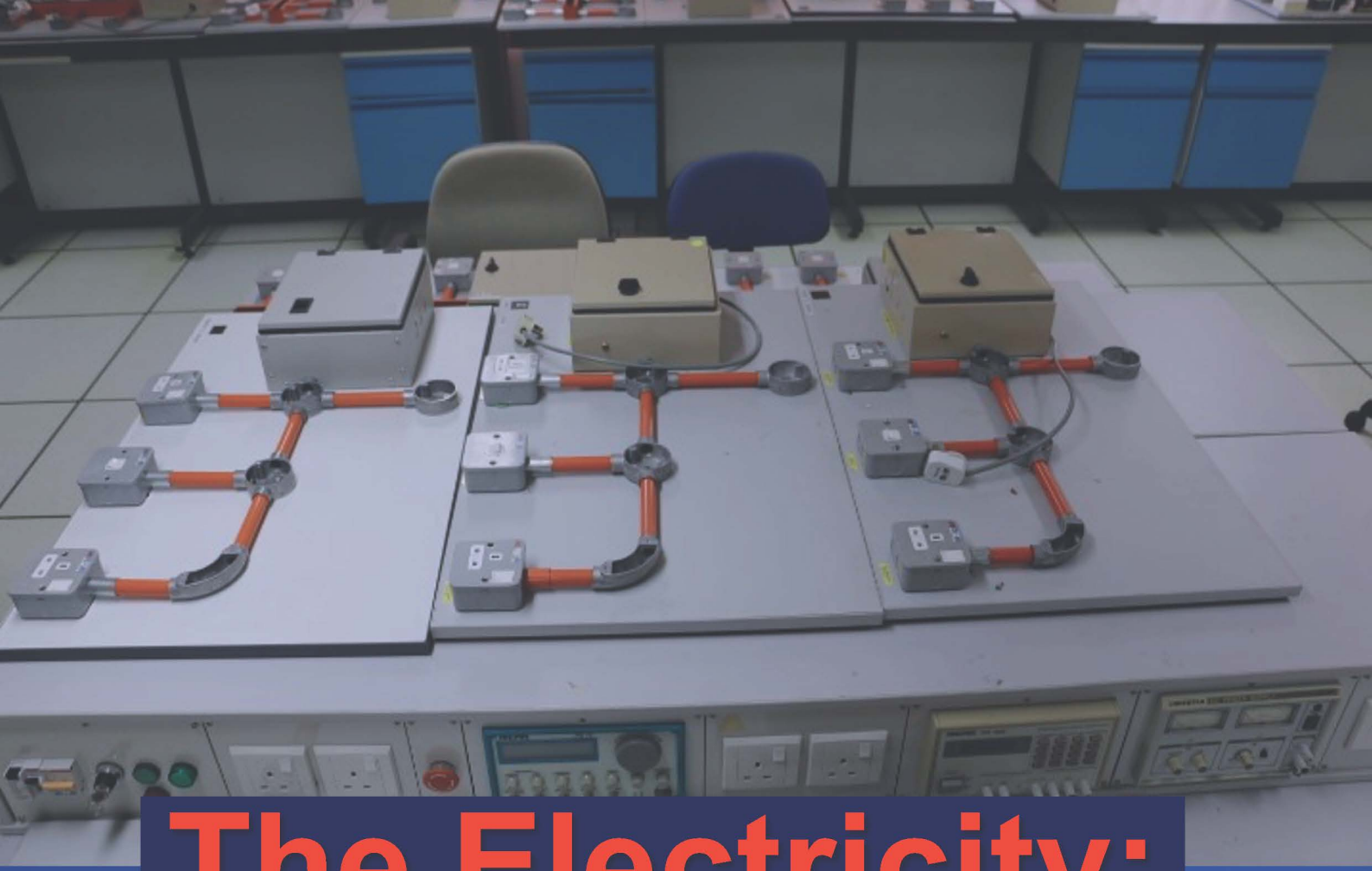

The Electricity:

The dryer, The safer

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Electricity is one of the most important elements our daily life. Nowadays, electricity plays a vital role for humankind, encompassing social, religious, education, administrative and even mobility activities. Within the current age, it is hard to imagine how humans could sustain their daily life without electricity. However, though we acknowledge that electricity is very important our daily life, it could pose a dangerous threat to human life. There are many factors or events that could lead to this hazard. Most of these cases are due to human factors such as lack of knowledge, ignorance, taking things for granted, or negligence. One of the factors that contribute to fatality is electricity shock while touching an electrical apparatus. This shock occurs when a certain magnitude of current flows from the electrical source to the human body. Table 1 shows the effect that may be experienced by the human when certain magnitude of current flows through the body [1].

Magnitude of Current (A)	Effect
0.001	Barely perceptible
0.001-0.003	Perception threshold
0.003-0.009	Painful sensation
0.009-0.025	Muscular contraction
0.025-0.06	Respiratory paralysis
0.06-4	Ventricular fibrillation
4-5	Heart Paralysis
5 and above	Tissue burning

Table 1 The current and magnitude and its effect to human body

Most of us assume that an electric shock would happen during working activities such as maintenance, switching procedures at a substation, or cable installation. However, electric shocks could also happen in the vicinity of the household. In a household, an electrical shock could occur in situations where the human limb touches any exposed electrical apparatus. This occurs when unintended potential or voltage appears between exposed metal parts and any voltage terminal in the electrical system. Electrical shock occurs when a human touches an exposed metal enclosure part of an electrical apparatus, allowing current to flow due to the voltage difference between the touched metal part and any existing voltage terminal.

According to the research by Talib et al. [2], there exists voltage potential between metal conductors that are connected to the earth. This potential can exceed 10V, which is regulated by IEEE Std 1695-2016 [3]. Despite these regulations, instances of high voltage potential often go undetected by protection devices. The failure of protection devices to detect high voltage potential poses significant challenges for professionals working in the field.

cardiac arrest and there is high possibility of sudden death. The question is, how does the wet condition contribute to the electrical hazard? The main reason is that wet conditions, which often consist of liquids such as water, can act as electrical conductors. The human body thus becomes part of the electrical circuit via water during wet conditions.

Another potential electrical hazard in households occurs when a person touches a light switch with wet hands or limbs. It is important to note that lighting switches are typically equipped with insulating materials and protection systems for safety purposes. However, there are situations where the protection system might fail to operate, allowing electricity to remain active. This could create a path for electricity to flow through our body. Additionally, it is important to note that water on our skin can flow through gaps around the switch, potentially bridging our body to the electric wire. With the reduction of skin resistivity, as mentioned in the previous paragraph, more current can flow through the human body, increasing the risk of fatality. With a standard voltage of 230V in our electrical systems, the current flowing

Identifying and resolving these issues becomes difficult when the source of the high voltage potential remains unclear. The origin of these problems is often multifaceted and complex. Suspected causes include loose terminations, improper wiring within buildings, and a lack of maintenance services. These factors contribute to situations where high voltage potential exists without a clear indication of its source. The presence of high voltage potential poses serious risks to human safety. Individuals can physically feel this potential and contact with it can result in electric shocks. In the most severe cases, contact with high voltage potential can lead to death. This underscores the urgent need for thorough investigation and the implementation of mitigation strategies to address these potentially life-threatening issues.

With the typical resistance of the human body at around 100000 Ω, a 0.007Amp current could flow in the human body (based on ohm's law equation, Current=Voltage /Resistor) [4]. As tabulated in Table 1, a magnitude of this amount would cause a painful sensation throughout the body. Now, what if a wet human limb touches that metal part? In a wet condition, the human body resistance is significantly reduced from 100000 Ω to 1000 Ω, and the resulting current flow to the human body would reach to 0.7 amp. The effect would be worse as this magnitude could bring to heart to a state of ventricular fibrillation, where the heartbeat becomes faster and out of rhythm. This condition would lead to

through the human body during wet conditions could reach up to 0.23 amperes (using the same formula of Ohm's law). At this level of current, the human body might experience ventricular fibrillation, as mentioned in the previous case.

We often take for granted switching off electricity with wet hands, especially after showering. Unbeknownst to us, the wet hand can provide a path to the electrical source from the wire connected to the switch, posing a hazard to the human body. In dry conditions, human skin acts as an insulator with extremely high resistance, preventing the flow of current. Additionally, as previously mentioned, switches are equipped with insulation properties, further minimizing the risk of unintended electrical paths. With the combination of high skin resistance and switch insulation, no current flows to the human body, making it unlikely for electricity to pose a hazard. Therefore, it is crucial to avoid our bodies becoming part of an electrical circuit by ensuring no electrical conductors touch us. It is a good practice to switch off bathroom lighting while bathing for safety. Ensure hands are dry when handling electrical switches. However, we should be certain our hands are truly dry for such activities. Therefore, from now on, ensure hands or any limbs are dry when touching electrical apparatus. The drier the limb, the lower the risk of exposure to electrical hazards and the lower the possibility of a life-threatening situation.

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