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Pusat Asasi

SInD: Self-Iron and Dryer

Muhammad Afzal Saidi, Muhammad Fiqri Sahrel, Nur Anisa Kamaliah Mohd Azran, Putri Syaza Ariesha Mohd Nazilam, *Aida Fazliza Mat Fadzil

Centre of Foundation Studies, Universiti Teknologi MARA, Cawangan Selangor, Kampus Dengkil 43800 Dengkil, Selangor, Malaysia

*E-mail: aidafazliza@uitm.edu.my

ABSTRACT

The Self Iron and Dryer is a cutting-edge household gadget that combines drying, steam disinfection, and intelligent ironing features. This invention attempts to alleviate the problem of time-consuming and labor-intensive drying of clothing as well as improve human life by offering them automated products. The dryer makes clever adjustments to the drying time and temperature based on the moisture level of the garments, providing effective and gentle drying. This product's innovative invention involves the incorporation of steam disinfection and intelligent ironing features, considerably decreasing laundry burden and time. The dryer is also collapsible, which can shorten its height to almost half its original height, making it easy to store and save room. This product has great commercial potential since it targets busy homes and individuals that value time savings and convenience, besides lowering the cost of energy usage. Overall, the Self Iron and Dryer (SInD) is a novel invention that streamlines the laundry process by merging two tasks into a single machine, which is our specialty. For those searching for effective and convenient ironing and dying solutions, this gadget has the potential to become a must-have home item.

Keywords: Clothes dryer; steam disinfection; intelligent ironing; cutting-edge household gadgets; timesaving

INTRODUCTION

Laundry has always been a necessary yet time-consuming task in our daily lives. Traditional washing procedures require significant physical labour, especially when ironing garments, which can be time-consuming and exhausting. Additionally, some fabrics are delicate and challenging to iron without damaging the material, making it difficult to keep clothing looking its best.

The Self Iron and Dryer machine (SInD) was created to address these issues, offering an innovative solution streamlining the laundry process. This gadget is a sophisticated, automated ironing machine that simultaneously uses steam and disinfection technologies to dry and iron garments.

The main goal of this product is to make laundry more accessible, faster, and more efficient, freeing up time for other tasks while ensuring that garments are thoroughly ironed and disinfected. In addition, it seeks to simplify the washing process by eliminating the need for hand ironing, reducing the time and effort required to do laundry.

The Self Iron and Dryer Machine's innovative aim is to provide a convenient and time-saving laundry solution, making it easier for busy individuals to keep their garments looking their best without spending much time ironing. With its unique features and capabilities, this

device represents a significant advancement in washing technology, offering a practical and creative solution that will appeal to busy individuals and families.

Materials

The Self Iron and Dryer Machine (SInD) is made of a robust and lightweight material that provides excellent heat insulation from the handle to the machine's body. The body is made of SUS304, a corrosion-resistant, heat-resistant, and durable material suitable for external use[1]. Fibreglass fabric coated with silicone is used as an insulator inside the machine to retain heat and minimise energy loss to the surroundings.

The insulator cover cloth we use is silver-plated cloth and Nylon zip, both watertight and airtight. This allows steam to travel through the cover, improving wrinkle removal and drying time while providing a hygienic surface. Additionally, we use wood to make handles, clippers, and hangers, as wood can withstand temperatures up to 150 degrees Celsius without damage. Furthermore, it adds an aesthetic look to the product, making it more appealing to potential customers.

Additionally, we gathered feedback from similar products and found that some had mould growth issues due to the moisture and humidity inside the machine. When mould spores come into contact with a damp surface, they can thrive and grow [2]. To address this problem, we equipped our product with a UV light that emits radiation to kill mould and bacterial spores, preventing their growth and ensuring a hygienic environment inside the machine [3].

How Its Works

The machine works in two parts which are the ironing and the dryer. Both functions use heat, and air flows to disseminate thermal energy to the isolated system in the ISnD machine. Heat and air current is supplied by a heater fan built inside the machine as the excess air will flow through the vents. The ironing process uses mechanisms such as high-frequency nanoparticles to change the physical property of water from liquid into a heavier mist. It follows the steamer concept by adding heat and air current. The steam works by loosening the bonds between the long-chain polymer molecules in the fabric, reducing wrinkles [4].

On the other hand, traditional dryers only use a heater fan with a higher temperature compared to the one used for ironing. For our product, we set the dryer to maintain the temperature near 60°C, a standard temperature for speed drying and suitable for items such as t-shirts and poly-blends. In contrast, the ISnD combines steam and high temperature in one go, allowing both ironing and drying simultaneously, saving time and energy compared to the traditional approach of doing one thing at a time.

Results

Users will no longer have to worry about their wrinkled t-shirts or damp cloth or both because this machine shows incredible results and can solve it in one go.

Table 1: Results

Before	After
	

Our Self Iron and Dryer Machine (SInD) offers a convenient and time-saving laundry solution that simplifies the ironing process and ensures that your clothes are disinfected, dried, and wrinkle-free, making it a valuable investment for busy individuals and families.

INNOVATION DEVELOPMENT

Our team has devised an idea to design a small, lightweight, and portable product with a modern look. Based on our survey, most people preferred a cuboid shape rather than a cylindrical one. In addition, they mainly voted for a pearl white colour with a metallic silver stripe as the best colour combination, reflecting their love for modernism. We also added a holder made of wood for users to carry around without hurting their hands.

To quickly solve the problem of wrinkles and dampness in clothes and with a single action, we created a product that draws on existing products for reference but is still original. We use the steam concept for ironing, which involves applying steam to the cloth. This works by relaxing the garment's fibres and using gravity to eliminate wrinkles [5]. Rather than using a traditional steamer, our product utilises an ultrasonic mist maker that converts water particles into a heavy mist. This mist is heated and blown out by a fan at the correct temperature.

Draft

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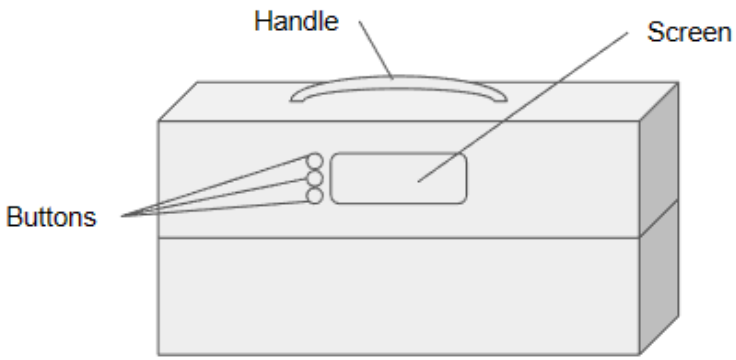

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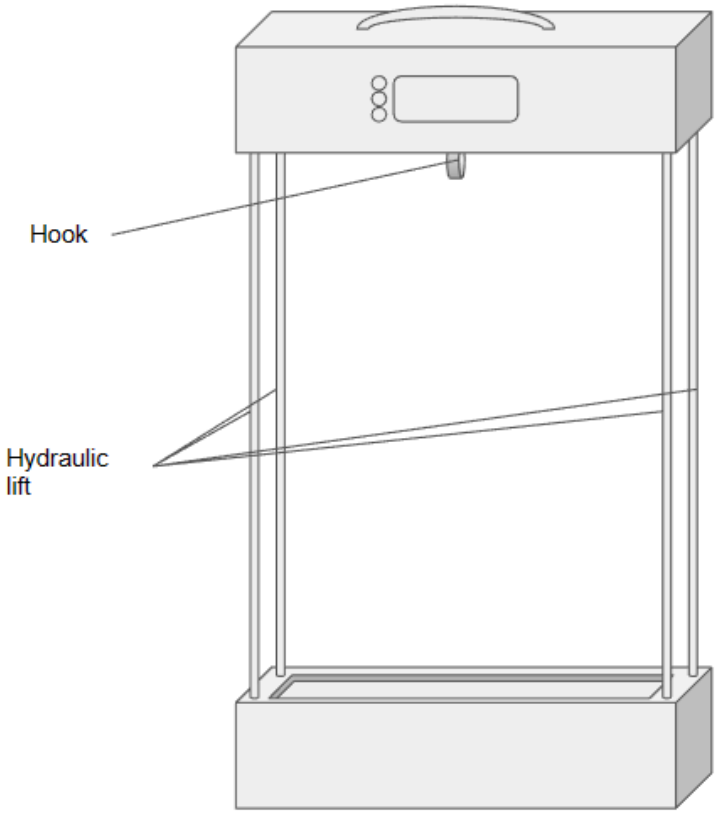

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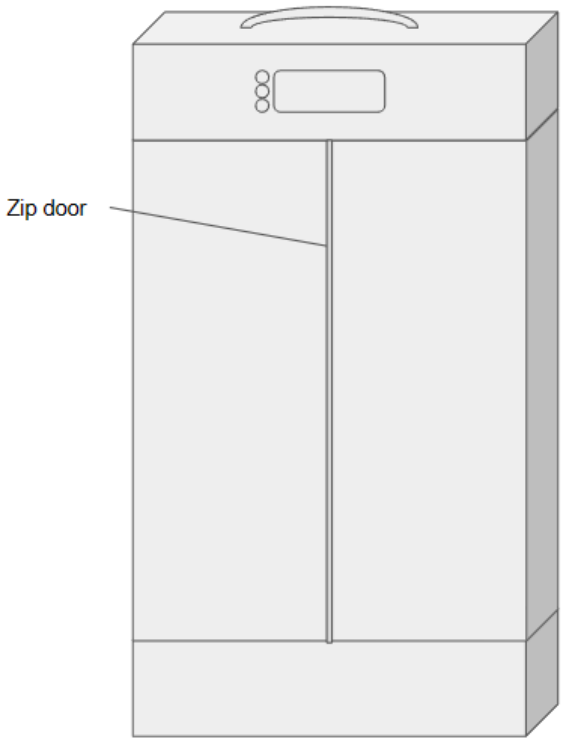
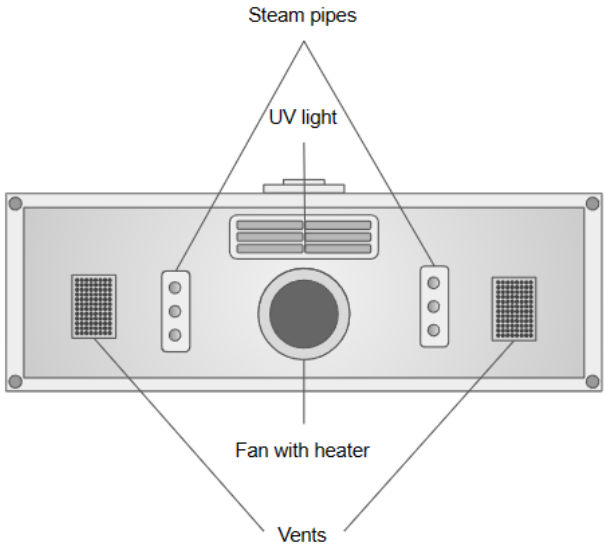


Bottom Component (Top-view):



Product Colour

Pearl White (Main)
(Secondary)
Hex code: F8F6F0

Metallic silver

Hex code: #A8A9AD

COMMERCIAL POTENTIAL

Ironing clothes is a task that can be challenging for busy or physically impaired individuals, as traditional ironing machines require significant physical effort and precision. Additionally, conventional machines can damage delicate materials, causing burns or wrinkles that require additional time and effort to fix. To address these issues, we have designed an automatic ironing machine that can efficiently and effectively iron clothes without human intervention. As a result, we developed our product to save time, energy, and effort while ensuring wrinkle-free and safe-to-wear clothing.

Our automatic ironing machine utilises cutting-edge technology to provide a safer alternative to manual ironing, reducing the risk of accidents for people of all ages and abilities. The machine is designed with a heat-control system that prevents burns and wrinkles, ensuring that clothing is not damaged during the ironing process. It is also user-friendly and compact, making it easy to store and transport.

Overall, our automatic ironing machine is a practical solution for those who find traditional ironing machines too physically demanding or time-consuming. With our product, users can save time and energy, reduce the risk of accidents, and ensure their clothing is wrinkle-free and safe to wear.

Not to mention the product would cost less compared to traditional iron methods in the long term since it does not use a high heat that can cost much power. In fact, we designed a system which was a powerful steamer with the technology of nanoparticles by using the ultrasonic mist maker combined with low heat from the heater from the dryer. A fan blew the hot steam to provide airflow in the machine. Thus, the steam will spread evenly throughout the ironing process.

Last but not least, our product comes with UV light which can kill 99.99% of harmful microorganisms without adding chemicals or changing your water's taste or odour [6]. The positive side of this, it would solve the unpleasant odour on the cloth and make it more durable. Hence, UV light is a gentle process that won't damage the fibres of your clothing, leading to a longer lifespan for your garments and a reduced environmental impact.

Total Cost

Table 2: Price and Profit Margin

Item:	Quantity:	Price of each (RM):
Silver-plated cloth cover	1	21.50
Wooden Handle	1	2.16
SUS304	1	11.80
Fibreglass fabric coated with silicone	1	13.00
Wooden Clipper	2	2.84
Button	3	3.80
OLED LCD display screen	1	13.90
Wooden Hanger	1	2.90
Nylon hidden zipper	1	9.90
PTC Electric Heater	1	39.00
UV Light	1	13.78
Ultrasonic Mist Maker	4	1.77
Plastic Container	1 set (for 2)	3.71
Hydraulic Lift	4	3.80
Piezo	1	1.10
NodeMCU V2	1	19.90
TOTAL COST (RM):		192.00

Profit Margin

We would like to take 15% of the sale as our profit margin with the wages of assembly and product design.

Product Price: $Total\ cost \times 115\%$

$$RM192.00 \times 115\% = RM220.80$$

Price Differences

Table 3: Price Differences

Prices	
Our Product, Self-Iron and Dryer (SInD)	Other similar product
• Self-Iron and Dryer (SInD): RM220.80 ; comes with automatic iron and dryer (2-in-1)	• Iron: In range of RM159.00 to RM300.00 • Steamer: In range of RM250.00 to RM400.00 • Dryer: In range of RM279.00 to RM1500.00

Figure1: Self-Iron and Dryer (SInD)

CONCLUSION

We highly recommend that those looking for a quick way to assist them in drying and ironing their garments buy the Self Iron and Dryer Machine. This machine will help them by eliminating the struggles of ironing and drying. At the same time, users can move on with their other tasks while the device operates in the background without human supervision. However, our product could be better since we can make a few improvements. We strive to become the best of the best in the laundry market.

Firstly, we plan to integrate heat sensors and Artificial Intelligence (AI) into the machine to help us detect any significant change in heat, allowing the device to keep a constant temperature inside. To follow up, we also plan to conserve energy by applying a transformer inside the machine. Lastly, since our product is still too big to carry around, we would like to make it more compatible, allowing users to bring it more easily.

Therefore, users should carefully assess their needs and preferences before purchasing this product. The sorts of materials and clothing items they regularly need to iron, and their

budget and space limits may all be crucial concerns. Make sure the clothes are suitable to use in the dryer. Any customer mistakes are not the product's nor the company's responsibility.

ACKNOWLEDGEMENT

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Next, we thank the group members for doing an excellent job. The job was only completed by the due date with the participation of all members. Our work delegation and numerous discussions went off without a hitch. Lastly, we thank our family and classmates for their direct and indirect assistance completing our project. We would not be here without our family, and we can only be here today because of their unending motivation.

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