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A

Synopsis report on

Project

**“…………Title of the project……….”**

Submitted to the

**Dr. Babasaheb Ambedkar Technological University, Lonere**

Submitted by

**Student Name PRN Roll No.**

Under the Guidance of

**Staff Name eg. (Prf. Mr. B. Y. Bhosale)**

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**Department of Mechanical Engineering**

**Shree Santkrupa Institute of Engineering & Technology, Ghogaon, Karad.**

**Academic Year:** 2024-2025

* **Name of Institute:** Shree Santkrupa Institute of Engineering & Technology, Ghogaon
* **Name of Department:** Mechanical Engineering
* **Name of Course:** B.Tech. in Mechanical Engineering
* **Class:** Final Year Mechanical Engineering
* **Student Name & PRN No:** 1. Mr. Patil Ajit T. (PRN: 202464662128)

2. Mr.

3. Mr.

* **Year of Admission:** 2021
* **Name of the Guide:** Prof. Mr. Bhosale B. Y.
* **Proposed Title of the Project work:** Investigating the Impact of Wire Coiled Inserts on Heat Transfer Characteristics in Heat Exchangers: Experimental and Computational Analysis.

1. **INTRODUCTION: (font size-12 Bold)**

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1. **LITERATURE REVIEW: (font size-12 Bold)**

Minimum Latest 10 to 12 papers related to the topic.

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The following are selected researchers who carried out their work related to\_\_\_\_\_\_\_. The literature presented below is taken from various journals like Science Direct, ResearchGate, etc. which are Scopus-indexed journals.

**Prabhanjan (2000)** has studied the influence of coil characteristics on heat transfer to Newtonian fluids. He studied the relationship between tube geometry, operating parameters (temperature and flow rate), target fluid velocity, and dimensionless numbers describing the flow field in the tube and heat transfer across the surface of the helical coil. He found that the outer and total heat transfer coefficients were significantly lower in natural than the forced convection water bath and the inner heat transfer coefficient was not significantly affected. Flow rate as low as 0.001 m/s in the water bath improved the outer and local heat transfer coefficients by 35 and 22% respectively. Studies conducted with three base oils have shown significant differences in viscosity after heating the oil for several turns. He has under-predicted the Nusselt Number by 25 to 37% for water bath temperatures of 75°C and 95°C respectively. **[1]**

**P. Sivashanmugam et al (2007)** have studied experimental investigation on heat transfer and friction factor characteristics of laminar flow through a circular tube fitted with right and left helical screw tape inserts of equal length, and unequal lengths of different twist ratio have been presented. The experimental data obtained were compared with those obtained from plain tube published data. The heat transfer coefficient enhancement for right and left helical screw tape inserts is higher than that for a straight helical twist for a given twist ratio.**[2]**

**L. Santini et al(2008)** have reported experimental results which illustrated the two-phase pressure drops in a helically coiled steam generator. Single-phase and two-phase pressure drops in helical coil steam generator single tube were investigated, using a full-scale, electrically heated experimental facility. The experimental results showed that two-phase friction pressure drops in test section showed to be proportional on the 1.91 power of flow rate, thus confirming the strong dissipation effect of tube bending. **[3]**

1. **LITERATURE GAP: (font size-12 Bold)**

From above literature review, it has been found that;------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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1. **PROBLEM STATEMENT: (font size-12 Bold)**

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1. **OBJECTIVE OF PROJECT:(font size-12 Bold)**

Following are the main objects of proposed project work;

1.

2.

3.

4.

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1. **METHODOLOGY: (font size-12 Bold)**

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1. **CONSTRUCTION WORKING/ COMPONENTS REQUIRED: (font size-12 Bold)**

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1. **ADVANTAGES, DISADVANTAGES: (font size-12 Bold)**

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1. **APPLICATIONS: (font size-12 Bold)**

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1. **EXPECTED COST OF THE PROJECT WORK: (font size-12 Bold)**

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1. **EXPECTED DATE OF COMPLETION OF WORK: (font size-12 Bold)**

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1. **REFERENCES: (font size-12 Bold)**

(Websites, papers, articles, books, ebooks, etc.) For example;

[1] Prabhanjan O. G, "Influence of coil characteristics on heat transfer to Newtonian fluids", PhD thesis submitted to Dept. of Agricultural and Biosystems Engg., McGill University, Canada, August 2000.

[2] P. Sivashanmugam, P.K. Nagarajan, “Studies on heat transfer and friction factor characteristics of laminar flow through a circular tube fitted with right and left helical screw-tape inserts” in Experimental Thermal and Fluid Science 32, (2007), pp. 192–197.

[3] L. Santini, A. Cioncolini, "Two-phase pressure drops in a helically coiled steam generator" in International Journal of Heat and Mass Transfer,51 (2008), pp. 4926-4939.

[4] J.S. Jayakumar, "Experimental and CFD estimation of heat transfer in helically coiled heat exchangers" in Chemical engineering research and design, 86 (2008) pp.221-232.

[5] Hussein A. Mohammed, “The effect of different inlet geometries on laminar flow combined convection heat transfer inside a horizontal circular pipe” in Applied Thermal Engineering 29 (2009), pp. 581–590.

**Mr. Prof. Mr.**

**Student** **Guide**

B.Tech (Mechanical Engg.) Mechanical Engineering Department.

SSIET, Ghogaon

**Prof. Mr. B. Y. Bhosale Dr. S. B. Kulkarni**

**Head** **Principal**

Mechanical Engineering Department. SSIET, Ghogaon

SSIET, Ghogaon

Institute Seal

**Some other General Guidelines:**

* **Font:** Times New Roman
* **All headings: size-12 with bold,**
* All Information: size-12,
* **Page Dimension & Margin**: The dimension of synopsis is A4 (297 mm\* 21 mm) for preparing the copy
* **The synopsis should have the following page margins:**

Top edge: 27 to 30 mm (1 Inch-1.18 Inch)

Bottom edge: 24 to 27 mm (0.94 Inch – 1 Inch)

Left Side: 27 to 30 mm (1 Inch-1.18 Inch)

Right side: 17 to 20 mm (0.66 Inch – 0.78)

* **Spacing between two lines**- 1.15 form line spacing.
* **Paragraph spacing**- Two Tab for each paragraph
* **Header**- start from Introduction to reference, consisting of a line, the name of the project on the left side.
* **Footer**- Start from Introduction to reference, consists of line, S.S.I.E.T, Ghogaon, Page No- font size 12]
* **No Pages- minimum 15 Pages to Maximum 25.**