CHAPTER 3:

METHODOLOGY

3.1 Introduction

This chapter highlights the detail explanation of methodology used for the design and fabrication of the automatic fish feeding system. The system consists of the implementation of both mechanical and electrical/electronic elements. The mechanical elements are the screw conveyor feeder mechanism and stepper motor. Meanwhile, the electrical/electronic elements are the system electrical circuit, Arduino Uno controller programming, infra-red sensor and also the LCD. The functionality of this automatic fish feeding system highly depends on the successful integration of both mechanical and electrical/electronic elements. Thus, the integration of both elements also will be discussed in this chapter.
3.2 Methodology Flow Chart

The diagram of Figure 3.1 is the flow chart of this project’s methodology.

Start

Determine the mechanical and electrical/electronic components.

Finalize the fish-feeder system conceptual design.

Mechanical implementation.

Design the screw conveyor.

Design OK?

YES

NO

Assemble with stepper motor.

Integrate the mechanical and electrical/electronics components.

Simulate and analysis the automatic fish-feeding system.

Testing OK?

YES

NO

Testing OK?

YES

NO

Report and presentation.

End

Figure 3.1: Methodology flowchart
3.3 Mechanical Implementation

This section will discuss in depth regarding the mechanical implementation to this project of automatic fish feeding system from the conceptual design to the screw conveyor design and selection of motor.

3.3.1 Overview of Conceptual Design

As mentioned in the project scope, this automatic fish-feeding system does not emphasized any aesthetical value. Hence, the main focus is to ensure a successful system as listed in the project objectives. The basic concept of the system is as shown in block diagram in Figure 3.2. The system would be in a continuous loop from the combination of basic mechatronic system which consists of the power supply, controller, transducer and actuator.

![System block diagram.](image)

The selection for the final design concept is made through based from four type of design. The designs were presented as Table 3.1.