



**DESIGN, CONSTRUCTION AND TESTING OF AN  
AUTOMATIC HATCHERY UNIT  
WITH A NUMBER OF SAFETY FEATURES**

by

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## SUMMARY

The purpose of this project was to design, construct and test an automatic hatchery unit, with a number of safety features. The unit is actually to be used for hatching any kind of birds eggs, in this case chicken eggs.

Hence for this reason, certain sensing, indicating and alarming circuits, were incorporated in order to provide automatic operation, reliability and good hatching results.

The main body of the unit is a wooden case made of melamine and the heat is provided by means of tungsten lamps of 100W. They are controlled by a certain circuit, incorporating a zero voltage switch IC CA3059 and an NTC thermistor to maintain a temperature of 37.7 degrees centigrade ( $^{\circ}\text{C}$ ). On the other hand if the temperature rises above or falls below this level for  $2^{\circ}\text{C}$  then the alarm systems are activated to inform the uses that something is going wrong with the system.

There are also circuits for temperature indication (thermometer), the turning of the eggs and small auxiliary circuits such as power supplies and a power cut-off alarm which is activated when supply is cut-off from the unit.

All the functions and controls of the hatchery unit are clearly indicated and mounted on a labeled panel unit box on the right side of the unit.

The circuit which are used are simple, clever and not very expensive in their construction, based on our knowledge and experience on electronics.

Finally the unit has all essential features of a professional engine except humidity control which has very difficult to construct, (especially mechanical part), and also very expensive due to expensive sensors needed for this design.