

## AGRICULTURAL RESEARCH COUNCIL

Specifications for the design, supply and delivery of 3D printed models of renewable energy technology.

| 3D-PRINTED MODEL WITH BIOGAS DIGESTER, WIND TURBINE, AND BOREHOLE WITH SOLAR PANELS |  |          |
|---|--|----------|
|   | DESCRIPTION  | QUANTITY |
| 1.  | Design, sizing and drawing of portable 3D model with a cross section of a biogas digester connected to a farmhouse, a cross section of a borehole and its pump house with a solar panel array, and a wind turbine. All these technologies must be on one model. The model must have a farm landscape with a kraal (located close to the digester cross section) with 10 cattle, planted fields of crops and roads. The model must be in colour. The model must be portable and lightweight with a maximum 750x500x30mm footprint. The model must have a base. The base must have handles on all four sides for easy carrying. Figure 1 to 4 below are suggested images for clarity on the design required. <b>THE FINAL DESIGN SHOULD BE APPROVED BY THE ARC BEFORE 3D PRINTING!</b> | 1        |
| 2.  | Design, sizing and drawing of 3D model of a biogas digester. The model must show a cross section of a brick-and-mortar type of biogas digester showing the inlet, digester, and outlet. The model must be in colour. The model must be portable and lightweight with a maximum 200x200x10mm footprint. The model does not need to have a base, but it must be stable, not need support, and not topple when placed. Figures 5 and 6 below are suggested images for clarity on the design required. <b>THE FINAL DESIGN SHOULD BE APPROVED BY THE ARC BEFORE 3D PRINTING!</b>   | 1        |
| 3.  | 3D printing, supply and delivery of above models   | 1        |

**Special Conditions (Non-compliance with the below special conditions will result in disqualification)**

| Description  | Comply (indicate with an x) | Do not comply (indicate with an x) |
|--|-----------------------------|------------------------------------|
| <p>1. <b>Compliance with Specifications</b><br/>The supplied model must strictly comply with all detailed specifications, including dimensions, portability, colour accuracy, and features.</p>  |                             |                                    |
| <p>2. <b>Final Design Approval</b><br/>The design drawings must be submitted to ARC within 10 business days for review and formal approval before any 3D printing begins. Printing without ARC approval will result in rejection of the bid or contract.</p> |                             |                                    |
| <p>3. <b>Material Quality and Durability</b><br/>The model must be made of durable, high-quality materials suitable for frequent handling and display.</p>   |                             |                                    |
| <p>4. <b>Portability and Handling</b><br/>The farm model must be lightweight (maximum footprint 750x500x30mm) with sturdy handles for easy carrying.</p>   |                             |                                    |
| <p>5. <b>Warranty / Defects Liability</b><br/>A minimum 6-month warranty covering manufacturing defects is required.</p>   |                             |                                    |
| <p>6. <b>Submission of Samples / Portfolio</b><br/>Bidders will be required to submit samples/ images of 3D printed models previously produced.</p>  |                             |                                    |
| <p>7. <b>Technical Support and Documentation</b><br/>Basic user instructions and contact details for support must be provided upon model delivery.</p>   |                             |                                    |

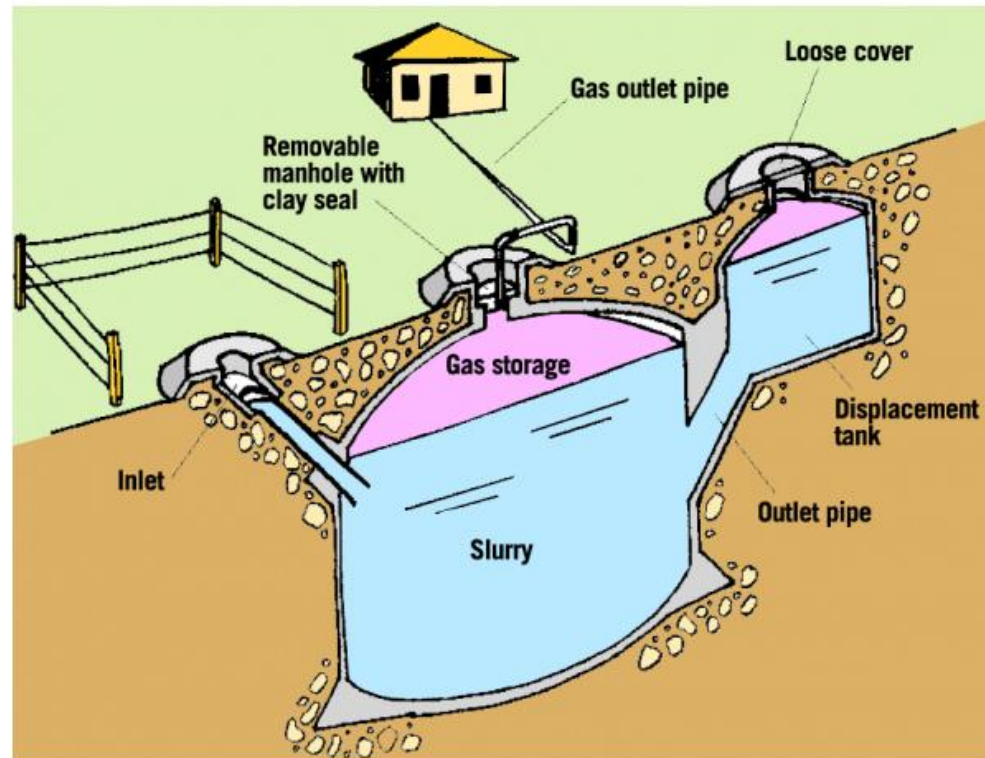


Figure 1 A sketch of a brick-and-mortar biogas digester. The model should draw inspiration from this sketch in terms of the detail displayed. The model does not have to be labelled.

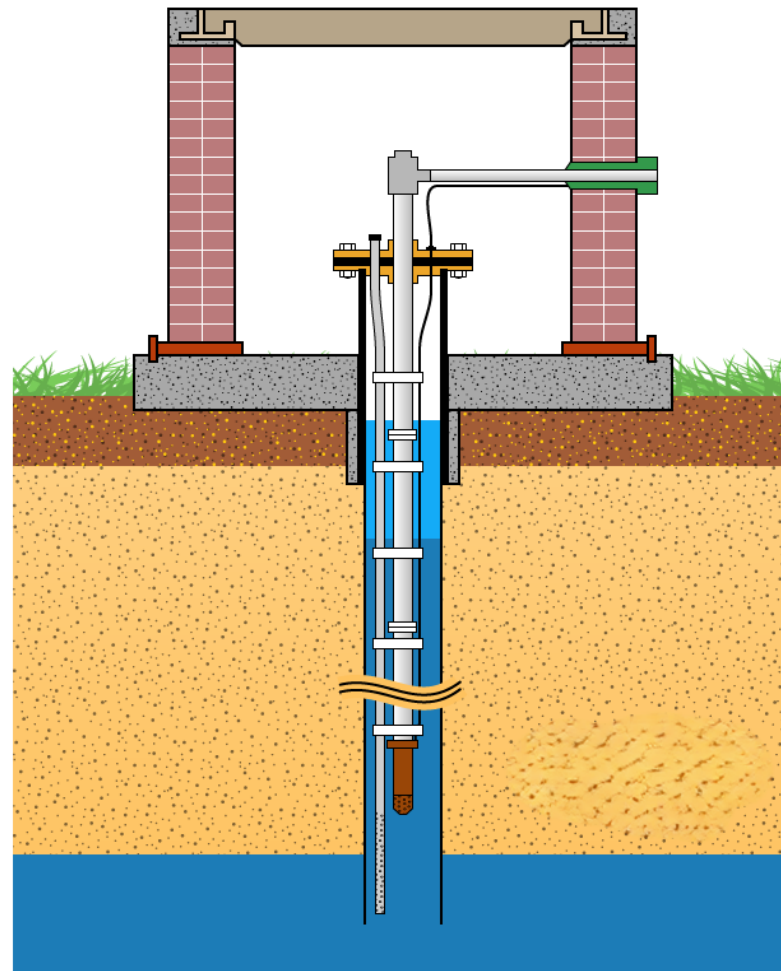


Figure 2 The borehole cross section should be similar to this image. However, the pump does not need to be as detailed. A representation of a submersible pump should suffice. The pump house should have a back, sides and top. A solar panel array must be located next to the borehole pump.



Figure 3 Three wind turbine similar to this should be part of the landscape. The wind turbines must be anchored to the model and not able to move.



Figure 4 The final printed 3D model should be a similar style as this model.

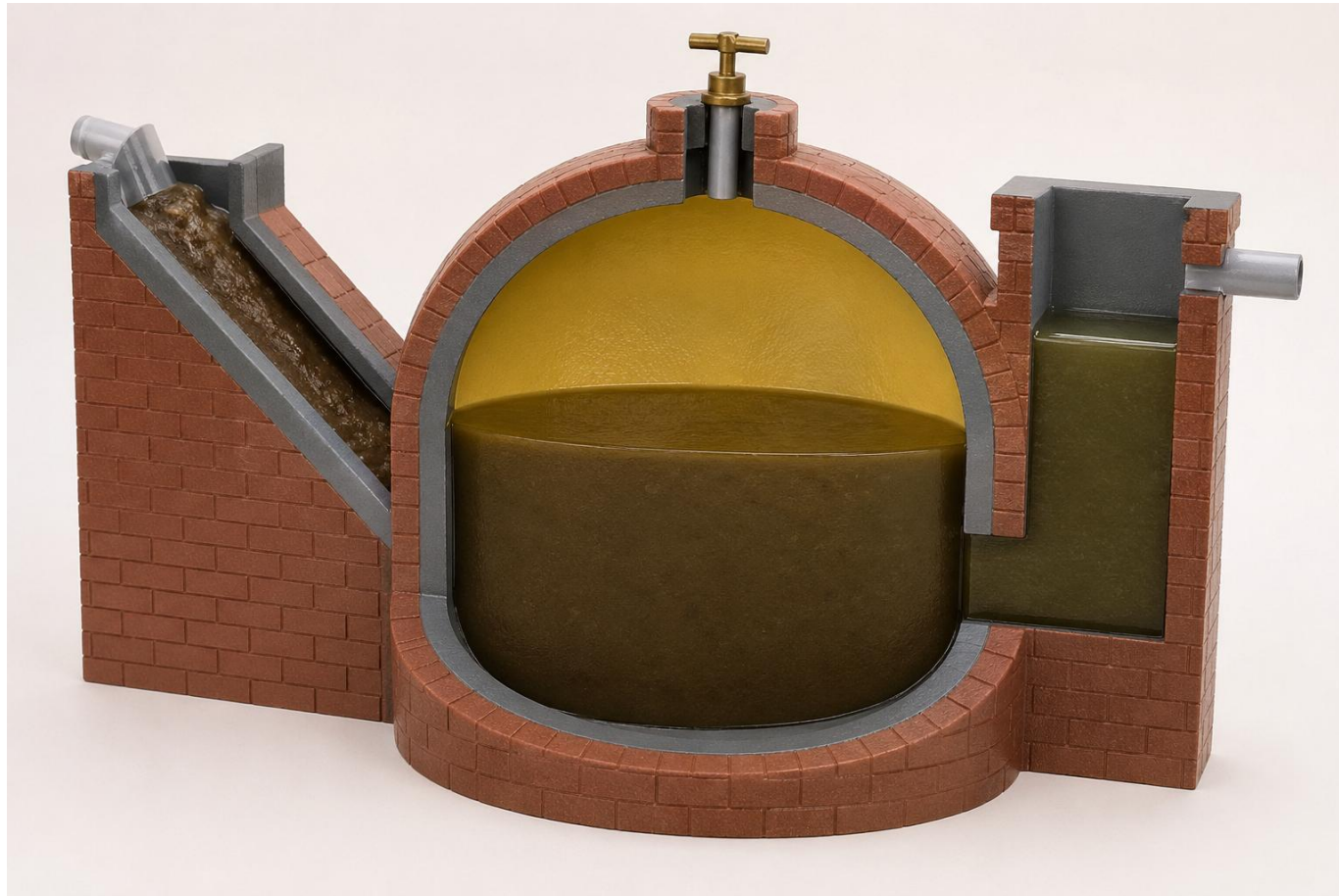


Figure 5 Example of the front of the miniature brick and mortar digester model.



Figure 6 Example of the rear of the miniature brick and mortar digester model.