

# Hippo Water Roller

Local on-site manufacturing  
under licence

Last update: 24 August 2010

# Purpose

- Exporting completed Hippo Water Rollers to other countries where they are needed is expensive, often doubling the cost of a Hippo roller.
- Limited quantities fit into a container which severely impacts on shipping costs.
  - 195 x units into a 20-foot (6 meter)
  - 430 x units into a 40-foot (12 meter) High-Cube
- Shipping large quantities of containers to remote countries will quickly add up. Many rural countries can only manage 20-foot containers (195 x units).



# Cost Justification

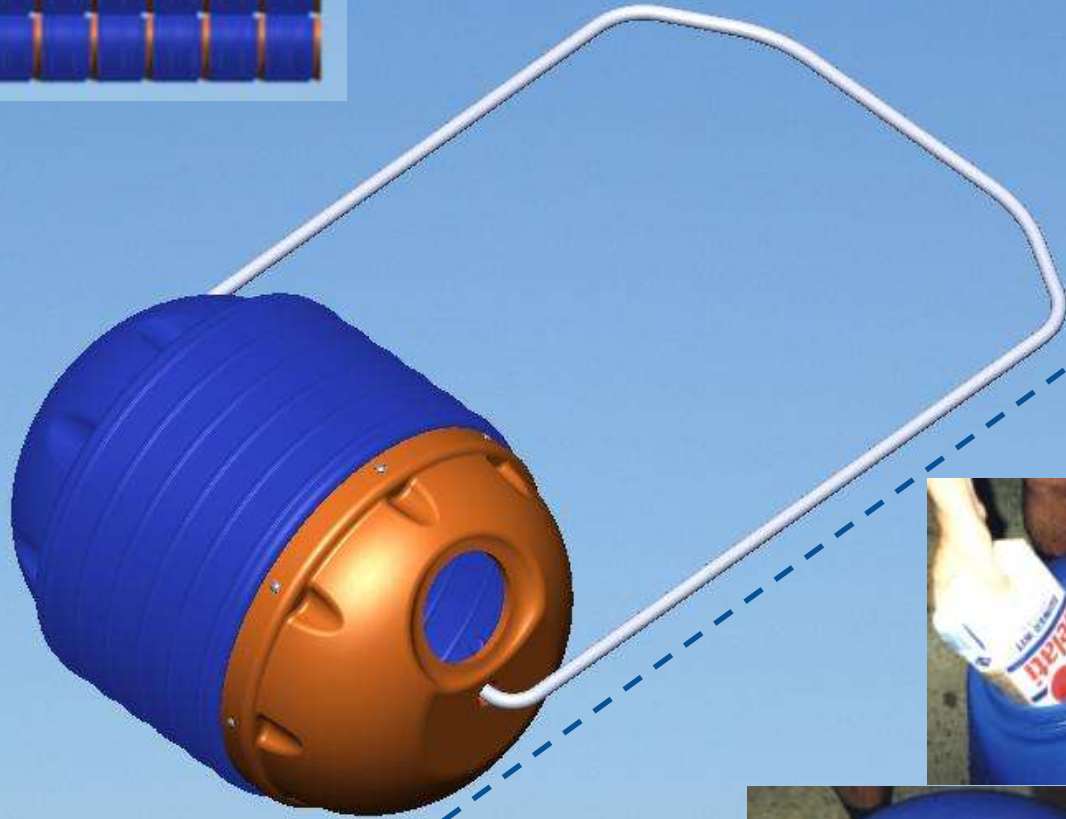
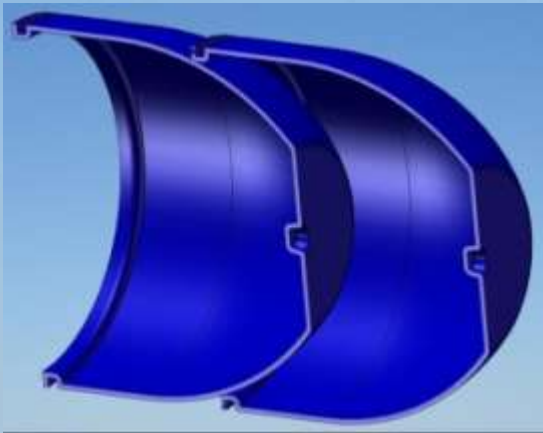
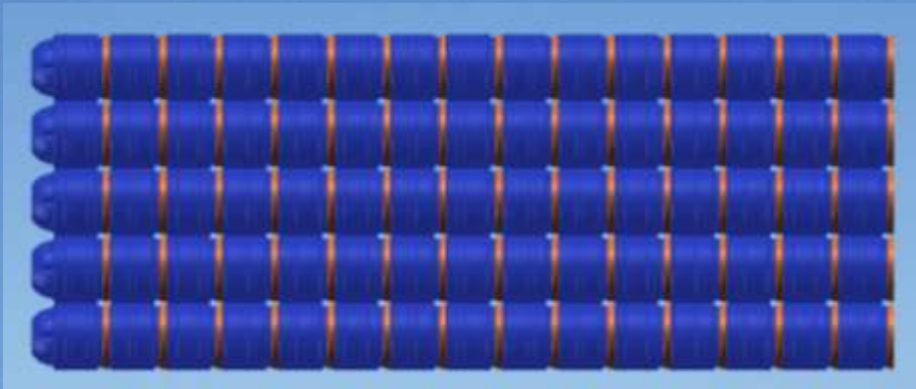
- It is more cost effective over the long term to ship one container including a small manufacturing machine and then on-going raw materials as required.
- Savings from shipping costs supplement the initial capital expenditure required to purchase the machine and the local production cost per Hippo roller is substantially less than the exported cost.
- Neighbouring countries are more effectively serviced by a local manufacturer. Local NGO's requiring small quantities can more easily afford Hippo rollers.



# Alternative Considerations

- With assistance from EWB (Engineers Without Borders), new designs for the drum were explored for more efficient shipping:
  - Manufacturing the drum in two or more components for compact stacking/nesting was a serious consideration.
  - However, it was found that the only way to maintain the integrity and strength of the Hippo roller is to continue to manufacture the drum in one solid piece.
- Due to the large opening (13.5 cm / 5 inches), it is possible to use the drums as packaging material for other goods intended for the same destination.

2-part Design for Stacking or Nesting is not durable enough



or  
Drums used as  
Packaging Material

# Local Manufacture

- The Drum and Screw cap are manufactured at the point of need, using a rotational-moulding process, by a trained local manufacturer.
- The rotational-moulding machine, raw materials, steel handles and fittings are supplied from South Africa.
- Training in the operation and maintenance of the machine is conducted in South Africa.
- Hippo roller moulds are leased to the local manufacturer and remain the property of Imvubu Projects in South Africa.



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# Machine Operation - 3 Stages



- **Stage I - Loading/Unloading station**

- This is where the raw material (polyethylene powder) is loaded into each mould-set (drum & screw cap).
- On completion of the cycle the moulds are opened and the completed mouldings are removed.
- New raw materials are added for the next cycle.



- **Stage II - The Heating station**

- With the moulds inside the oven the burner fires up and begins to melt the powder inside the moulds.
- During this phase the mould is constantly rotated in a predetermined pattern allowing the molten raw material to flow and take the shape of the mould.



- **Stage III - The Cooling phase**

- While the moulds continue to be rotated they are cooled down by blowing air and spraying water .
- The molten raw material solidifies in the shape of the mould.

# Finished Product



- The completed mouldings are removed from the mould and any excess material is scraped off

