

Village Water Ozonation System

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Problem Statement

- According to the World Health Organization, **2.1 billion people** still lack access to safe drinking water.
- The **United Nations SDG 6.1 goal** aims to



ensure **availability and sustainable management of water sources.**

Target Community

Christian Family Center International (CFCI)

- Located in **Oaxaca, Mexico**: 2 km away from another site (*Trigo y Miel*) where VWOS installed a system in 2016
- Needs: **3,500 liters** drinking water / week
- Purpose: Expand current **children's feeding program and sell water** to the greater community

Our Mission

Provide communities with the **cleanest water they can sustainably afford by designing and installing water treatment systems** to meet local drinking water needs

- Design a system that fits CFCI's layout
 - Similar in operation to the nearby system at *Trigo y Miel*
- Ensure that the **well source** will consistently have **enough water capacity** to provide for the community's needs

System Design

- Final system design: **Two "loops"**
 - **First loop:** removes sediment with **microfilters**, then water goes into the **storage tank** (Figure 1)
 - **Second loop:** water comes from storage tank, recirculates through the **ozonation process**, pumps back into the **storage tank** (Figure 2)

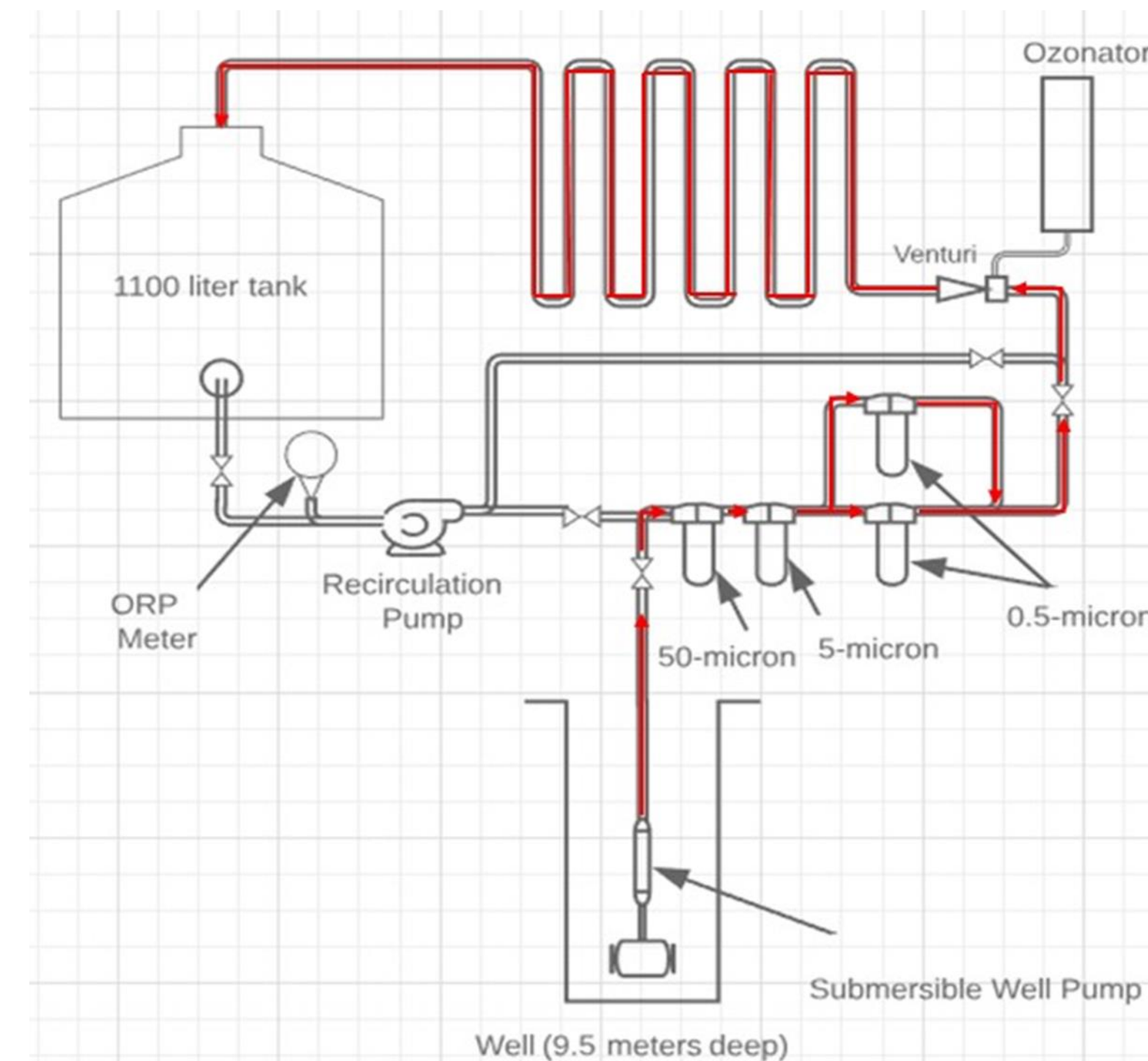


Figure 1

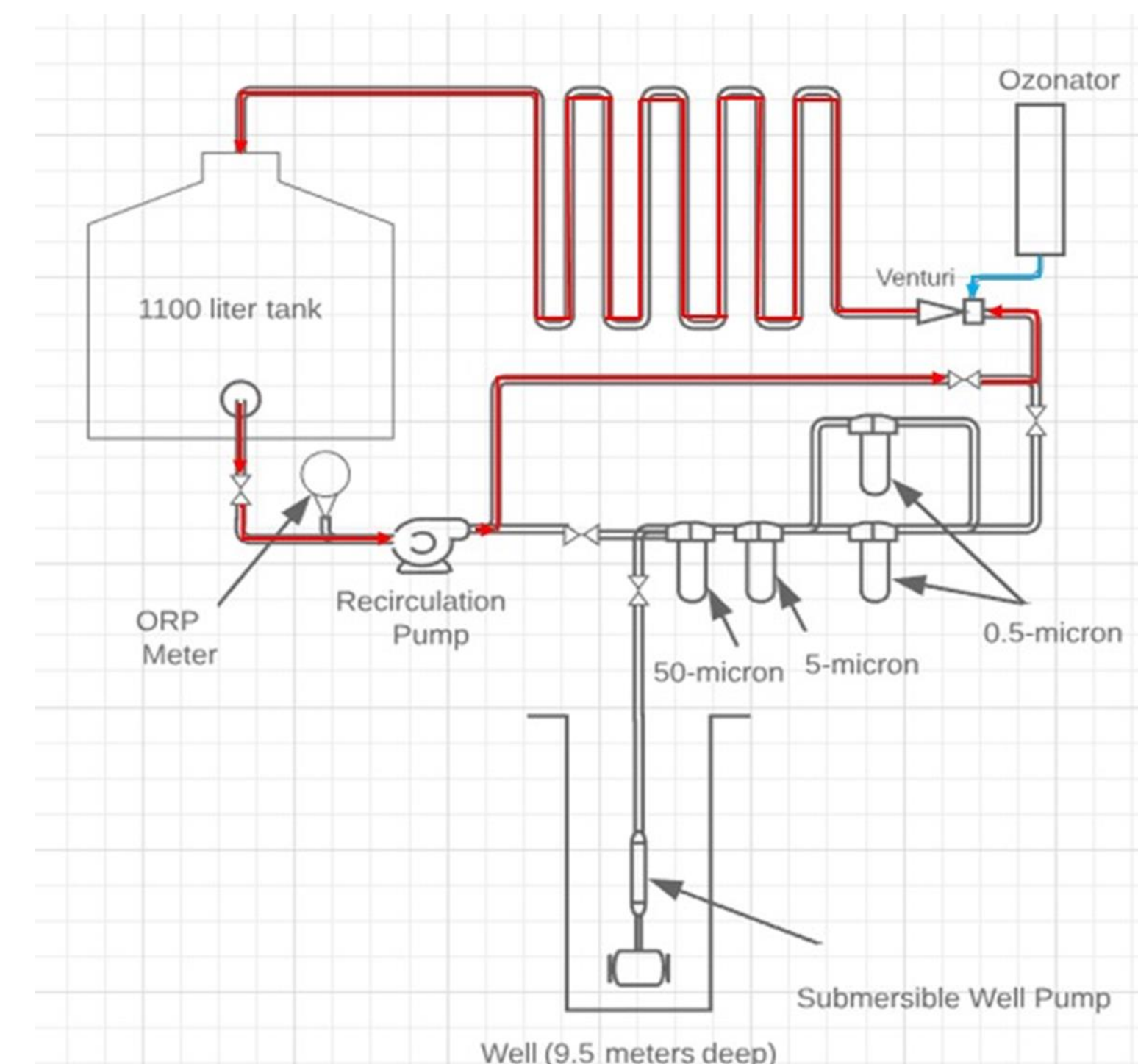
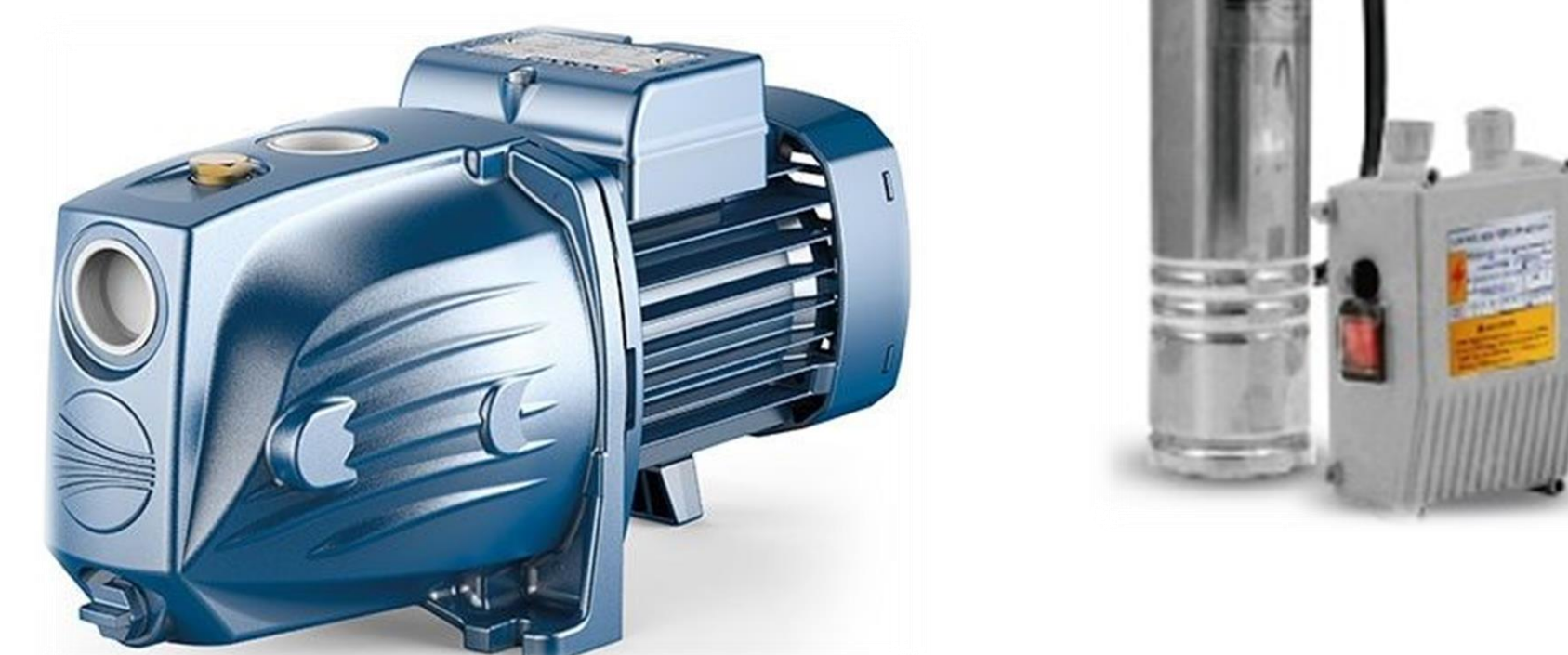


Figure 2

Pumps

- **Two pumps** in the overall system simplifies operation:
 - **Igoto Submersible Well Pump:**
 - Pumps from well, through filters, and through venturi for initial run-through
 - **Pedrollo Recirculation Pump:**
 - Pumps filtered water through venturi to fully disinfect water to **750 mV ORP**



Well Recovery

- **Test Goals:**
 - Pump roughly **one batch worth of water (1,100 liters)**
 - Observe well behavior and **time how long full recovery takes**
- **Results:**
 - **1,000 liters** were pumped
 - Well recovered in **40 minutes**
- ✓ **The well has proper, sustainable capacity for the community's needs**

Future Work

- Compile full **parts list and cost estimates** and send to Forward Edge
- **Spring of 2020:** implement in Oaxaca

Conclusions

- Past similar system designs in field shows the effectiveness of the VWOS system
- Complexity with the addition of a shallow well has been assessed and its capacity deemed viable

Acknowledgements

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