CASE STUDY

Biogas As Renewable Source Of Energy

At Nestle Training Farm at Sukheki - Pakistan

Biogas Plant at Nestle Training Farm

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150 PSI Gas Storage

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Sukheki Farm Statistics

Total # Of Cows: 175

Per Cow Manure: 20 KG/DAY

Average Daily Manure: 3500 KG

Average Collectable Daily Manure: 2800 KG

Biogas Plant Statistics

Total Cost on 200 M3 Plant: 2.56 M PKR

Per Cow Manure: 20 KG/DAY

Average Daily Manure: 3500 KG

Daily Dung Feeding: 2 Ton

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200 Cum Biogas Plant

AVERAGE GAS PRODUCTION	79 M3 / DAY
FUEL HEATING VALUE	575,386 MJ/ ANNUM
ELECTRICITY PRODUCTION POTENTIAL	159,829 KWH/ ANNUM
BIOGAS EARMARKED FOR THERMAL USE PER YEAR	2190 M3/ ANNUM
HEATING VALUE OF 2190 M3 BIOGAS	83800 MJ/ ANNUM
EFFICIENCY OF GAS STOVE	60%
NET HEATING VALUE	26,289 MJ/ ANNUM

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Purpose

Electrical Power Generation (milk chiller, barn fans, lights)

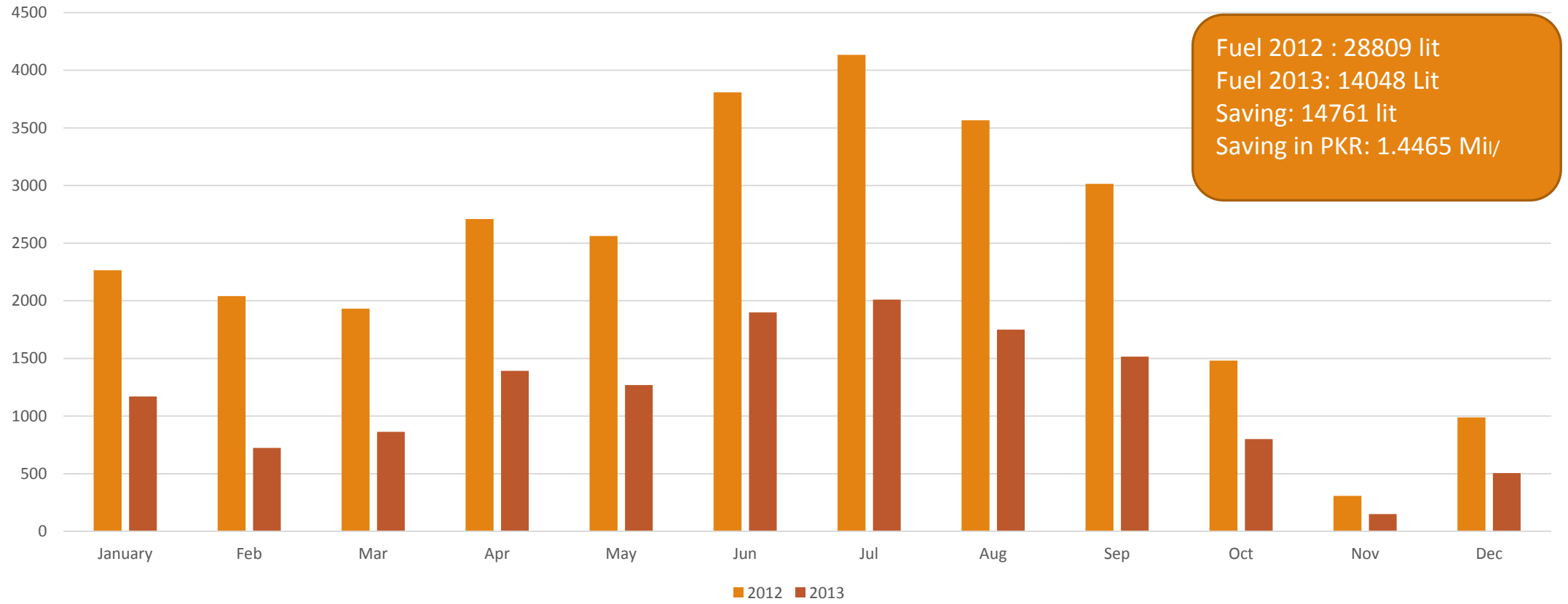
House Hold Usage of Biogas

Organic Fertilizer

1Generator 100 KVA, Mainly On Biogas mixed with diesel

Compressor Capacity Maximum 150 PSI

Sukheki Gen set Consumption 2012 Vs 2013



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Operational Cost

Operators Salary:	**12000 PKR/ Month**
Pit Cleaning:	**5000 PKR/ Month**
Repair & Maintenance:	**6000 PKR/ Month**
Total O&M Cost:	**23000 PKR/ Month**

Cost Benefit Analysis

Saving:

Diesel: 1,440 M/ Annum

LPG: 0.0984 M/Annum

Fertilizer: 0.100 M/Annum

Total Saving: 1.638 M PKR/Annum

O& M Cost: 0.276 M PKR/Annum

Net Saving Per Year:1.362 M PKR

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Cost Benefit Analysis

Net Saving: 1.362 M PKR/Year

Cost of Plant: 2.56 M PKR

Pay Back Period: 1.88 years

Plant Status Today

- Plant Was Commissioned in Jan 2013
- Operated Normally until October 2015
- Storage Vessel Leaked in September 2015,
- Feeding was stopped for 2 months resulting in solidification of slurry inside the digester.
- Storage Vessel repaired
- Portion of Digester wall removed, Digester and out let emptied
- Wall Rebuilt and the plant operation Restarted in February 2016

Beyond Sukheki

- Successful Performance of Sukheki plant Enabled WI in Getting USAID Grant for "Pakistan Commercial Biogas Project (PCBP)"
- Objectives and Achievements of PCBP

Establish Construction Standards for Biogas Plant	Developed Construction and Operational Manual and Established Quality Standard
Develop Capacity of Biogas Plant Construction Companies (BCCs)	Trained CEOs, masons and supervisors of 23 BCCs
Facilitate Installation of 300 medium size Biogas Plants in 3 years for energy generation	216 Plants for electrical, thermal and mechanical energy Generation Installed in 1 year 8 months
Provide Technical Advisory to the Dairy Farmers on Using Efficient Appliances	Trained the BCC, farmers and Plant supervisors on using EE appliances
Monitoring, Evaluation, data base management and Information dissemination	Monitored quality of construction, managed plant data, used personal meetings, TV shows and Exhibitions for Marketing of biotechnology


Thank You!