PREFEASIBILITY REPORT

FOR

PROPOSED

LPG BOTTLING PLANT

Capacity: 21000 MTA

BY

SHV ENERGY PRIVATE LIMITED

AT

KIADB INDUSTRIAL AREA

PLOT NO. : 184-185
VILLAGE : JAKKASANDRA
TALUK : MALUR
DISTRICT : KOLAR
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1. EXECUTIVE SUMMARY

This is a Greenfield project for Proposed LPG bottling Plant of 21000MTPA at Jakkasandra village of Kolar District, Karnataka. This project falls under item no. 6 (b): Isolated storage & handling of hazardous chemicals under the category “A” (general conditions apply) as per the EIA notification 2006 and its amendments.

For Karnataka domestic, commercial and industrial requirements cylinders are filled in a contract filling plant in outskirts of Bangalore and distributed to customers. Bangalore is a growing market including the automotive gas segment. The proposal will improve service to customers and grow the local demand in and around Bangalore.
2. INTRODUCTION OF THE PROJECT

2.1 Identification of the Project and Project Proponent
SHV Energy is a Dutch Multi National having LPG trading activity in India since 1996. The company has installed and operating import terminals at Tuticorin and Porbandar and operating 12 own filling plants and 7 contract filling plants. The imported bulk LPG is stored in our terminal and transported to cylinder filling plants through road tankers. In filling plants LPG is filled in cylinders of various capacities of 4Kg, 12Kg, 17Kg, 33 kg and 450kg. LPG is also sold as bulk LPG to Industrial units and for use as fuel Auto LPG segment.

For Karnataka domestic, commercial and industrial requirements cylinders are filled in a contract filling plant in outskirts of Bangalore and distributed to customers. Bangalore is a growing market and we propose to install our own bottling plant for enhanced safety, better service to our customers and higher level of control and efficiency.

2.2 Brief Description of nature of the Project
The proposed unit is LPG bottling plant of 21000 MTPA. LPG will be coming to the unit by road in trucks. This will be stored in bullets and then filled in various cylinders within the plant and sold to the customers. The proposal is only storage and bottling of LPG.

2.3 Need for the Project and its importance
SHV has been installing the cylinder filling plants in the industrial estates for the availability infrastructure facility in single location. Since KIADB has developed an industrial area, SHV found this location as suitable for our industry and hence it has been selected.
Since it is only 40 kms away from the Bangalore city it is convenient to distribute to all our customers through trucks.

2.4 Demand – Supply Gap
LPG is a growing market in India and every year the demand is increasing from 6 to 10%. As SHV is giving energy solutions to the industries for better safety and cost optimization we have seen the interest of industrial customers for conversion from conventional fuels to LPG

2.5 Import Vs Indigenous Production
Bulk LPG is imported into TuticorinPort and stored in our shore tank installed in Tuticorinharbor. From Tuticorin the bulk LPG is transported through the road tankers to the cylinder filling plants. In filling plant LPG is filled in cylinders and distributed to the customers according to their requirement

2.6 Export Possibility
The proposed bottling unit is for indigenous supply to local markets.

2.7 Domestic/ Export Markets
Since SHV is a parallel marketer, Govt of India is not providing subsidy, as it is provided to public sector units. Hence our domestic cylinders are priced more than the PSU cylinders available in the market. Our domestic sales volume is very minimal.

2.8 Employment Generation due to the Project
The proposed project will provide direct employment to about 14 persons and indirect to approx. 50 persons during operation phase. During construction Phase, around 100 people will be employed.
3. PROJECT DESCRIPTION

3.1 Type of the Project
The proposed project is new LPG bottling facility to produce 21000 MTPA. The proposed project falls under the schedule 6 (b) as per the EIA notification dated September 14, 2006 and its amendments. There is no interlinked project. The project falls under the Category B.

3.2 Project Location
The plot of land acquired from the Karnataka State Industrial Area Development Board (KIADB) lies in a notified industrial area, 40Km away from Bangalore city towards East in Jakasandra village. The site is located near approximately 6 km away from the National Highway-4 Bengaluru to Chennai Golden Quadrilateral road. A number of other industrial undertakings are being planned and under execution in this notified industrial area, notable among them being the Honda Automobile and development centre. Densely populated area is Bhavanahalli present 0.83 Km from site towards South. The layout of KIADB is enclosed in Annexure-2.

The project location is given in Figure 3-1 and the Project site with coordinates is given in Figure 3-2. The 10 Km radius map from the project is given in Annexure-5.
Figure 3-1 Location of Project
3.3 Details of Alternate sites considered
Since the proposed site is already allotted by KIADB and the land area is 23506.84 Sq.M, located within Industrial Area where many industrial activities are already established and some are coming up.

3.4 Magnitude of Operation
The list of products proposed is given in Table 3-1 below.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Proposed Products</th>
<th>Quantity (Nos. / month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>12Kg</td>
<td>700</td>
</tr>
<tr>
<td>3</td>
<td>17Kg</td>
<td>24000</td>
</tr>
<tr>
<td>4</td>
<td>33Kg</td>
<td>12000</td>
</tr>
<tr>
<td>5</td>
<td>Bulk supply</td>
<td>200 MT/M through tankers</td>
</tr>
</tbody>
</table>

3.5 Process Details

Bulk unloading system:
The proposed facility will receive LPG through road tankers. The LPG from road tankers is unloaded and stored in two mounded Bullets of 75 MT capacity each. The total storage capacity will be 150 MT in two mounded bullets configuration with one 75 MT bullet for future provision. The bulk unloading system will be designed for the capacity of 72 MT per shift. The unloading process will start by connecting road tanker liquid line to respective receiving bullet. The liquid LPG flow will continue till the pressure in road tanker and receiving bullet equalizes with each other.
At this stage the LPG compressor will be started, with its suction line connected to bullet and the discharge line connected to road tanker vapour line. The vapour pressure difference in bullet and road tanker drives the LPG liquid from road tanker to bullet.

The liquid LPG unloading further continues until the complete road tanker is unloaded. The pressurised LPG vapour left in the road tanker will be recovered with the help of compressor by changing the compressor suction from mounted bullet to road tanker through 4 way valve. The recovered vapour will be stored in respective bullets. LPG compressor will be interlocked for low pressure trip with the road tanker, so that the compressor will be tripped after recovering optimal amount of vapour. The site plan showing the facilities is given in **Annexure-6**. The piping details are enclosed in **Annexure-7**.

**Bottle filling System:**

12, 17 & 33 Kg capacity Cylinders

The filling station will have the capacity of 60 MT per shift. In the filling station the empty cylinders (12, 17 & 33 Kg) will be fed to the automated chain conveyor system. The conveyor system will be routed through the following units for completing the filling process,

- Empty cylinder weight scale with CVT
- Cylinder washing unit
- Electronic filling machines(10 nos)
- Online electronic cylinder weight scale unit
- Digital compact valve tester unit(DCVT)
_ In line Test bath

_ Hot air sealing unit

The filled LPG cylinders will be conveyed and stored in the filled cylinder storage shed. If any cylinders are rejected from the online electronic check scale unit then it will be directed to the manual weight correction unit where the weight correction will be done manually and then it will be routed to the automated conveyor for subsequent process.

If any filled cylinder fails in the DCVT and in line test bath unit, then the defective cylinders will be directed to evacuation rack for evacuation and repairing work. The evacuated LPG from rejected cylinders will be collected in an evacuation vessel and then stored in storage bullets. The emptied cylinder will be purged using the purging unit.

The liquid LPG will be supplied to the filling heads through LPG vane pumps. The LPG pumps suction and discharge lines will be designed with all safety requirements.

**450 Kg capacity Cylinders:**

The 450 Kg empty cylinder will be brought to the filling point and taken back to the loading bay with the help of manual trolley. The 450 Kg cylinders shall be filled in the two numbers, dedicated electronic filling machines.

All filling station equipment shall be designed as per OISD 169 guidelines.
**Bulk loading system:**

The liquid LPG will be loaded to road tankers from storage bullets at a rate of 144 MT per shift. LPG pumps will be used for loading the road tankers. The loading process will be done simultaneous to LPG bottling. Therefore, standby LPG pumps will also be operated during road tanker loading and bottling process.

### 3.6 Raw Material Requirement

The LPG bottling plant is a refilling station and hence raw material is not required as it is just a storage and filling station. LPG would be imported by way of sea through Tutcorin port. Further they would be transported by Road to various domestic, commercial and industrial customers.

### 3.7 Water Requirement

Water requirement for the proposed project is 10 KLD and the break up is given in **Table 3-3**. The required water will be met from KIADB.

**Table 3-2 Water Requirement for the Project**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Water Requirement</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Domestic</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Cylinder washings</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Fire fighting</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>Green belt</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

### 3.8 Power Requirement

Power Requirement for the project will be sourced from BESCOM. The details of power and backup power is given in **Table 3-4**.
### Table 3-3 Power Requirement

<table>
<thead>
<tr>
<th>Details</th>
<th>Proposed Capacity</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Requirement</td>
<td>322KVA</td>
<td>BESCOM</td>
</tr>
<tr>
<td>Power Back Up</td>
<td>250 kVA standby</td>
<td>DG Sets</td>
</tr>
<tr>
<td></td>
<td>160 kVA</td>
<td></td>
</tr>
</tbody>
</table>

### 3.9 Liquid Waste Management

For the proposed project there is no manufacturing process as it is only storage and filling plant hence there will be no generation of Effluent. Sewage will be treated through septic tanks and soak pits. Effluent from Cylinder washings will be treated using settling tank and the supernatant will be used for green belt.

### 3.10 Hazardous and Solid Waste Management

There will be no generation of any hazardous waste for the proposed project. Total Solid Waste Generated from the proposed facility is 6 Kg/Day and the same will be disposed through local body.

### 3.11 Fire Fighting Details

#### 3.11.1 Fire Fighting System Description

Following are the type of fire protection systems for proposed LPG bottling plant,

- Automatic Fire Water Pumping System consisting of one Main Pump, one Standby Pump & one jockey pump.
• External Hydrant & Water Monitor System covering the entire proposed plant area for manual fire fighting.
• Medium Velocity Water Spray System for Cylinder filling shed, Filled storage shed, Tank truck gantry (Two bays), LPG Pump / Compressor shed, above ground mounded bullet tunnel, dome, manholes, Loading/Unloading shed, Painting Booth cum Cold Repair Shed and Connecting platforms.
• Fire Detection & Alarm System covering the entire proposed plant area.
• Portable Fire Extinguishers.
• Personnel Health & Safety Equipment.

3.11.2 Design Basis for Pumps

• Spray density of 10LPM/m² is considered as per OISD: 169 clause 4.4.2.
• Highest Water Requirement for water spray system is 4000 LPM for cylinder filling shed.
• As per OISD: 169 clause 4.4.2. (iii), the fire water system in the plant shall be designed to meet the highest fire water flow requirement of a single largest risk of any cases at a time plus 72 Cu. M per hour for operating 2 hydrant points.
• 72 Cu. M per hour = 1200 LPM.
• Total Water required = 4000 + 1200 = 5200 LPM (312 m³/hr).
• The next available pump is 6834 LPM (410 m³/hr).
3.11.3 Design Basis for fire water tanks

- As per KIADB, 4hrs of fire fighting to be done
- Required size of fire water Tank = 4 x 410 = 1640 KL.
- Fire water tank required is two circular steel tanks each having effective capacity of 820 KL.
4. SITE ANALYSIS

4.1 Connectivity

The proposed site located around 6 Km away from NH 4 (Bangalore - Tirupati).

The connectivity of the site to airport, railway and road is as follows:

a. Airport connectivity- The site is about 32 km away from the Bangalore Airport.

b. Rail connectivity- The site is about 10.55 km away Malur railway station.

c. Road connectivity- The site is about 6 km from NH 4 (Bangalore- Tirupati)

4.2 Land form, land use, land ownership

The proposed project falls within Plot No.184/185. The present land use is industrial. The land use break up for the project is given in Table 4-1 below

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Component</th>
<th>Area in Sq.m</th>
<th>Area in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Built up area</td>
<td>3450.68</td>
<td>14.67</td>
</tr>
<tr>
<td>2</td>
<td>Vacant</td>
<td>7405.00</td>
<td>31.50</td>
</tr>
<tr>
<td>3</td>
<td>Green Belt</td>
<td>7804.27</td>
<td>33.200</td>
</tr>
<tr>
<td>4</td>
<td>Road and pavements</td>
<td>4846.89</td>
<td>20.62</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>23506.84</strong></td>
<td></td>
</tr>
</tbody>
</table>
4.3 Topography

The topographic survey map of the site is enclosed in Annexure-8. The site is more or less a flat terrain.

4.4 Existing land use pattern

The present land use is industrial. The proposed site is within KIADB Industrial Area. The details of sensitive areas from the site boundary is given in Table 4-2.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name</th>
<th>Km</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lakes</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Jakkasandra village lake</td>
<td>0.5</td>
</tr>
<tr>
<td>2.</td>
<td>Hedakanhalli Lake</td>
<td>11 West</td>
</tr>
</tbody>
</table>

4.5 Existing Infrastructure

The site is well connected by road to NH 4 (Bangalore – Tripathi). The list of existing industries available within 10 Km from site are given in Table 4-3.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name</th>
<th>Distance from site (Km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Volvo Industries limited</td>
<td>6.5</td>
</tr>
<tr>
<td>2.</td>
<td>Honda</td>
<td>1.48</td>
</tr>
<tr>
<td>3.</td>
<td>Bhavanahalli</td>
<td>0.62</td>
</tr>
<tr>
<td>4.</td>
<td>Abbenahalli</td>
<td>4.4</td>
</tr>
</tbody>
</table>
4.6 **Climatic Conditions**

Normal annual rainfall of Kolar district is 740mm. Of the total rainfall, contribution from southwestern monsoon is 55% and 30% is from northeastern monsoon. In addition to this, Premonsoon showers contribute significant rainfall of 15%.

The annual average maximum temperature ranges from 23.9 to 30.4°C and minimum temperature ranges from 19.6 to 23.9°C.

The annual average humidity is 65.5°C. The annual average wind speed is 4.5km/h.

4.7 **Social infrastructure available**

The social infrastructure facilities available near the site are given in Table 4-3.

**Table 4-4 Proposed project surrounding features**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name</th>
<th>km</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Schools &amp; Colleges</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Maruthi Collage</td>
<td>9.57</td>
</tr>
<tr>
<td>2.</td>
<td>Government First grade collage</td>
<td>9.77</td>
</tr>
<tr>
<td>4.</td>
<td>Higher primary School</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td><strong>Religious Places</strong></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Noor-E- Aqua bhari Mosque</td>
<td>7.40</td>
</tr>
<tr>
<td>6.</td>
<td>Malur Church</td>
<td>9.30</td>
</tr>
<tr>
<td>7.</td>
<td>Malur Hanuman Temple</td>
<td>10.1</td>
</tr>
<tr>
<td>8.</td>
<td>Anthrange</td>
<td>16</td>
</tr>
</tbody>
</table>
5. PLANNING BRIEF

5.1 Planning Concept
SVH Energy Pvt Ltd is setting up the proposed LPG bottling Plant for a capacity of 21000 MT/A within its land area 23506.84 Sq.M located KIDA Jakksandra Industrial Estate. The site is located near Jakkasandra village approximately 6 km away from the National Highway-4.

The city of Bangalore is easily accessible along the national Highway road. Nearest railway station is Malur: 6.7 km, Bangalore Airport - 33 km and National Highway -6 km.

5.2 Population Projection
Influx of the people in both phases will be temporarily. During construction phase the population will be around 100 workers and in the operation phase there will be temporary influx of 65 people.

5.3 Land Use Planning
The total site area is 23506.84 Sq.m. The green belt area is 7804.27 Sq. M (33.2%) of the total area.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Component</th>
<th>Area in Sq.m</th>
<th>Area in %</th>
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<td>20.62</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>23506.84</strong></td>
<td></td>
</tr>
</tbody>
</table>
6. Proposed Infrastructure

6.1 Proposed Infrastructure Facilities
Presently the site is empty land new facilities are proposed for storage and filling of LPG gas. SHVEnergy Pvt Ltd proposed to construct three bullet tanks of 75MT capacity

6.2 Drinking Water Management
Water Requirement
Water requirement for the proposed project is 10 KLD and the required water will be met from KIADB.

6.3 Industrial Waste Management
Hazardous waste generated from the proposed manufacturing can be categorized as given in Table 6.2.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Hazardous waste generated</th>
<th>Quantity Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Used oil</td>
<td>1 TPA</td>
</tr>
<tr>
<td>2.</td>
<td>Oil Soaked cotton waste</td>
<td>0.5 TPA</td>
</tr>
</tbody>
</table>

The hazardous waste will be stored separately in hazardous waste storage area and disposed to CPCB authorised vendors.
6.4 **Solid Waste Management**
Total Solid Waste Generation will be minimal and the quantity is about 6 kg per day. This will be disposed by local body.

6.5 **Power Requirement & Supply/Source**
Power Requirement for the project will be sourced from BESCOM. The details of power and backup power is given in Table 6.1

**Table 6.3 Power Requirement**

<table>
<thead>
<tr>
<th>Details</th>
<th>Proposed Capacity</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Requirement</td>
<td>322 KVA</td>
<td>BESCOM</td>
</tr>
<tr>
<td>Power Back Up</td>
<td>250 kVA standby</td>
<td>DG Sets</td>
</tr>
<tr>
<td></td>
<td>160 kVA</td>
<td></td>
</tr>
</tbody>
</table>

6.6 **Proposed Fire Fighting Facilities**
Following are the type of fire protection systems for proposed LPG bottling plant,

- Automatic Fire Water Pumping System consisting of one Main Pump, one Standby Pump & one jockey pump.
- External Hydrant & Water Monitor System covering the entire proposed plant area for manual firefighting.
- Medium Velocity Water Spray System for Cylinder filling shed, Filled storage shed, Tank truck gantry (Two bays), LPG Pump / Compressor shed, above ground mounded bullet tunnel, dome, manholes, Loading/Unloading shed, Painting Booth cum Cold Repair Shed and Connecting platforms.
• Fire Detection & Alarm System covering the entire proposed plant area.
• Gas detection system
• Portable Fire Extinguishers.
• Personnel Health & Safety Equipment.

**Design Basis for Pumps:**
• Spray density of 10LPM/m2 is considered as per OISD: 169 clause 4.4.2.
• Highest Water Requirement for water spray system is 4000 LPM for cylinder filling shed.
• As per OISD: 169 clause 4.4.2. (iii), the fire water system in the plant shall be designed to meet the highest fire water flow requirement of a single largest risk of any cases at a time plus 72 Cu. M per hour for operating 2 hydrant points.
• 72 Cu. M per hour = 1200 LPM.
• Total Water required = 4000 + 1200 = 5200 LPM (312 m³/hr).
• The next available pump is 6834 LPM (410 m³/hr).

**Design Basis for fire water tanks:**
• As per KIADB, 4hrs of fire fighting to be done
• Required size of fire water Tank = 4 x 410 = 1640 KL.
• Fire water tank required is two circular steel tanks each having effective capacity of 820 KL.
7. Project Schedule & Cost Estimates

7.1 Project Schedule

The project schedule is given in Table 7-1.

Table 7-1 Project Schedule

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Description</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Overall</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Stage A - Basic Engineering and Statutory Approvals</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Stage B - Break Period</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Stage C - Detailed Engineering and document review</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Stage D - Construction and Commissioning</td>
<td></td>
</tr>
</tbody>
</table>

7.2 Project Cost

The total cost for the project is 22 Crores. The break up is given in Table 7.2

Table 7.2 Project Cost

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Components</th>
<th>Rs (in crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Land and Land development</td>
<td>10.5</td>
</tr>
<tr>
<td>2</td>
<td>Buildings and Factory Premises Design Engineering and statutory approval</td>
<td>5.5</td>
</tr>
<tr>
<td>3</td>
<td>Plant and Machinery and Equipment</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>Rs 22 crores</td>
</tr>
</tbody>
</table>
8. Analysis of Proposal

SHV was looking for suitable locations to install a cylinder filling plant. As SHV is installing all our bottling plant in industrial estates, we have approached KIAD for the suitable land. The proposal will be helpful for supply of cylinders within and near Bangalore.

- Since the proposed project is coming up in an Industrial area, there will not be any change in land use.
- Rain Water harvesting system is proposed.
- Organic waste converter for solid waste management is proposed.
- There will be positive Impact on Social conditions in and around the site due to the proposed project.
- The marginal impact of setting up the Development in the proposed location will be fully mitigated by the Environment Management Plans. (EMP)