Organization Details:

Organization Name	:	AL HASSAN ENGINEERING CO. SAOG
Organization Type (Business/NGO/Gov)	:	Business
Website	:	www.al-hassan.com
Location /Address	:	AL HASSAN ENGINEERING CO. SAOG, PO Box 1948, PC 112, RUWI, Sultanate of Oman,
Award Category	**:**	Green Foot Print Award
Project Details	:	Saih Nihayada Gas Depletion Compression Project – Phase I
Project Title	**:**	Environment Awareness & Conservation Initiatives
Location of Project	:	Saih Nihayadah
One Line Description of Project	:	Initiatives to enhance Environmental Awareness and protect the Environment

Effectiveness

What were your goals?

1. **Environment protection & Prevention of Pollution** is inbuilt in the Health, Safety, Environment (HSE) & Sustainable Development (SD) policy of AHEC and special focus has been given at Saih Nihayada Depletion Compression (SNDC) project site in this direction since beginning of the project to achieve our goal.

(Please see the attachment# 1 for AHEC Health, Safety, Environment (HSE) & Sustainable Development (SD) Policy)

2. Prevention of Pollution / Emission Control:

All the Plant & Equipment are being maintained regularly thereby keeping the Equipment in good working condition to have better control on the Emissions from the Plant & Equipment.

3. Water Conservation and Management to reduce the water wastage:

a) Water Distribution: The entire water distribution system is being done through pipes starting from RO Plant till it reaches the end user, thereby avoiding transportation through trucks – leading to saving of fuel (fuel saved is fuel produced) and elimination of dust / air pollution during transportation caused by vehicles (reduction in CO_2).

(Please see attachment #2 for RO Plant & distribution Pipes Photos)

b) Recycling of Water: The Waste water is recycled through Membrane Bio Reactor Type STP, the water produced is of good quality (Type A) and is being used for irrigation, borrow pits, dust control (by spraying on the graded roads) and 100% of the water produced is used effectively without being disposing in the evaporation pond.
(Please see the attachment# 3 for AHEC MBR Technology STP Plant)

4. Reduction in Pollution:

The Temporary facilities requires a power requirement of 4 MVA (4000 KVA) Power during the construction phase of the project (2 years). AHEC has taken a unique initiative in getting

temporary power by tapping the power from nearby Overhead Line which is 3.2 km away, thereby avoiding the usage of Diesel Gensets to produce power and in turn reduction in pollution & carbon production.

(Please see the attachment# 4 for OHL photos).

5. Plastic Minimization

5.1 Reduction in the usage of plastic cups and plates and encourage the usage of Glass / porcelain cups. In Unavoidable conditions, use only environmental friendly cups and plates.

5.2 Reduction in the usage of bottled water. The water being produced from Reverse Osmosis Plant is directly supplied through pipeline to the water coolers without storing in the plastic cans / bottles. Tests are carried on the Water Samples collected from the farthest point (consumer usage point) regularly to check the quality of water through approved laboratory.

(Please see the attachment #5 for the copy of Water Test Result conducted at Fugro Laboratory)

6. Minimize paper usage and implement recycling of paper

6.1 Encourage two side printing

6.2 Electronic mail sending / receiving leading to reduction in printing to avoid wastage of papers

7. Usage of Recyclable material for Temporary Camp Construction:

AHEC has gone in for usage of interlocking tiles in place of concrete for walkways in camps. Though the initial cost of construction is more, considering the repeated use of materials for other sites, it works out to be economical. This in turn leads to reduction in carbon production and also elimination of disposal of concrete debris.

(Please see the attachment # 6 for the photos of walkways with interlocking tiles)

8. Tree plantation

Trees were planted in the Staff Camp as a part of environment protection programme at SNDC site. This is initiated by AHEC and commenced jointly by Gas Director of PDO, Ms Abla Riyami and Chairman of AHEC, Hassan bin Ali Salman and Project Director of GS E&C, South Korea by planting trees during the commencement ceremony at SNDC site.

(Please see the attachment# 7 for photos of tree plantation by PDO / GS / AHEC Team @ SNDC site)

9. Minimizing Transportation:

We have reduced the transportation of workers from Camp to site & back by constructing the camp within the walk-able distance from site, thereby leading to reduction in number of vehicles which in turn leads to reduction in pollution (vehicle & dust) & carbon production.
(Please see the attachment #8 for photos of walkways to site)

10. Spraying of aggregates in the camp:

Frequent dust storms / whirls are common in the desert areas & lot of dust enters inside the cabins. Aggregates have been sprayed around the camp area to minimize these whirls from entering into the cabins in addition to the dust seals provided to the cabins.

(Please see the attachment #9 for photos of the camp)

How have you measured your success?

a) AHEC has been executing a number of projects in Oil & Gas, Power, Water and Wastewater sectors since its inception a few decades ago. It is trying to inculcate the culture of Health, Safety & Environment into its workforce & the efforts are personally led from the top by Chairman. Receipt of many HSE awards from clients and achieving of 1.00 million man-hours in this project without any Lost Time Incident (LTI) indicates the

commitment of AHEC towards this goal. AHEC is trying to improve continuously from project to project & implement the lessons learned from their previous projects towards this goal. Many such environment friendly measures have been implemented in this project as an initiative to a better future.

b) Impacts / achievements measured are given against each measure above.

Following best practices are done on regular basis to monitor the effectiveness of the systems being implemented

1. Closely monitoring the emissions being released by Construction Plant & Equipment and taking steps to control the emissions from time to time.

2. Monitoring of water usage on regular basis, visual inspection / checks to avoid wastage due to leakages.

3. Enhance the public Awareness by Continuous daily tool box meetings / weekly / monthly HSE meetings.

4. Recycling of Paper

a. Visual Inspection of skips to ensure that paper is not dumped to general skips

b. Periodical delivery note verification

5. Tree Plantation

Increase the number of trees planted at/around the site

6. Always looking for alternatives to reduce the risk at site by using more environment friendly materials.

Innovation & Creativity

How were innovative methods, strategies or ideas applied?

AHEC has been working continuously to improve in its methods of working.

AHEC has been successful in implementing certain innovative methods to provide healthy & environment friendly atmosphere for the workforce.

100% recycling of the waste water, there by reduction in disposal of waste to environment and usage of recycled water for irrigation / dust control / back filling works, etc.

Usage of recyclable / reusable material for camp construction to reduce the disposal of waste to environment after completion of the projects.
Plantation of trees to improve / provide healthier air to the workforce.

Impact

How has the project/initiative/work motivated others to contribute to a greener Oman?

The implementation of the above has created a good impact on the project team in way of appreciation received from the main client (GS E&C, South Korea) & being indicated as a model project.

The project team is boosted by the healthier living conditions provided in the Green Environment.

Petroleum Development of Oman (Owner of the Facility) has appreciated the initiatives & advised other sites to follow the same in their future projects.

The greener environment will reduce the CO_2 levels as well as control the temperatures in the surrounding area.