CII National Award for Excellence in Energy Management - 2023 AGI Glaspac – Bhongir (AGI Greenpac)



Presented By : Mr. SK Verma (AGM) Certified Energy Auditor



AGI glaspac-Snapshot



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AGI glaspac

Our Mission Innovative and Eco-friendly Glass Packaging Solutions

Our Vision

To Be The Most Preferred Glass Company Creating Value For The Customers And Stakeholders



Our Journey....



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Manufacturing Process of Glass Containers – 3D Lay Out





Regenerator

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Fore lift

Inside the Warehouse

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AGI glaspac Bhongir Manufacturing



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Electrical & Thermal Energy

Electrical Energy Cons. Million Kwh



Thermal Energy Cons. Million Kcal



Capacity Utilization increased after the COVID



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Specific Energy Consumption

Sp. Electrical Energy Cons. Kwh/Ton

Sp. Electrical Energy Cons. Kwh/MT



Sp. Thermal Energy Cons. Kcal/Kg



Commitment of doing the Excellence

Sp. Electrical Energy decreased by 3.2 % & Sp. Thermal Energy Decreased by 8.7 %



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Benchmarking with Competitors

Specific Electrical Energy Consumption Benchmarking with competitors



Source : Data Collected from the plants websites



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Energy Saving Projects Implemented in last Three years

Year	No of Energy Saving Projects	Investment (INR Million)	Electrical Saving Million Kwh	Thermal Energy Million Kcal	Saving INR Million	Impact on SEC (Electrical Kwh/t)	Impact on SEC (Thermal Kcal/kg)
2020-21	06	4.31	1.329	0	7.508	4.82	0
2021-22	06	67.5	1.049	9142	16.4	3.44	30.0
2022-23	08	38.36	2.51	344.77	18.215	6.87	0.94
Total	22	110.17	4.89	9486.7	42.12	15.13	30.94
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Implemented Energy Saving Projects 2020-21

Sr.No	Implemented Projects	Annual Electrical Energy Saving Kwh	Annual cost of Saving Rs Million	Investment Rs Million	Payback Period Months
1	Arresting compressed air leakages from IS machines	577000	3.26	0	Immediate
2	Reducing pressure drop in compressed air line by modifying the same	30000	0.17	0	Immediate
3	External coolers for IR compressor no 2	300000	1.695	4	28.3
4	Reducing Voltage drop in F4 barrier booster transformer system	343000	1.935	0.17	1.1
5	Installation of timers for F5 Rejection conveyors	25000	0.1	0.0	Immediate
6	Providing level sensors for water tanks to avoid pump running	54000	0.3	0.1	3.9
	Total	13,29,000	8	4	6.9



Implemented Energy Saving Projects 2021-22

Sr.N o	Implemented Project	Annual Electrical Energy Saving Kwh	Annual Thermal Energy Saving Million Kcal	Annual cost of Saving Rs Million	Investme nt Rs Million	Payback Period Months
1	Modification in furnace height to reduce thermal energy consumption	0	9142	16.4	60.0	43.9
2	Installation of BLDC Fans	9100	0	0	0.1	23.5
3	Energy Efficient cooler for IR3	300000	0	1.7	3.6	25.5
4	Reduction in voltage drop in F5 melting booster transformer	452000	0	2.6	0.0	Immediate
5	Modifying compressed air header of F5 to reduce pressure drop	173000	0	1.0	3.0	36.9
6	Instllation of FRP cooling tower fan	115000	0	0.8	12.2	187.3
	Total	10,49,100	9,142	22	79	42.2

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Implemented Energy Saving Projects 2022-23

Sr.N o	Implemented Project	Saving in Kw/Hr	Annual Electrical Energy Saving Kwh	Thermal Energy Saving Million Kcal	Annual cost of Saving Rs Million	Investment Rs Million	Payback Period Months
1	Installation of Energy Efficient VHP Air Compressor	35	277200	0	1.84	22	143
2	Installation of Energy Efficient Vacuum Pumps	75	594000	0	3.95	10	30
3	Reduction in Pressure drop in copmressed air lines	65	514800	0	3.42	3	11
4	Optimization of Compressor IGV operation to increase the efficiency	27	213840	0	1.42	0	Immediate
5	Instllation of Auto control valve for VHP/HP boosting	80	633600	0	4.21	0.12	0.3
6	Installation of energy efficient inter cooler in Cameron 3	35	277200	0	1.84	1	7
7	Installation of Energy Efficient burners at Lehr	0	0	239.75	1.06	0.2	2.26
8	Installation of Oxy-Hydrogen Fuel generator	0	0	105.02	0.465	2.04	52
	Total	317	25,10,640	344.77	18.215	38.36	25.27

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Planned Energy Saving Projects 2023-24

Sr.No	Implemented Project	Saving in Kw/Hr	Annual Electrical Energy Saving Million Kwh	Annual cost of Saving Rs Million	Investment Rs Million	Payback Period Months
1	Energy Efficient HP Compressor	66	0.52272	3.5	20	69
2	WHR system	1000	7.92	52.7	250	57
3	Arresting air leakages from IS machines	35	0.2772	1.8	0	Immediate
4	Installation of VFD for Pump House	20	0.1584	1.1	1	11
4	Energy Efficient mould cooling blower	15	0.1188	0.8	2.5	38.0
	Total	1136	9	59.83	79	42.2



Innovative Project - 1

Installation of Hydro-Oxy Fuel system to replace LPG in Fore hearth

Hydro-oxy fuel generator is a innovative technology supplied by M/s Brown (Australia) We used this system to replace LPG in fore hearth as a trial and phase wise replacement of Conventional fuel to renewable fuel.



Basic Requirement for operation : Capacity – 2000 Ltr/Hr

DM/Distilled water- 15 Ltr per day
 KOH as catalyst- 4.8 Kg (only initial charge)
 Electricity for electrolysis – Avr. 65 units/day

Investment : Rs 20.0 Lakh Saving : Rs 4.65 Lakh per year



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Innovative Project - 2

Installation of Energy Efficient Burner in Lehr

It was observed higher gas consumption in Lehr burners, during root cause analysis it was found that the it is due to improper fuel-air mixing. Hence the existing burner is replaced with External air controlled device for better air-fuel mixing to improve its energy efficiency.



No of Burners Replaced – 04 Nos in a Lehr Saving – 656.7 Kcal/MT Investment – Rs 2.0 Lakh Cost of saving per annum – Rs 10.6 Lakh Payback period – 02 Months



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Innovative Project - 3

Installation of VFD driven, water free vacuum pump in place of water ring vacuum pumps



10 Nos, 22 Kw each L.R. vacuum pumps is replaced with 04 Nos 45 Kw VFD driven Vac. Pumps Saving – 75 Kw/Hr Cost of Saving – Rs 39.5 Lakh Investment – Rs 100 Lakh, ROI – 30 Months

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Installation of online leakage monitoring system for compressed Air

Problem identified:

- 15 Nos IS machine with more than 8000 Nos air operated solenoid valves
- Not possible to check leakages by simple method due to heavy noise area.
- Frequent chances of valve leakages due to speedy operation and heat

During machine operation very difficult to distinguish between actual leakage or valve exhaust.



Implementation :

Installed SCADA system with online flow meters for real time monitoring and analysis

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TAGNAME	DESCRIPTION	VALUE	ENGUNIT	LOW ALARIV	HIGH A	~			1				1 MACHINE 521 P 17-52	START DATE	28/06/2022 510 05 MACHINE 1/2 HP 17. 02 17	MACHINE STEP PV-01
IS MACHINE 57 LP PV-01	IS MACHINE 57 LP PV -01	592	m3/h	🥏 10.0		DATE	TIME	IS MACHINE STEP PV O	1 IS MACHINE ST LP TZ.01	IS MACINE ST LP PV.01	15 MACHINE ST LIP 12.03 1286751 00	13 MACHINE ST P 14-4	18235831.00 18245922.00	1944.00 1918.00	11790295.00	476.00
IS MACHINE 57 LP TZ-01	IS MACHINE 57 LP TZ-02	3786641	m3/h	10.0	9	29/05/2022 21/01/2022	01.00	484.00	3767429.00 n/b	1839.00 1839.00	1200/003.00	695 00 668 00	1828963.00 1829040.00	1963 00	11780771.00	494.00
IS MACHINE 51 LP PV-01	IS MACHINE 51 LP PV-01	1839	m3/h	🥚 10.0	<u> </u>	29/05/2022 29/05/2022	01.15	430.00 490.00	3767512.00 3767549.00	1839.00	1287517.00	697.00 (64.00	1829103.00 1829162.00	1857.09 1952.00	11793096.00	494.00
IS MACHINE 51 LP TZ-02	IS MACHINE 51 LP TZ-02	1358811	m3/h	🥥 10.0		29/05/2022	01.25	493.00 480.00	3767631.00	5839.00	1287647.00 1287811.08	701.00	1829(281.00	1965.50	11793678.00	474.00
IS MACHINE 52 LP PV-01	IS MACHINE 52 LP PV-01	650	m3/h	6 10.0	9	29/05/2022	01:35	492.00 483.00	376767500	1839.00	1207968.00 1238131.00	00 000 6/9 00 6/9 00	1829399.00 1829454.00	1980 10	11793929-00	485.00 493.00
IS MACHINE 52 LP TZ-02	IS MACHINE 52 LP TZ-02	1855165	m3/h	🥥 10.0		2905/2022 29/05/2022	01:45	487.00	3767792.00	1839.00	1283423.00	703.00 601.00	1829673.00	1975.00	11794229 50 11794402 00	459.00
IS MACHINE 52 HP PV-01	IS MACHINE 52 HP PV-01	1898	m3/h	🥥 10.0		25/05/2022 25/05/2022	07.55	430.00	3767868.00	18/29/00	1255742 09 1258563.00	606 00 700 00	1829687.00	1979.05 1967.40	11794572:00	449.05 442.00
IS MACHINE 52 HP TZ-02	IS MACHINE 52 HP TZ-02	11868140	m3/h	10.0		29/05/2022 29/05/2022	02.10	4/95.00	3767952.00 3767993.60	1839.00	1/3190322.00 1/289192.00	6345.00 6346.00	1829857.00	1965.00	11795052100	459.00
IS MACHINE 53 LP PV-01	IS MACHINE 53 LP PV-01	431	m3/h	ID.0		2505/2022 2505/2022	02.29	469 00	3750074.00	1639.00 1839.00	12/02/96 00 12/09/08 00 1/22/96/46 00	701.95 696.00	1829917.05 1829976.00	1977.00	11795462.00	457.50
IS MACHINE 53 LP TZ-02	IS MACHINE 53 LP TZ-02	3750054	m3/h	10.0	9	29/05/2022	02.30 02.35	4/9 00	3768185.00	00 0251	1289963.00	607.00 63/3.00	1830096.00	1955.00	11794587.09	446.00
IS MACHINE 53 LP 12402	IS MACHINE 53 HP PV-01	1865	m3/h	🥥 10.0		29/05/2022 29/05/2022	02.40 02.45	475.00	3.768230.00 3.768272.00	1839.00	1200128.00 Q	675.00	1830212.00 1830271.00	1874.00	11796184.00	440.00 451.00
IS MACHINE 53 HP PV-01	IS MACHINE 53 HP TZ-02	10737251	m3/h	10.0		29/05/2022 25/05/2022	02.50	478.00 470.00	3768314.00 3768356.00	1010-00	1290412.00 1290571.00	70110	1830327.00 1830388.00	1965.00	11796529.00 11796529.00	455.00 445.00
IS MACHINE 53 HP TZ-02	IS MACHINE 53 IP 1242	0	m3/h	🥥 10.0		2%/05/2022 2%/05/2022	0306	404.00 456.00	37686.96.00	1839.00	1290732-00 1290876-00	705.05	1830446.00	19/78.00	11790544 50	415.00 405.00
IS MACHINE 54 LP PV-01		2997705	m3/h	III.0		29405/2022 29405/2022	03.15	483.00	3768511.00 3768552.00	1839.00	1291173.60 1291333.00	703.00	1830613.00	1961.00	1179750.00	439.00
IS MACHINE 54 LP TZ-02	IS MACHINE OF LP 12-02	1313	m3/h	6) 10.0		29/05/2022	03.25 03.30	492.00	37685595 09 3768537 00	1839.00	1291492-00 1291652-00	705.00 701.00	1830734.90	1980.00	11797647.00	454.00
IS MACHINE 54 HP PV-01	IS MACHINE 54 HP PV-01	0104141	m3/h	🥚 10.0		29/05/2022	03.35 03.40	486.00	3768279.00 3768276.00	1839.00	1291793.00	702.00	1830854.00 1830911.00	1964.00	11797990.00	00.829
IS MACHINE 54 HP TZ-02	IS MACHINE 54 HP PV-01	640	m3/h	0 10.0		29/05/2022	03.45	485.99	3768/57.00 3768/57.00	1839.00 1839.00	1292249.00	701.00 784.00	1830966.00	1973.00 1962.00	11796334.00	442.00
IS MACHINE 55 LP PV-01	IS MACHINE 55 LP PV-01	4448524	m3/h	🥥 10.0		29/05/2022 29/05/2022	0355	479.00 454.00	3768577.00	1839.00	1292571.60	708.00 702.00	1831145.00	1969.00	11758829.00	457.00
IS MACHINE 55 LP TZ-02	IS MACHINE 55 LP TZ-02	4140324	m3/h	10.0		4 29/05/2622 29/05/2022	04:10	489.00	3768960.00 3769002.00	1839.05	1292879.00 1293005.00	704.05	1831264.00 1831307.00	1975.00	11799142.00	460.00
IS MACHINE 55 HP PV-01	IS MACHINE 55 HP PV-01	2000	m3/h	6 10.0		0 29405/2022 7 29405/2022	04.20	472.00	3769035.00 3769077.00	1839.00	1293365.00	669.00	1831426.00	1009.00	11799467 00 11799536 00	442.00
IS MACHINE 55 HP TZ-02	IS MACHINE 55 HP TZ-02	4402480	m3/h	10.0		29/05/2022	04:30	487.00	3769119.00 3769161.00	1839.00	1293456.00	705.00	1831485.05	1356.00	11799946.00	4196.00
IS MACHINE 56 LP PV-01	IS MACHINE 56 LP PV-01	491	m3/b	10.0		1 29/05/2072	04:45	454.00	3769233.00	1839-00 1819-00	1293918.00	699.00 697.00	1031607.00	1971.00 1974.00	1000264.00	486 00
IS MACHINE 56 LP TZ-02	IS MACHINE 56 LP TZ-02	740439	mani m1/h	0 10.0	6	29405/2022	04.50	487.00	3769233 00	1839.00	1294244.00	698.00 704.00	1831707.00	1961.98	11000605.00	463.00
IS MACHINE 56 HP PV-01	IS MACHINE 56 HP PV-01	1289	man	6 10,0		29.05/2022	05.00	482.00	3769404.00 3769447.00	1839.00	1294562.00 1294662.00	705.00	1831903.00 1831963.00	1093.00	11000913.00	
IS MACHINE SO HP T7-02	IS MACHINE 56 HP TZ-02	10300964	main			29/05/2022	05.10	457.00	3769483.00 3769525.00	1659-00	1294853.07	010.04				
IS MACHINE 56 HP 12-02	12 11 14 14 14 14 14 14 14	HINGIN				29/05/2022 2/9/05/2022	05.25	418.00								~
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Online real time monitoring and report generation of compressed air consumption



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Benefits :

By online monitoring and further identified the leaks using ultrasonic leak detectors and By checking and valves we arrested the leakages.



Total Benefits observed : 350 CFM of compressed air Energy Saving achieved : 3.5 Lakh unit per year Energy Cost Saving : Rs 23.7 Lakh per year Investment : Rs 35.0 Lakhs (in phases) SEC Reduction : 1.176 kwh/t



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Utilization of Renewable Energy

	Roof Top		Gro	ound Mount		Target to increase 25% Green Energy by 2028
Year	Technology (Electrical)	Type of Energy	On site/Off site	Installed Capacity, MWp	Generation Million Kwh	% of over all electrical energy
2020-21	Electrical	Solar	On Site	11.6	13.117	13.06
2021-22	Electrical	Solar	On Site	13.7	17.252	16.52
2022-23	Electrical	Solar	On Site	13.7	16.826	13.9



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Solid Waste Management :

Sr No	Year	Waste Glass, MT	Metal Waste, MT	Used Paper Cartons, MT	Disposal Method
1	2020-21	1724.24	157.78	301.84	Disposal through
2	2021-22	2950.84	353.8	620.4	Third party vendor
3	2022-23	3105.3	431.16	520.69	for Recycling

Waste Utilization & Management

Waste Water Management :





100 % Recycling of process waste water, making plant as Zero water discharge. Saving of 350 KL fresh water per day



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Rain Water Harvesting





Rain water Harvesting Ponds, Total area ~ 26.5 Acre Storage Capacity – 45000 KL



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GHG Inventories & Green Supply Chain



HSIL Limited	Purchase Procedure	Doc. No	:AGI/IMDP/15
Packaging Products Division		Rev. No	: 11
AGI glaspac	QMS/EHS/FSSC/ISO 15378//EnMS	Page No. : 1 of 19	

1.0 PURPOSE:

To establish and maintain a procedure for procurement of Raw-material, Fuels, Packing materials, General Stores Items, Indigenous Capital Items, Imported Raw-materials, Consumables and Capital Items, Mould Stores Items, Low Value Material which are below Rs. 5000/- (Rupees Five Thousand Only) and Items / materials required on emergency basis from time to time.

- 1.1 Issue of Annual Maintenance Contracts, Service Purchase Orders.
- 1.2 Evaluation and Registration of New Vendors and to review the performance of existing Vendors by Rating them periodically.
- 1.3 To achieve over effectiveness and efficiency in purchasing process and to ensure the Purchase or materials in Time, Right Quality from Right Source and conform to specified requirements.
- 2.0 SCOPE:

This procedure shall apply to all the Purchases of Raw-material, Fuels, Packing materials, General Stores Items, Indigenous Capital Items, Imported Raw-materials, Consumables and Capital Items, Mould Stores Items, Low Value Material and various activities of Procurement including Service Purchase Orders and Annual Maintenance Service Contracts.

- 2.1 All the new Vendors developed from time to time through Vendor Evaluation for 'A' Class items (List of A class items maintained in Purchase department subject to changes from time to time as per the requirement).
- 2.2 The Purchase procedure covers and applicable to Hyderabad and Bhongir Plants since the purchase department functions were centralized. The process of procurement of materials and services are same for both Plants under the above procedure. The purchase documents/records are being maintained separately for each Plant. The process of vendor evaluation cum registration is same for both Plants but the vendor rating shall be done separately for each Plant. Due consideration for energy efficiency shall be given during procurement of applicable header items (Raw Material, Fuels & Capital Items).
- 3.0 RESPONSIBILITY: Section In-charge / HOD / A.V.P. (Comml)
- 4.0 DEFINITIONS & ABBREVIATIONS:

A V P (Comml) - Assistant Vice President (Commercial)

- HOD Head of Department
- S.I Section-in-charge

Prepared by:	Approved by:	Issued by:	
Date:	Date:	Date:	



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ISO Certifications: ISO 50001: 2018 Certified

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FSCC 22000	ISO 9001:2015	ISO 14001:2015	ISO 45001: 2018	ISO 15378:2011	ISO50001-2018
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Online monitoring of Electrical Energy (EMS) and Compressed air consumption



Daily team review of all energy parameters with set targets and deviations



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Training and Team engagement

Trainings imparted on Energy conservation and ISO 50001

Training

- Training on ISO 50001 :2018 Energy Management system
- Training on Energy Efficiency best practices
- Training on Compressed air usage
- Training on Energy Conservation awareness



IMS Policy HSIL Limited **Packaging Products Division** AGI glaspac Rissogie, Stadadol Dire andh Namer, Hyderschuld Integrated Management System Policy Our Integrated Management Systems has been established in line with our company Vision, Hission, Values and our husiness strategy. We are the manufacturer of soda **Give plass** containers. It is AGE glaspac policy to design, develop, implement and maintain an Integrated Management System that mosts the requirements of ISO 9001 (Quality), 250 14001 (Environment), 190 45001 (Decupational Health and Safety), 190 50001 (Energy), FSSC 22000 (GMP & Food Safety) & ISO 15378 (GMP for Medicinal Use) effectively and efficiently. · For us any defect in our product or any part of our activity which may lead to any concern about Quality, Food Safety, Energy officiency, environment or safety of "our workers, visitors to our operations and the public," is non-negotiable. Our approach to ensure consistency within our wat system is to develop good understanding of our employees about organization management system requirement as well as customer requirements through regular averences comparigns. All glasses is committed to: · Comply with the standards to which up are cartified to, all minuted logal requirements, local rules and regulations," interested parties concerns as well as customer's expectations of their glass packing needs. Provide & maintain Healthy and Safe Warking environment to all concerned. Parsae sestainable growth while continually improving our integrated management. system performance through availability of adequate information & resources. · Prevent impact on anvironment; conserve natural resources; ensure efficiency in

- Provent impact on environment, conserve astanal resources; maars efficiently in energy performance; achieve highest likelith & safety stavilation for our employees and to achieve highest food safety standards for the consumity.
- Ensuin affective communication of policy / programs and active involvement of all anyinynes / internated qurlins m. n. to Quality, Environment, Health & Safety, Environ Physics, QMP and Food Safety.
- Consider every performance supresentent during all stages of operations including design activities as well as procurement of products / services.
- · Periodic monitoring, analysis and review of Policy and objectives

Stachtung (MSR/01, Set 5 - Arrold Res, No. 10, Set. 1932)

firmers K threads President & Chief Electrics officer



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Our Testimonials



GPEMA-2021 18 September 2023



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Future Roadmap

01

05

To Reduce the Carbon emission per MT of glass from 713 CO2 kg to 540 CO2 kg in Next 5 years, equivalent to 6.4 Mn Trees per annum.

To Increase the Usage of Cullet through improvement in Cullet quality and increase in cullet collection.

All the Future New Infrastructure & Installation with respect to IGBP (Indian Green Building Rating System) Rating System 02

Planned Installation of Waste Heat Recovery System.

04

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Additional 5 MWp solar power installation is under discussion

06

Usage of Plastic Pallets in place of Wooden Pallets in association with Garden Polymers which is a Group company of AGI

Carbon Reduction to 540 CO2/ kg in Next 5 years equivalent to 6.4 Mn trees per annum

Installation of 1.5 MW WHR plant for furnace flue gases

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Thank





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