Presentation Flow

1. About us
2. Increasing Energy prices : A major Challenge
3. Available solutions for challenge
    - Improving operating efficiency and reducing specific energy consumption.
    - Recycling of materials in sustainable manner.
    - Reducing waste generation.
    - Investment in sustainable practices and technologies, which can impact the cost of production .
4. Awards and accolades

About Kuantum Papers

Plant Configuration :

- Paper Production Capacity : 450 TPD
- Pulp Production Capacity :
  Agro Pulp : 200 TPD
  Wood Pulp : 180 TPD
- Power Plant Capacity : 42 MW
- Steam Generation Capacity : 130 TPH
  : 60 TPH
- Recovery Boiler Capacity : 70 TPH
  (steam generation) : 20 TPH

Increasing energy prices : A major challenge

- In last **10 years** there has been a substantial growth in prices of all Energy Commodities .
- The import trends of coal, crude oil and petroleum products is also increasing steadily.
- Imports of coal grew from **143.34 MTs** in 2012-13 to **207.77 MTs** in 2021-22.
- Imports of crude oil also increased from **184.8 MTs** in 2012-13 to **211.98 MTs** in 2021-22.
- Import of natural gas also saw a growth in imports from **17.61 BCM** in 2012-13 to **30.78 BCM** in 2021-22 with a growth rate of **6.40 %**
- India also imports electricity to meet its domestic demand which grew from **4795 GWH** in 2012-13 to **7596.71 GWH** in 2021-22.

Year	Petrol	Kero-sene	Aviation Turbine Fuel	High Speed Diesel Oil	Bitumen	Furnace Oil	Lubri-cants	LPG	Coking Coal	Petroleum Coke	Lignite	Electricity
1	2	3	4	5	6	7	8	9	10	11	12	13
2012-13	114.9	107.1	112.6	111.6	101.3	107.7	109.6	107.8	100.0	99.4	98.9	100.5
2013-14	124.6	109.3	119.7	126.3	112.1	111.5	114.2	118.6	101.2	92.8	99.2	103.6
2014-15	108.6	103.5	105.1	114.8	106.1	93.6	118.8	103.5	101.4	94.3	99.2	105.7
2015-16	75.7	88.4	69.5	73.4	77.1	54.3	120.8	76.7	101.4	78.3	94.7	105.3
2016-17	72.4	94.3	69.3	74.4	68.0	58.1	116.8	72.0	108.2	93.0	90.2	104.2
2017-18	80.3	117.8	78.7	84.4	71.3	68.8	114.0	82.2	134.1	117.2	104.2	103.7
2018-19	88.4	152.4	102.8	97.1	85.6	94.7	124.8	92.1	132.9	149.7	120.3	109.6
2019-20	85.6	172.8	97.2	93.7	82.8	81.0	131.7	84.5	138.1	128.6	129.1	111.8
2020-21	75.5	116.8	62.5	80.2	77.9	67.9	137.2	82.2	141.8	132.4	130.9	109.6
2021-22(P)	123.0	221.9	112.4	128.2	113.2	108.2	162.0	117.8	143.0	220.1	170.5	117.4
Increase in 2021-22 over 2020-21 (%)	62.91	89.98	79.84	59.85	45.31	59.35	18.08	43.31	0.85	66.24	30.25	7.12

* Annual average of monthly index, Financial Year wise

Source :Office of the Economic Advisor, Ministry of Commerce & Industry.

Available solutions for challenge

1. **Improving operating efficiency and reducing specific energy consumption.**

2. **Recycling of materials in sustainable manner.**

3. **Reducing waste generation.**

4. **Investment in sustainable practices and technologies, which can impact the cost of production .**

"Improving operating efficiency and reducing specific energy consumption"

A. CASE STUDY : <u>Upgradation of existing TG 4 from 10 MW to 13.5 MW</u>

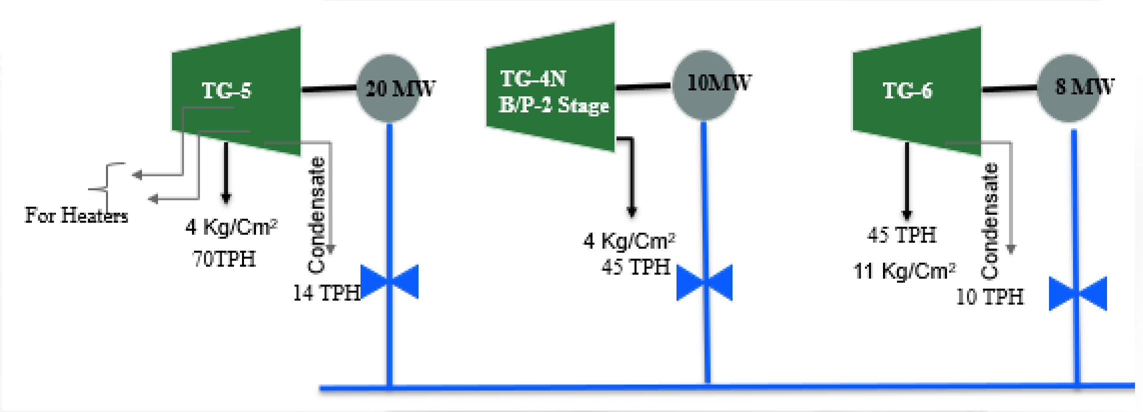
Problem faced :

- Condensing load on turbines leading to higher steam generation.
- Steam shortage for process units during shutdown.
- Low PLF of operating turbines

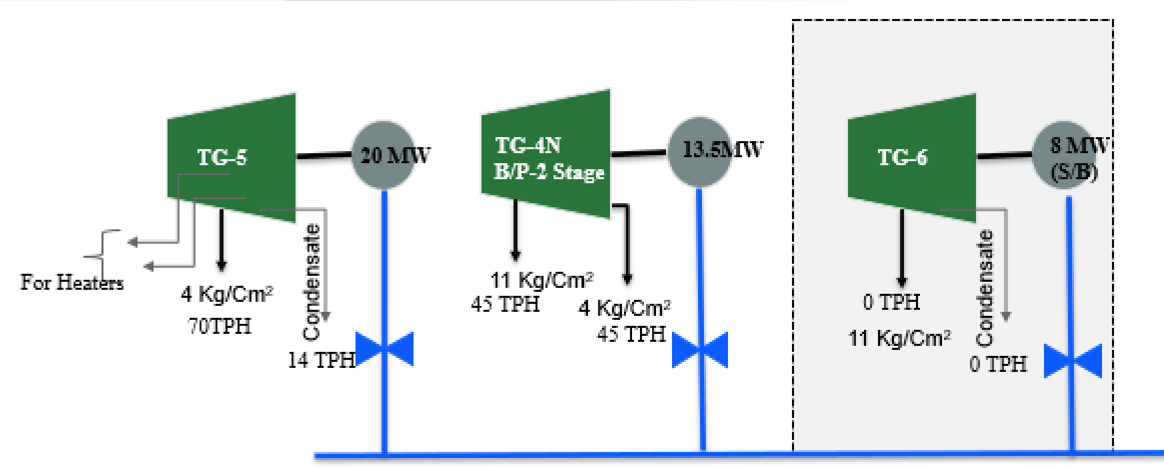
Solution implemented :

- Upgradation of TG 4 (10 MW LP steam backpressure turbine) with 13.5 MW LP steam backpressure and controlled MP extraction turbine.

CONDITION BEFORE



CONDITION AFTER



<u>Gains Achieved :</u>

- Saving of 9-10 TPH of TG condenser steam.
- Increasing overall power generation capacity of system.
- Better steam and power distribution during boiler/Turbine shutdowns leading to increased paper production.
- Reduction in specific steam consumption.
- Increase in plant PLF

ROI = 8 Months

B. CASE STUDY : Reducing pulp cost & making system environment friendly by optimizing Steam and Power consumed in producing pulp bleaching chemicals in ECF bleaching

Problem faced :

- High CLO2 cost is major cost concern for paper producers.
- High production cost of chlorine dioxide, Sulphur dioxide & Sulphuric acid.
- High consumption of steam, power and Sodium Chlorate for producing CLO2.

Solution implemented :

- Replacement of steam ejectors with vacuum pumps.
- Replacement of MP steam with LP steam in VAM Chillers.
- Replacement of raw water with soft water in VAM Chillers, thus reducing steam consumption.
- Increasing ClO_2 concentration from 9-10 gpl to 11.5-12 gpl, thus reducing chilled water requirement.
- Increasing sodium chlorate concentration from 650-660 gpl to 725-730 to achieve reduction in steam consumption.

- Producing dry Sodium Sulphate in powdered form as a by-product.
- Power saved for pumping slurry to Soda recovery section.
- utilizing weak CLO2 solution in cooling towers (Soda recovery,CLO2 plant, Power plant) thus reducing biocide chemicals and increasing cooling water efficiency.

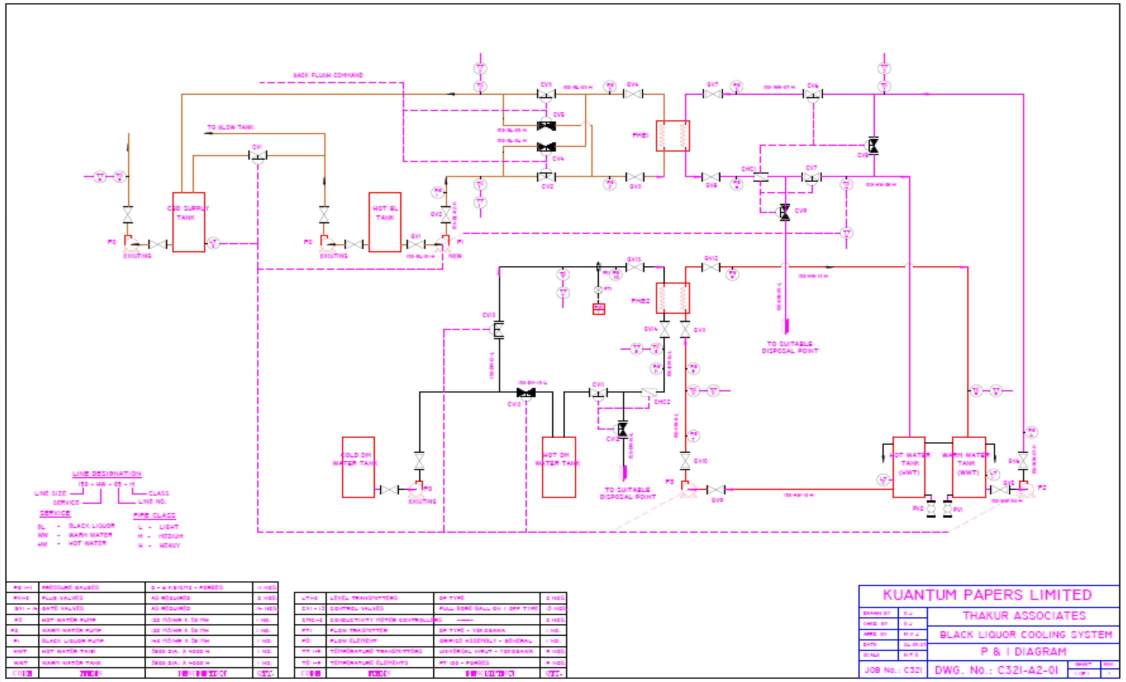
Gains Achieved

- MP steam consumption /ton CLO2 reduced to zero from 8 ton/ton CLO2.
- LP steam consumption reduced from designed consumption 10.2 ton/ton Clo2 to 7.6 ton/ton CLO2.
- Zero effluent target achieved by making total Sulphate packed & saleable.
- Environment friendly process –Zero SO2 emission to atmosphere, Zero contaminated effluent to sewer achieved.
- Significant saving in power & water by replacing cooling load with adiabatic cooling and reducing pumping activities.

C. CASE STUDY : Installation and commissioning of black liquor cooling and DM water heating system

Project Purpose :

The Black liquor cooling system is installed to cool down the black liquor which is coming from BSW1 seal tank and being used to dilute the pulp before blowing in Cold blow discharge of panida tubular continuous digester.



P&I diagram for Black liquor cooling Project

Brief Description of the process:

Step 1: The Black liquor from BSW 1 filtrate tank is being cooled through a PHE from 85 to 60 Deg C.

Step 2: Hot water is being generated.

Step 3: Cooled black liquor is being used for cold blowing through CBD in the Pandia Continuous digester.

Step 4: The generated hot water is used to heat DM water from 30 Deg C to 70 Deg C.

Step 5: Cold water is being stored in a warm water tank and again used to generate the hot water through Black liquor PHE.

ROI
6 Months

"Recycling materials in sustainable manner"

A. CASE STUDY : Installation of condensate polishing unit for saving of water and steam energy

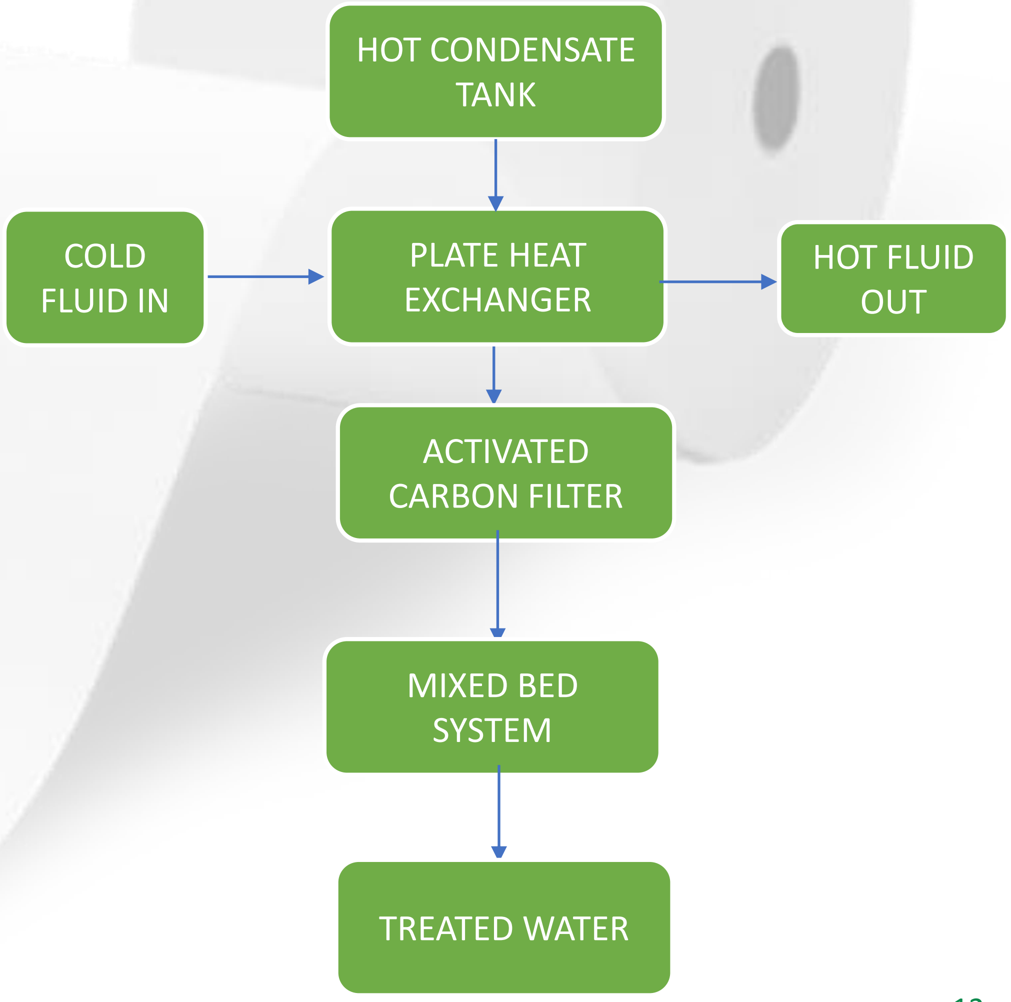
Problem faced :

- Non utilization of condensates of few sections directly in boilers leading to loss of both heat and DM water.
- Draining of condensates during minor contamination during process start-ups.
- Boiler CBD/IBD and trap condensates being not recycled or reused.
- Contaminated condensates posting threats on high pressure boilers

Solution :

- Installation of condensate polishing unit which could remove minor contamination from condensates and recover heat.
- The final output parameters of the water of polishing unit to be most suitable for boilers and can be directly fed in the boilers..

CPU BLOCK DIAGRAM



Gains :

A. Saving of plant condensates:

- Saving of non-usable plant condensates, which were earlier used as raw water **@ 170 TPD**

B. Using trap/blowdown condensates

- Trap and boiler blowdowns which were earlier drained are now processed and used as DM water with heat recovery.

C. Ensuring condensate quality

- Ensuring desired condensate quality for high pressure boilers for improved life.

D. **Ensuring asset life**

- As all boilers are fed with desired water parameters, it ensured long and healthy life of boilers.

ROI : 18 Months

B. CASE STUDY : Use of High-Rate Solid Contact Clarifier of processing high TSS water

Problem faced :

- High TSS water **up to 1000 ppm** generated in the process.
- Due to high TSS present in the water its usage in general applications becomes difficult.
- Wide flow rate and range of TSS presence makes the task more difficult to handle the water flow.

Solution implemented :

- Installation of HRSCC for handling of solid loads **upto 1000** ppm and offering treated water less than **50 ppm** consistency for use in pulp mill.
- Has a wide flow rate and size range.
- Rise rates are higher than conventional clarifiers and depending on the type of application, can be as high as **3.6 m/h.**
- Sludge consistency up to **2 – 5 %** is achieved depending on the application.
- Total Volume generated is **5000 M^3/Day.**

HRSC Clarifier

Recycling materials in sustainable manner cont.….

- ✓ Clarified Machine back water is **100 % recycled** back and reused for Pulp Bleached towers dilution and wire cleaning showers at paper machines.
- ✓ Clarified water used in vacuum pump sealing and at final washers in pulp Mill.
- ✓ Machine cleaning shower nozzles changed & modified to reduce freshwater consumption .
- ✓ Belt filter press and screw press shower cleaning water replaced with clarified machine back water to save **1000 M^3/day.**
- ✓ Wet washing pulper Junk trap flushing line filtrate replaced with the ETP water and **saved 400 M^3/day** by consuming the **400 M^3/day** machine backwater.
- ✓ Final washer (D1 in agro street and D2 in Hardwood street) wash water replace with clarified machine back water and save **300 M^3/day.**
- ✓ Saving of **150 m3/day** Soft water + DM water by recirculating sealing water of pumps in CLO2 .

“Reducing waste generation”

3. Reducing waste generation

❖ **Using the mill waste as a fuel in boilers for environment cleaning.**

- Wood dust
- Wood bark
- Wheat Straw Dust

❖ **Utilization of ETP sludge for board making**

➢ Boiler fly ash generated is **100% used** in cement plants

➢ The high pressure CFBC boiler is equipped with 5 field ESP and setting a benchmark for achieving emission below **30 mg/Nm^3**

Board from Sludge

“Investment in sustainable practices and technologies, which can impact the cost of production ”

A. CASE STUDY : Upgrading existing SST-150 model Turbine to SST-300 model

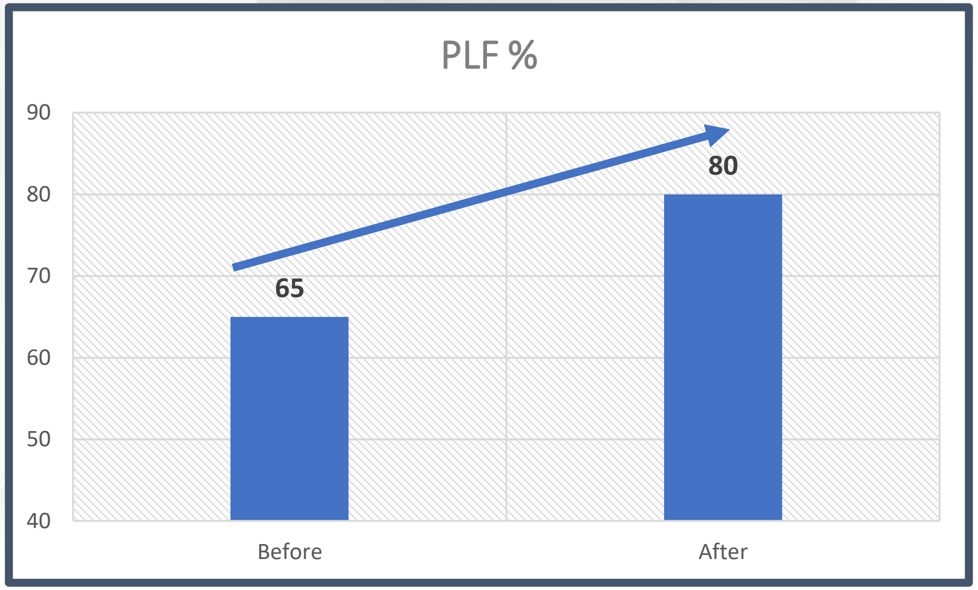
Condition Before:

- **10 MW LP steam** turbine with inlet steam pressure **65 Kg/Cm2** and temperature **475+-5 Deg C**.
- The turbine model was **SST-150,** which generates **10 MW** power at an inlet flow of **75 TPH.**
- The turbine was installed in the year **2008** to meet the LP steam demand from the process.

After Upgradation:

- The new **13.5 MW** turbine is highly efficient state of art technology **SST-300** model SIEMENS make turbine.
- **The SST-300** rotor is fitted with resonance-proof blading.
- This guarantees high efficiency over the whole operation range, including rapid changes of load for smooth plant operation.
- It also has symmetrical casing design, either inner casing or nozzle casing, for fast start up time.

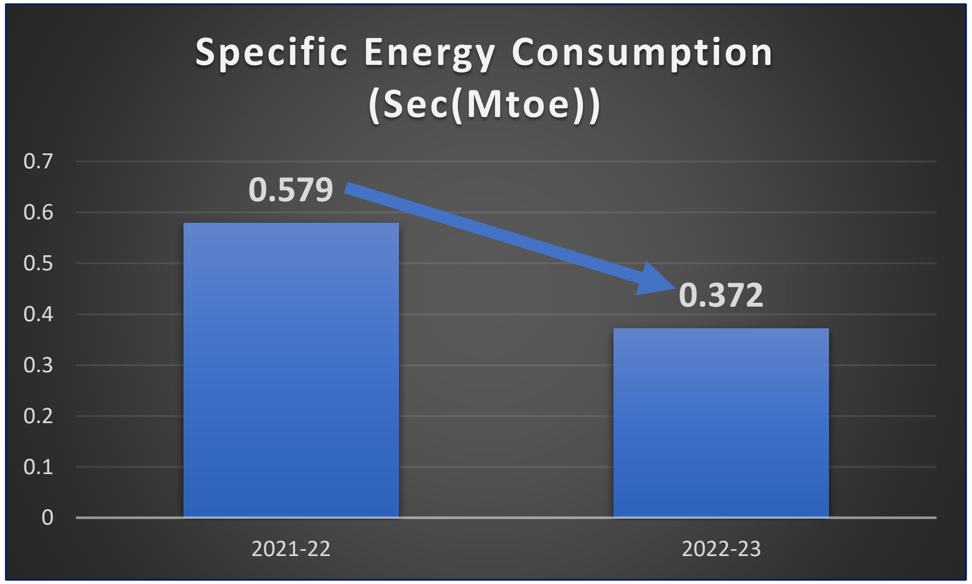
Improving PLF of operating Turbines



Awards and Accolades

Kuantum
The Paper Makers

Specific energy consumption in terms of TOE/MT of finished production



The company has been able to achieve Y-O-Y specific energy consumption reduction. There has been reduction in specific energy consumption by over 17% from PAT-I to PAT-VII.

Awarded first prize in State level Energy Conservation Award

PEDA

PUNJAB
ENERGY DEVELOPMENT
AGENCY
(A Punjab Govt. Undertaking)

No. : 10470
Dated : 18/12/23

Sh. Parveen Goyal,
Associate Vice President
M/s. Kuantum Papers Ltd.
V.P.O - Saila Khurd,Tehsil Garshankar,
Distt. Hoshiarpur
Punjab 146001
Email: parveengoyal@kuantumpapers.com,rakeshsaini@kuantumpaper.com

Subject: **State Level Energy Conservation Awards 2023.**

Sir,

We are pleased to inform you that **M/s. Kuantum Papers Ltd, Hoshiarpur** has been adjudged for the **First Prize** under the Category of Energy Intensive Industries, sub category of Pulp and Paper **(Designated Consumer)** in the State Level Energy Conservation Award Competition for taking extra efforts for Efficient Utilization, Management and Conservation of Energy during the last two years 2021-22 & 2022-23. The award will be conferred during the State Energy Conservation Award function to be held on 21st December, 2023 at CII, Sector 31-A, Chandigarh. The tentative program schedule is enclosed herewith.

It is requested to kindly send the list of participants and contact details of CEO/MD on your firm's letter head who will receive the award. A line of confirmation by return email shall be highly appreciated.

Thanking you,

Yours faithfully,

Director

Encl.: As above