

Tech Bytes

“Knowledge shared is knowledge multiplied”



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Vijaipur Unit

Problem of High Vibration during startup of GTG-2

Introduction:

Gas turbines, in service at Vijaipur Unit are of Frame -5. These are single shaft (common shaft for axial compressor and turbine) machines having one bearing at front turbine end (BB1), second at rear turbine end (BB2) and third bearing at Generator non drive end (BB5). Seismic probes are being used to measure level of vibrations. High vibration alarm is set at 12.5 mm/Sec while the trip level is 25mm/sec.

Observations:

For the last 10 years, GTG-2 was having problem of high vibration during startup; hence it couldn't be started in Auto mode. Normal starting time of any GTG in Auto mode is approx. 15 minutes, whereas due to the chronic problem of high vibration during startup, machine was forced to be started in Manual mode by altering its speed constant and this process took 7 to 8 hours' time to reach Full Speed No Load (FSNL) and synchronization.

Normal gas consumption at no load is approx 2500 Sm³/hr, but owing to start up time of eight hours, almost 20,000 Sm³ or more NG was being consumed for every start up. Higher startup time not only led to wastage of energy, but also kept the unit deprived of timely power availability which is not desirable for plant.

Further, whenever GTG-2 was started in auto mode it got tripped on high vibration at BB1 and BB2 bearings. It was also observed that with higher exhaust temperatures, vibrations have tendency to rise and therefore the IGV (Inlet Guide Vanes) were forced to be kept full open at 85 deg on manual mode by keeping IGV exhaust temp control mode off whereas, normally, IGV exhaust temperature control mode is to be kept ON in cogeneration mode, so as to have higher exhaust temperature and higher overall efficiency. This too increased energy consumption owing to increase in supplementary firing in HRU.

Diagnosis & Action taken:

In order to resolve the issue of GTG-2 not taking start on Auto Mode, Vibration analysis of the machine was carried out by OEM, wherein alignment and balancing were recommended.

After alignment and balancing of machine, issue of high start-up vibration was resolved in Dec-2020, but steady state vibration was still on higher side. Again, vibration analysis was carried out & existing rotor was replaced with refurbished rotor by OEM and after balancing and alignment of complete GTG train, Machine was started successfully on Auto mode with in permissible limits of vibration in

June 2021. Since then, problem of Auto start and High vibrations have been resolved.

Conclusion/Recommendations:

Following Benefits were achieved:

1. Auto start of machine i.e., availability of power with-in 15 minutes against 7 to 8 hours.
2. Less down time for GTG startup resulted in reduction in unproductive Energy (tentative 158 Gcal or Rs 5.5 Lacs per start of GTG).
3. Reduction in supplementary firing of HRU-2, as IGV is kept in temperature control mode.

Learning: Timely replacements can improve Plant performance

Tech Bytes

Nangal Unit

S-200 Basket replacement and fresh synthesis catalyst loading & Activation

Introduction:

Synthesis section of Ammonia Plant is designed to produce 950 MT Ammonia per day. During AFCP project, no major change was carried out in Synthesis loop. In Synthesis section, Synthesis convertor (D-1801) is a series 200 Topsoe radial flow Converter i.e. S-200. It consists of a pressure shell and a basket. The basket consists of a two catalyst beds and one inter bed heat exchanger placed in the center of first catalyst bed and a feed/effluent heat exchanger located below the second bed, lower heat exchanger (LHE).

S-200 basket was in service since 1995 with last synthesis catalyst (KMIR) replacement in 2006 and it was in operation since last 26 years.

Observations:

After ATA 2021, Plant was running on 102% with loop pressure 206 kg/cm²g and pressure drop of 3.4 kg/cm² across Synthesis convertor and Waste heat boiler. Activity of Synthesis catalyst was also reported satisfactory by Topsoe on the basis of process parameters. On 24th June 2021, there was a power failure and consequently Synthesis loop got isolated as per trip logics. Only natural depressurization took place in synthesis loop till further startup. On 25th June 2021, after resuming Ammonia production, while trying to increase plant load, it was observed that further synthesis gas could not be pushed through the convertor due to abnormal high loop pressure. The pressure difference across convertor and waste heat boiler (combined) increased up to 5.0kg/cm²g at 90% load. To avoid further deterioration in parameters and considering plant safety, it was decided to operate the plant on reduced load.

All related parameters were analyzed to find out the reason behind the aforesaid abnormality and following list of abnormal parameters was prepared:

1. Synthesis loop pressure.
2. Pressure drop across Synthesis convertor and Waste heat boiler.
3. Pressure difference between recycle suction and discharge stage of Synthesis gas compressor.

Diagnosis & Action Taken:

After analyzing all possibilities, it was noted that there might be a mechanical damage in internals of basket leading to gas flow restriction through convertor.

Haldor Topsoe, OEM of S-200 basket, also reviewed the data and also opined some internal damage in the basket and the most probably it could be the damage to 1st bed exit side screen through which catalyst is escaping from the 1st bed and getting trapped at the exit of 1st bed or inlet of 2nd bed. Hence, it was decided to replace existing S-200 basket with spare S-200 basket brought out from FCI, Sindri along with fresh catalyst charge available at site.

With complete preparation, Plant was stopped after catalyst cooling down. The whole loop was purged with Nitrogen and handed over to Maintenance team for basket replacement.

During catalyst unloading, continuous bulk supply of Nitrogen in both catalyst beds of converter was mandatory to avoid increase in catalyst temperature.

Pressure shell was in operation for last 40 years and last inspection of pressure shell was carried out in 1995 during S-100 basket replacement. Hence, inspection of pressure shell is of utmost importance for conforming the pressure shell integrity for uninterrupted operation. So, after old Basket removal, Converter pressure shell was thoroughly inspected by GE Department. An in-house designed and fabricated inspection platform was lowered inside empty shell to facilitate aforesaid inspection.

A new S-200 basket was installed in the Shell and a fresh Topsoe Synthesis catalyst charged in converter under the supervision of Topsoe representative. This fresh lot of catalyst was 6.5 M3 pre-reduced iron (KM1R) for 1st bed and 15.29 M3 unreduced iron (KM1) for 2nd bed. The repair and Basket installation was successfully completed in a record time of 18 working days.

After initial hiccups Catalyst reduction and subsequent activation was completed successfully.

Conclusion/Recommendations:

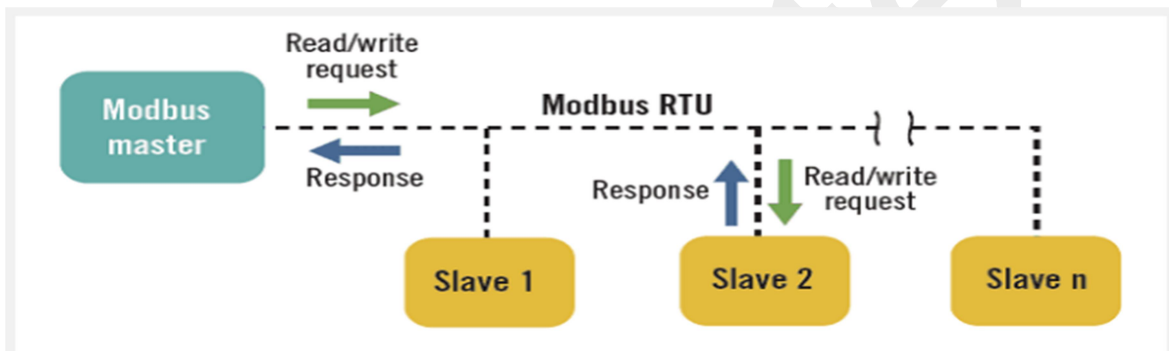
Pressure drop across Converter and Waste Heat Boiler(combined) has been reduced to 3.1 Kg/cm²g at 103% plant load with consequential reduction in steam consumption @2.5Te/hr on account of replacement of basket along with fresh catalyst charge.

Panipat Unit

Resolution of Modbus hanging (data freeze) problem at Ammonia plant

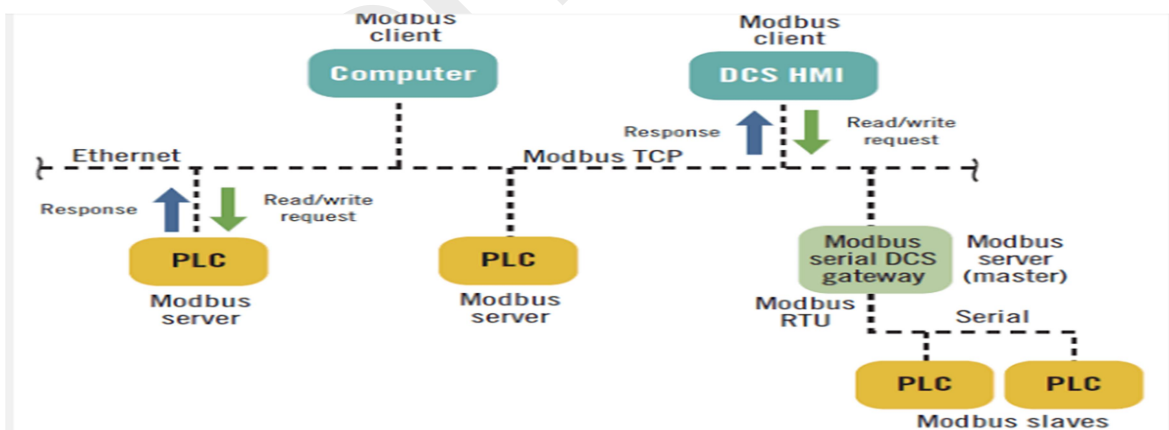
Introduction:

Modbus is a communication protocol for transmitting information between electronic devices over serial lines (original version) or via the Ethernet, and is commonly used in process and factory automation. Modbus serial protocol (the original version) is a master/slave protocol, e.g. one master that controls the Modbus data transactions with multiple slaves that respond to the master's requests to read from or write data to the slaves. Modbus TCP, also known as Modbus TCP/IP, uses client/server architecture. These network architectures are shown Figures 1 and 2.



Modbus serial architecture

Figure 1: In a standard Modbus serial network, there is one master and up to 247 slaves, each with a unique slave address.



Modbus TCP architecture

Figure 2: Modbus TCP is typically implemented on an Ethernet network, and data transactions from a client are directed toward a server via an IP address.

Modbus is commonly used to read data and status from safety instrumented system (SIS) for the SIS HMI as required by the SIS standard IEC 61511, which is typically on the basic process control system (BPCS), commonly a DCS. Writing to the SIS/DCS via Modbus is less common and should be done cautiously.

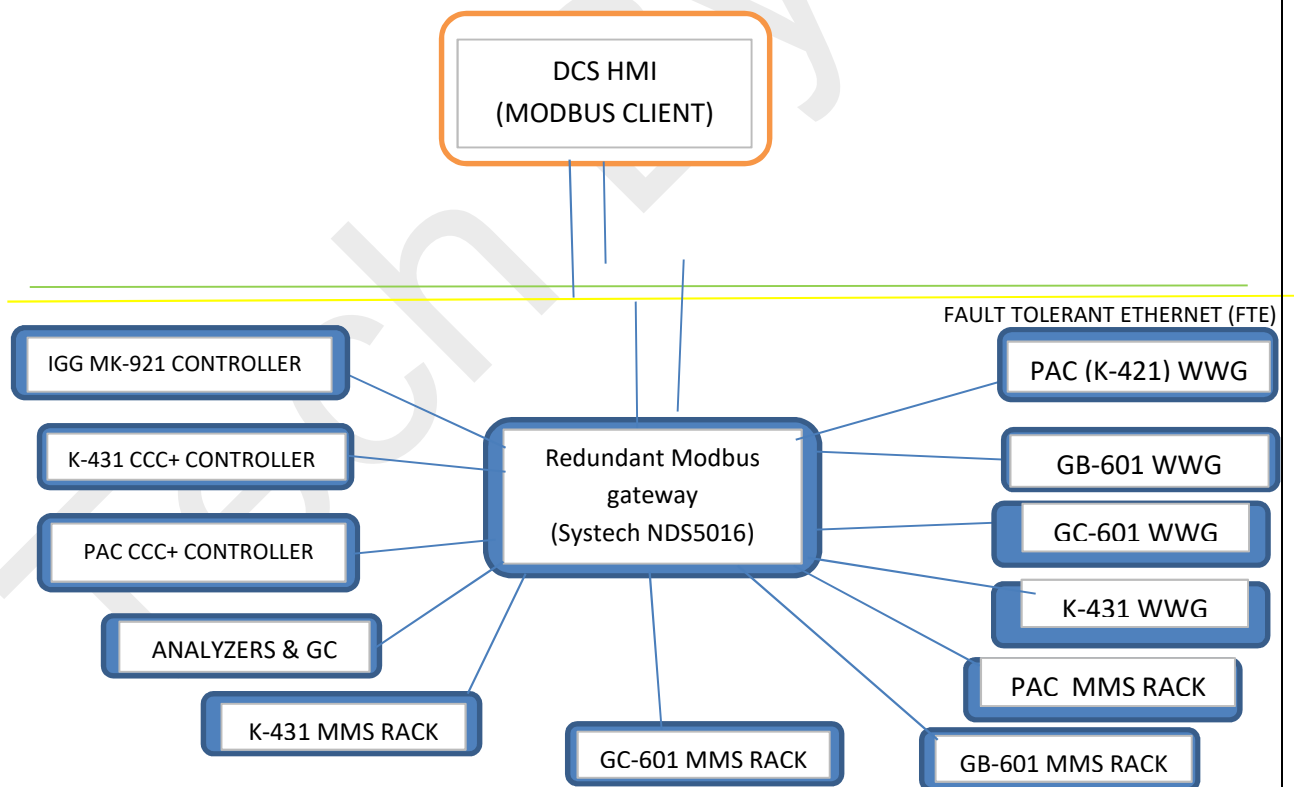
In Ammonia plant at NFL Panipat, data from third party devices to DCS/ESD

control system is read using Modbus protocol and displayed on DCS HMI. No device is being written from DCS using Modbus.

List of these third party devices includes Process Air Compressor (PAC) Woodward digital governor, Synthesis gas compressor, GB-601 Woodward digital governor, Refrigeration gas compressor, GC-601 Woodward digital governor, Synthesis gas booster compressor, K-431 Woodward digital governor, Process Air Compressor (PAC) vibration data from MMS, Synthesis gas compressor, GB-601 vibration data from MMS, Refrigeration gas compressor, GC-601 vibration data from MMS, Synthesis gas booster compressor, K-431 vibration data from MMS, Analyzer shelters and Gas chromatographs, Process Air Compressor (PAC) CCC+ antisurge controller, Synthesis gas booster compressor, K-431 CCC+ antisurge controller & IGG air compressor MK-921 controller

These devices are connected to DCS FTE (Fault Tolerant Ethernet) network using Systech make NDS5016RM Modbus serial gateway. This gateway device has 16 Nos. RJ45 serial ports for connecting third party devices.

Modbus system architecture for our system is as below:



Observation:

At Panipat Unit, it was observed that Modbus data at DCS HMI gets freezed (hang) occasionally, leading to difficulty in control action by operator. Gradually the frequency of recurrence of this phenomenon was increasing.

Diagnosis and Actions Taken:

On checking it was observed that Systech make Master Gateway starts interrupting the data (data get hang) in case any of slave device (any of 12 Nos. third party devices) is not responding within 1000 millsec (Timeout Period) due to any reason.

Following action was taken:

1. Initially gateway device NDS5016 had to be accessed through web browser using IP address http://172.16.2.103/ and then specific port assigned to serial device (In which data is frozen) needed to be reset. Sometimes, all 16 ports of gateway device required to be reset. This approach worked fine as long as the frequency of problem was low.
2. The problem was discussed with vendor and NFL Bathinda & Nangal. However, no concrete solution was found as the system involved data from many Modbus devices of different vendors.
 - (a) It was decided to study and resolve the issue in house. The problem was divided in two phases. First phase was to study the parameters & other reasons causing Modbus device to stop transmitting data. All 12 slave devices were studied and the problematic devices were identified. These were Modbus devices of GC-601 Governor, GB-601 Governor, IGG panel. All three devices Modbus communication was made redundant. This has led to drastic reduction in the frequency of problem.
 - (b) In second phase it was analyzed and observed that a reset pulse of 5 sec. is required to activate a hanged Modbus communication device. Hence a method was envisaged to remote reset of gateway using a soft switch on DCS HMI graphics. For this purpose, a pulse of less than 5 sec has been provided as DEBUG command on Systech gateway. This DEBUG pulse is used to reset Modbus gateway device. A pulse of 1 sec is configured in DCS C300 controller which is triggered using a SOFT switch provided on DCS HMI graphics, accessible to panel operator. This Pulse is assigned to energize a 24VDC relay, NO contact of relay is connected parallel to DEBUG button using hardwire with proper soldering on backside of switch. Now whenever panel operator observes that parameters from any of these third party devices have frozen, he easily resets gateway device by using Soft reset switch without any involvement of Instrument engineer. This method is working fine from almost last one year.

Conclusion/Recommendation:

The above solution has been implemented in-house without any involvement of M/s Honeywell, OEM of DCS. This solution has enhanced reliability of Modbus data & its availability. Further to this, we are also working on to configure Auto reset of this gateway device after fixed interval or whenever a parameter freezes without any involvement of panel operator.

Panipat Unit

Case study: Rectification of Deformed Bypass Dampers and Hot Spots in Waste Heat boiler and Steam Super Heater

Introduction:

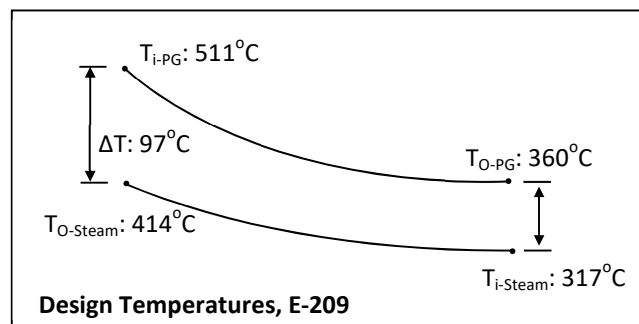
In Steam Methane Reforming process, temperatures of the process gas in the downstream of Primary reformer and secondary reformer are around 791 deg C & 960 deg C respectively and temperature of the exhaust gases is around 1024 deg C which displays a huge potential for waste heat recovery. Waste heat recovery modules have been installed to recover waste heat from exhaust gases of convection section and two waste heat boilers and a steam super heater have been installed for waste heat recovery from the process gas. Extent of heat recovery is governed by use of bypass dampers in waste heat boiler and steam super heater, which makes these dampers quite critical for smooth and efficient plant operation. Due to this, a maintenance engineer is required to have sufficient knowledge of the operational features of these bypass dampers and experiences related to the maintenance requirements and modification on these dampers should be shared with the engineering fraternity.

The case study intends to share few instances pertaining to the maintenance of bypass dampers which have been installed in the reforming section of Bathinda and Panipat unit of National Fertilizers Limited. These bypass dampers have been installed in the waste heat boiler and steam super heater for recovery of waste heat in the Steam methane reforming process. A deviation from the design parameters and problem of higher skin temperature on shell was observed during plant operation which has been taken care of with few modifications in the bypass dampers and associated assemblies.

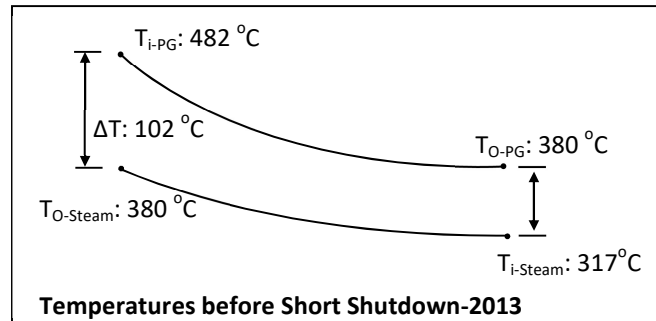
Observation:

1. Case Study: Bypass damper of E-209

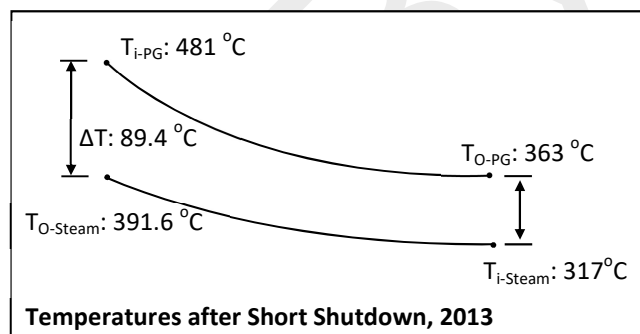
Steam super heater, E-209 has been installed in the Ammonia Feedstock changeover project, commissioned in 2013 in both Bathinda and Panipat unit of NFL. Since inception, deviation was observed in the inlet/outlet temperatures of process gas and steam w.r.t. design values which are shown below:



ΔT between PG-inlet and steam outlet is 97 deg C and the corresponding ΔT for Process Gas Outlet and steam inlet is 43 deg C. However actual values were found to be 102 deg C for Process Gas inlet and 63 deg C for PG-outlet.



After carrying out the root cause analysis of the situation on the basis of available data, it was concluded that probable cause would be the bypassing of high temperature process gas through the bypass damper. To tackle this situation, an additional restriction plate made of SS-310 with 20 holes of diameter 18 mm, was installed during short shutdown in 2013 by M/s L&T in the path of bypass process gas to restrict its free flow. After installation of this perforated plate the operating temperatures were recorded as below:



Above data shows that the ΔT at gas outlet was reduced to 46 °C from earlier 63 °C causing significant rise in the degree of superheat of steam and hence resulted in higher waste heat recovery.

However, shortly after implementation of the above mentioned modification, following observations were found:

- During lining-up of gas after start up on 20.04.2014, it was experienced that bypass Valve TV-265 is not closing beyond 45% even on 100% close signal from control room.
- E-209 gas outlet temperature increased to 386°C from normal value of 358°C.
- E-209 steam outlet temperature decreased to 361.8°C from normal value of 388°C.
- Hot spots with temperature as high as 430 °C were observed on the interconnecting line between Waste heat boiler (E-208) and Steam super heater (E-209) which is higher than the shell design temperature.

A sparger was fabricated and installed for cooling the hot spots to reduce the skin temperature of the shell and keeping it below the design temperature 410 °C.

Diagnosis & Action taken:

Root Cause Analysis was carried out with the available data and the matter was taken up with OEM, M/s L&T. It was hypothesized that gas may be leaking from inlet nozzle refractory and from the sleeve to the refractory junction to reach the shell metal surface. Refractory repair job was carried out during short shutdown and the performance of the super heater was restored.

When the bypass assembly was dismantled, it was observed that the damper plate was found in bent condition.

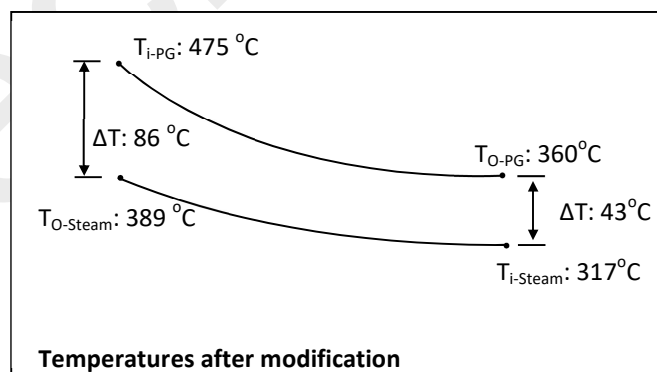
Probable cause of bending of damper plate was considered as the flow reversal due to opening of bypass valve for higher load (more than 50%).

The bent plate was rectified, stoppers were installed to limit the operation and the damper plate was reinforced to prevent future occurrence of similar failure. It was also decided to replace the previously installed SS-310 perforated plate with another plate of Inconel 690 and with 36 holes of diameter 18 mm to reduce the back pressure.

However, in June 2014, recurrence of hot spots with temperature as high as 365 deg C were observed. The root cause being the same as before, it was decided to replace the existing Inconel 690 liner in the interconnecting line between E-208 and E-209 with an increased length liner of same MOC.

Conclusion and Recommendation:

After carrying out the above modification, operating temperatures were found as below:



The above recorded data confirms the efficient operation of the steam super heater in accordance with the design parameters.

2. Case study: By pass damper of E-208

Introduction:

The bypass damper of Waste heat boiler, E-208 consists of two rectangular plates that offer restriction to the tube side gas flow and one circular plate that varies the bypass gas flow. Both the rectangular plates are parallel to each other while the circular plate is perpendicular to them.

Observations:

During plant operation, it was observed that the input signal to the bypass damper did not create the intended results. The data was shared with the OEM and it was hypothesized that the damper shaft was not rotating freely causing sticky operation. To rectify the same, manhole of WHB, E-208 was opened to access the damper shaft.

Primary observation was that the clearance between the circular damper plate on its circumferential portion was uneven and it was fouling with the bypass pipe from the bottom side.

It was also observed that the north side rectangular damper plate was not parallel to the south side rectangular plate with a rotational offset of about 25-30°. It showed that there was a twist in the shaft.

Further to this, it was observed that the shaft was bent and twisted near the center sleeve of the circular damper plate.

After the shaft was dismantled from position, it was seen that there were numerous deformations varying from plane to plane and with a runout up to 20 mm.

Diagnosis & Action taken:

Due to these deformations of shaft, the clearance in the bushes was not adequate to facilitate the free rotational movement, hence causing sticky operation. The matter was thoroughly analyzed with respect to the design clearances and drawing dimensions. The same was also consulted with the design department of OEM, M/s L&T and it was decided to provide a 0.25mm cut on outer diameter of circular damper plate and a 0.2 mm cut on the inner diameter of shaft support bushes.

Since new spare shaft was not available, rigorous efforts were to straighten shaft in various planes. The shaft runout was removed with the help of a tailor made fixture, hydraulic jack, V-blocks and dial gauge.

After multiple attempts, the maximum runout was brought down to 2.5mm from the earlier maximum of 20mm. For more than 95% of the shaft portion, the runout was brought down to less than 1.7mm and less than 1mm for around 80% shaft portion. Considering the initial degree of deformation and the steps taken to ensure adequacy of clearances, the rectified shaft was considered suitable for installation.

The rectified parts were assembled on position and simulation was carried out. The simulation readings were found acceptable.

Though the rectified assembly worked satisfactorily during plant operation; action was initiated for procurement of all the spares required for replacement of complete bypass damper assembly in future as a preventive measure.

Conclusion/Recommendation:

Waste heat recovery systems offer huge potential for energy efficient operation especially for a process industry. Faulty operation of bypass dampers can cause ineffective heat exchange, elevated skin temperatures/ hot spots and if unattended, can cause severe failure of the equipment.

Operating parameters, visual inspection of thermo indicative paint and thermal scanning results should be monitored frequently to ensure that any change pertaining to these critical equipment does not go unnoticed. Abnormality, if any, should be attended promptly to ensure the safe, efficient and reliable plant operation.

Bathinda Unit

Shifting of Electrical Load from TGs to GTG without plant interruption.

Introduction:

It was a great challenge for Electrical Team of NFL, Bathinda to shift Electrical Power from old turbo generators of Capacity 2x15 MW running in synchronism with power grid to Newly installed Gas Turbine Generator of Capacity 1X20MW. Commissioning of new project and its testing had to be carried out without interrupting plant process.

Observations:

It was planned to run old power generation plant (CPP) to meet power demand of fertilizer complex in synchronization with state grid. As there are two power circuit out of which one was taken in line through one step up power transformer and second one transformer had to be taken under shutdown for hook up activities with new GTG plant.

Diagnosis & Action taken:

To cater to this complex power system condition following two independent power line circuits were formed by opening of 132 KV high level isolator-F in main receiving station:

1. Both Turbo Generators were running parallel on 18MW load and feeding power to fertilizer plant through one of the power transformer (31.5MVA, 11/132KV) in synchronization with state grid incomer-II. This circuit was made totally independent for hook up activities with new Gas Turbine Generator.
2. The transformer of other circuit remained under shut down for a longer period for hook up activities of GTG project. Testing and commissioning of GTG was carried out independently after completion of control & power work. The performance testing was carried out for seven days in a single stretch through step up transformer and grid incomer-I.

After completion of testing activities another challenge was to stop both STGs and lining up of GTG for continuous operation. The load on STGs was gradually minimised and simultaneously the power was gradually increased as import from M/s PSPCL. Then both the TGs stopped and GTG synchronized with grid and load on GTG increased to full load around 18 MW.

Conclusions & Recommendations:

During above process of shifting power from Turbo Generators to Gas Turbine Generator, no interruption occurred resulting in successful change over.

Bathinda Unit

Maintenance of CO2 Gas Reciprocating KOBE Compressor in Urea Plant.

Introduction:

The subject High pressure reciprocating compressor is installed in Urea plant for compressing CO₂ gas from pressure 28 kg/cm² (g) to 240 kg/cm² (g) with 25000 Nm³/hr capacity. This compressor faced a sudden unexpected breakdown on 31.07.2021 though it was running flawless since its last major over hauling in April 2021 wherein ultrasonic testing of piston rod was carried out.

Observations:

On 31.07.2021, it was observed that high abnormal sound of reciprocating nature was coming from 2nd stage of compressor which resulted in increase in overall vibration of the complete train. The same was confirmed by vibration reading taken by NDT there-after. It was thought that either the piston along-with piston rod had loosened/ broken or the clearance in the big end bearing of 2nd stage connecting rod has increased due to wear and tear of bearing. Finally it was decided to stop the Compressor for inspection and corrective action.

Diagnosis & Action taken:

Top cover of crankcase was removed for inspection of 2nd stage connecting rod big end bearing and crankshaft main bearings. All bearings were found in good condition. Clearances of crankshaft bearings were found to be within limits. Later-on 2nd stage cylinder end cover was opened and piston rod assembly was removed. Locking Nut (castle type) of Piston on piston rod was loose and on dis-assembly it was found that the Castle locking nut segments had broken and sheared, resulting in looseness of piston on piston rod, the same was replaced with spare locking nut. After rectifying the problem, the assembly of compressor was started post DP test of piston rod. The compressor was taken in-line after maintenance and found to be running with normal parameters.

On 04.08.2021, it was reported by Production deptt. that high abnormal sound along-with high vibration has been observed in 2nd stage of Kobe Compressor. Also discharge pressure of 1st stage also increased rapidly, which led to manual tripping of compressor.

On dismantling of 2nd stage of compressor, it was observed that piston rod had broken from centre with exactly vertical edges. Since piston rod was broken, high vibration and noise was observed and also since 2nd stage was not taking suction due to this, discharge pressure of 1st stage increased. Due to breaking of piston rod, piston rod packing rings and oil diaphragm wiper rings along with end cover got damaged.

- 2nd stage Crosshead shoe to pedestal clearance were taken and found on higher side. Hence crosshead was removed after removal of gudgeon pin. DPT of gudgeon pin was done and found ok.
- 2nd stage connecting rod was dismantled for checking any distortion/bending. Big end bearing was checked and found ok. DPT of big end bearing was done and found ok. Complete connecting rod was checked found ok. DPT of complete connecting rod also done and found ok.
- 2nd stage Suction and delivery valves were also checked found ok.
- 2nd stage crosshead both shoe were having minor linings/signs of erosion. Hence both top and bottom shoe was replaced with new part. Crosshead bush to gudgeon pin clearance was found within limit.

Conclusion & Recommendations:

Assembly with New piston rod was put in place after checking the same with ultrasonic testing. The compressor was restored back to function. Now the compressor is running with healthy parameters.

Corporate Office

Plastic Waste Management (PWM) Rule 2016 (as amended time to time)

Introduction

Use of plastics in our day to day life is so eminent that we cannot think of life without it. Once plastic is discarded in form of packaging packets, it creates plastic waste. The increased use of plastics after the late 60's has dramatically increased the portion of plastic garbage.

At present in our country the quantity of plastic waste is approx. 26,000 MTD (Metric Ton per Day). 60% of this qty is being recycled through informal sector to manufacture low grade plastics and around 9400 MT of plastic is still left unattended in environment causing land, air and water pollution.

The disposal of plastic waste is a serious concern because it is not decomposed naturally and cannot be burnt directly as it produces harmful Halogen gases which is harmful for living organism. Apart from this there is lack of proper collection and segregation system of plastic wastes in most of the developing countries including India.

Therefore, disposal of plastic waste is one of the most recognized and pressing issues for almost all municipal corporations, urban local bodies, panchayats etc. who deal with disposal of garbage and solid wastes.

GOI steps to address the issue

Central Pollution Control Board (CPCB) under the Ministry of Environment and Forest (GOI) has formulated various laws from time to time to address the concerns. The latest Guidelines pertaining to plastic waste are covered under Plastic Waste Management Rules (PWM) 2016. These rules have been further amended in 2018 and known as PWM Rules 2016 (amended).

Salient Points of PWM 2016 (amended):

- (a) These rules are applicable to every waste generator, gram panchayat, producer, importer and Brand Owner.
- (b) Producer, Importer and Brand Owner shall register with CPCB/SPCB with their action plan to recollect and recycle the waste generated/introduced by them in market.
- (c) The CPCB/SPCB shall be responsible for proper implementation of the rules.
- (d) As per Rules every Brand Owner shall recollect and recycle total quantity of plastic generated (100%) by them.

The theme of these rules are based on four R' i.e. **Reduce/Reuse/Recycle/Recovery**.

Reduce: Discourage the use of plastics. Government of India has already banned the use of single use plastics (thickness below 50 mic).

Reuse: Reusing will reduce the demand for plastics. One can reuse the plastic bags for filling cereals and grains in households, some creative articles can be prepared etc.

Recycle: Virgin plastics can be recycled to form low grade plastics (i.e. having lower strength) and may have further useful life. The plastics can be recycled up to 2-3 times for use.

Recovery: Waste plastics can be used as an alternative fuel for Cement and Power plants. By this the plants can save raw material consumption, with more eco-friendly contribution.

Various changes in policy

In July 2020, MoEF has introduced Draft EPR (Extended Producer Responsibility) obligation under Plastic Waste Management Rules 2016 (amended) to all the Brand Owners, making mandatory to register themselves with CPCB/SPCB in time bound manner with action plan of collecting and recycling of plastic waste generated by them. The draft EPR guidelines were Geo and Brand neutral. It meant that one Brand Owner can fulfil its EPR obligation by collecting and recycling plastic waste of any type from anywhere in India. It also has the provision of recycling target in graded manner i.e. recycling target of 30% to 90% in 05 years.

In March 2021, CPCB introduced Standard Operating Procedure (SOP) for fulfilling EPR obligation, which stated that the EPR obligation is not Geo Neutral and 100% plastic waste generated should be recycled by Brand Owners.

In May 2021, CPCB published amendments and instructed Brand Owners to submit their forms through on line mode only and this time it has been made mandatory to collect the plastic waste according to the waste introduced by the Brand owner state wise. Again on 6th October, 2021, MoEF issued draft notification wherein EPR target of 35% for the year 2021-22 & 70% for year 2022-23 has been indicated.

Implications of these rules on Fertilizer Sector

Fertilizer Industries like ours, also use Plastics for packaging of its products in multi layered plastic bags for sale of various fertilizer products like Urea, DAP/Di Ammonium Phosphate, NPK, Bentonite Sulphur). These bags are called multi layered since there are mainly two layers; Inner layer is of water resistance

lamination LDPE (Low density poly ethylene) and other i.e. 2nd layer of fabric of HDPE (High density Poly Ethylene) or PP (Poly Propylene). As per PWM Rules 2016 (amended time to time), Fertilizer Industry is covered under the rules as Brand Owner and requires to fulfil its obligations accordingly.

In order to fulfill its commitment towards Environment and considering PWM Rules and its future statutory obligation, almost all the Fertilizer companies have taken steps to implement this in their organizations.

Action taken by NFL

In line with the above EPR guidelines NFL has already submitted online application to CPCB for registration of Brand owner on 29.09.2021. Consultant M/s Gem Enviro, Delhi was lined up for the same.

Accordingly, NFL has submitted its Form-1 (registration with CPCB) through online mode on 29.09.2021. The registration certificate is awaited till date. However, CPCB has kept the registration process on hold for three months w.e.f. 20.10.2021.

Meanwhile, NFL has initiated process to line up a party for fulfilling its EPR obligation for the year 2021-22 & 2022-23 as per current SOPs. The annual cost of fulfillment of EPR obligation is estimated to be Rs 2.9 crore (approx.).
