

Venkat Pattabathula

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QUALIFICATIONS

- Bachelor of Technology (Chemical), Osmania University. India
- Master of Technology (Chemical) Indian Institute of Technology.
- Certificate from Massachusetts Institute of Technology (MIT), USA

CURRENT POSITION

- Global Ammonia Technology Manager, Incitec Pivot Ltd.
- Joined in February 2004

PROFESSIONAL AFFILIATIONS AND APPOINTMENTS

- Corporate Member, Chartered Engineer Institution of Engineers Australia.
- Senior Member, American Institute of Chemical Engineers (AIChE)
- Member, AIChE Ammonia Safety Committee, USA.

OTHER TRAINING OR SPECIALIST KNOWLEDGE

- Project Management
- Effective Communication Skills for Technical Professionals
- Economic Concepts for Engineers and Managers
- SH&E Leadership
- Dale Carnegie Course
- HAZOP Leader
- Internal Quality and Safety Auditor
- Pressure Relief Course
- Practical Process Control
- Boiler Operator

AWARDS

- Manufacturing excellence award for contribution towards process improvements in 2004.
- Best paper award at ammonia synthesis catalyst development symposium held in China in 2007.

PUBLICATIONS

- Approx. 25 technical papers
- About 70 articles in fertiliser industry magazines

Key skills and experience

Venkat Pattabathula is a chemical engineer with 25 years plus experience in technology evaluation, project management, process design, process engineering, plant operations, process optimisation, plant debottlenecking, process safety, risk and reliability.

As part of Process Design Team with KRIBHCO, and SABIC, he was responsible for process design and engineering of world scale ammonia projects at more than US\$ 600 million engineered by MW Kellogg and Toyo Engineering.

He provided process engineering support for commissioning Kellogg Ammonia plants at KRIBHCO and an affiliate of SABIC. As Senior Engineer he was involved in the investigation and understanding of challenges and developed appropriate solutions.

He has been responsible for economic evaluation and technology selection in plant upgrades and performance guarantees on various ammonia plant related projects.

He has identified and documented Best Practices in the ammonia production processes to achieve world class safety and reliability standards.

Venkat also organized benchmarking between various ammonia plant operations and identified performance gaps and supported the line organization in improving production efficiency and optimization of energy utilization.

Venkat facilitated networking among the different ammonia plants across the company and shared learning's and enhanced plant personnel competency level.

Venkat has provided technical support to all plant operations including troubleshooting and also shared good engineering practices with production units.

Managed the conversion of carbon dioxide removal solvent from sulfinol to aMDEA which resulted in significant reduction in chemical costs and also the elimination of handling of heavy chemical such as arsenic.

Excellent communication skills and leadership and coaching abilities.

**FEBRUARY 2004
INCITEC PIVOT LIMITED (IPL)**

Venkat joined IPL as the Ammonia Technology Manager and later on took the role of Global Technology Manager.

- Provided process engineering support on ammonia-utility related projects from conceptual design to commissioning.
- Performed an expert and thorough assessment of all 6 ammonia plants across the with respect to efficiency of resources/ materials used to the production cycle, efficiency of the production equipment and processes, maintenance processes and reconstruction/ modernisation plans. Engaged at all levels within the company to be able to gather all necessary input to perform the assessment.
- Communicated positively about the findings and recommendations and in an adapted manner to the production environment and to the senior company management.
- Benchmarking of the company's production process and procedures to state-of-the-art technologies and best practices used for Ammonia production worldwide.
- Contributed to the decision process of the company's management related to upgrade, modernisation, investment plans of the Ammonia production units
- Engaged in the implementation of the decisions taken by the company's management relating to Ammonia production: upgrade, modernisation, investment plans
- Monitored industry technology, best practice on a global basis and progress of the Ammonia production at the company.
- Member of the project team in the relocation of ammonia plant which included safety & design reviews, modification assessments and pre-commissioning and commissioning.
- Involved in ammonia plant upgrades by incorporating modern technology design features in two stages which increased ammonia production rates from 800 to 850 tpd and then to 900 tpd.
- Participated in design reviews, HAZOP and SIL/LOPA Studies of both new and old plants. Closed out actions from design review/HAZOP/LOPA studies in new projects.
- Applied high emissivity refractory coating on reformer radiant section walls and reduced fuel gas usage.
- Installed a new hydro-desulfurization unit at St Helens, OR (SHOR) plant and increased plant production rates by about 10 tpd.
- Technical support in the selection of catalysts and ensured environmentally acceptable catalysts were installed in different plants.
- Improved secondary reformer burner reliability by installing a new design burner using modern technology at Cheyenne, WY plant.
- Carried out investigations in the failure of a fired heater and improved the safety & integrity of the equipment with process modifications.
- Developed ammonia code of practice for all the plants within the company.

- Improved ammonia plant production rates by about 10 tpd with new axial-radial baskets after about 40 years with old axial baskets.
- Implemented advanced process control system and improved plant energy efficiency by about 0.5 GJ/t.
- Facilitated networking among the different ammonia plants across the company and shared learning's and enhanced plant personnel competency level.
- Provided technical support to all plant operations including troubleshooting and also shared good engineering practices with production units.
- Involved in process engineering & plant design activities and plant optimisation projects.
- Evaluated and suggested improvement projects in ammonia production across the global plants of the company.
- Took part in the due diligence activities of company growth projects.
- Established key performance indicators (KPI) for plant operations and rolled them across all the sites.
- Assisted in NH3 tank decommissioning, inspection and re-commissioning project.
- Maintained HSE standards per company's global corporate vision of "Zero-Harm".
- Conducted training courses for plant operating teams in the operation of amine system.
- Took leadership role in ensuring the project team and engineering consultants adhere to Safety in Design and Catastrophic Risk Management processes.
- Presented many papers at international symposiums on the process technology improvements.

2000 TO JAN 2004 AGRIUM U.S INC., BORGER NITROGEN OPERATIONS, TX, USA

Senior Process Engineer responsible for safe, reliable and efficient operations of ammonia and urea plants.

- Involved in the development and execution of major projects from conceptual design to commissioning of ammonia and urea production units at a world scale facility in South America.
- Reduced cash costs by employing best available technologies in maximizing plant production rates.
- Conducted studies for plant debottlenecking and initiated projects to improve manufacturing capabilities.
- Evaluated various process technologies and incorporated the technologies that improved plant energy efficiencies of ammonia and urea plants.
- Participated in PHA revalidation of all company's ammonia & urea plants in North America.
- Increased ammonia plant production rates by 50 tpd with the installation of a new catalyst support grid system in one of the reactors.
- Identified an innovative approach in reformer tube replacement and applied latest techniques that resulted in significant reduction in plant capital costs.

- Improved the reliability of syngas compressor by installing modern design system to reduce vibrations on its discharge piping.

1994 TO 2000 INCITEC LTD, AUSTRALIA

Process Development Engineer responsible for plant upgrades and process developments of ammonia, urea and CO₂ projects.

- Involved in ammonia plant upgrades that increased plant output, improved environmental standards and reduced energy consumption.
- Evaluated catalyst performance and installed most cost effective catalysts.
- Conducted the safety & integrity analysis of an atmospheric ammonia tank and installed overpressure protection system.
- Improved the recovery of hydrogen rich gas stream with the replacement of membrane separators.
- Developed operating procedures for new plant equipment.
- Technical investigation in underperforming ammonia synthesis converters and identified the bottlenecks.
- Implemented manufacturing improvement programs that reduced variable cost of the product.

1993 TO 1994 ICI AUSTRALIA , BOTANY, AUSTRALIA

Project Engineer responsible for several major capital projects which involved energy efficiency improvement projects on sites at Botany.

Member of steam recovery corrective action team (CAT) and saved about \$300,000 per year by recovering steam & condensate.

1987 TO 1993 NATIONAL FERTILISERS AND CHEMICALS COMPANY, SAUDI ARABIA

Production Engineer in charge of ammonia and urea plant operations and manufacturing excellence programs.

- Developed and managed process engineering team for an ammonia-urea project based on natural gas. Project value US\$600 million.
- Involved in the commissioning of an ammonia-urea complex, was responsible for the performance guarantee test run and verification of ammonia and urea plants.
- Provided technical support for the company's three production facilities, including the ammonia, granular urea and phosphate fertilizer plants.
- Written standard operating procedures (SOPs) for ammonia, urea and utility plants.

- Initiated safe operating practices and established risk assessment process to manage emergency shutdown systems (ESD).

1982 TO 1987

KRISHAK BHARATI COOPERATIVE LIMITED (KRIBHCO), INDIA

Shift Engineer, in charge of commissioning and operating of ammonia and urea plants that included catalytic reforming, gas treatment and ammonia storage tanks in a fertiliser company. He supervised 20 operators, and was involved in the process design of the ammonia expansion project.

SUMMARY OF RELEVANT EXPERIENCE

Process Design and Operation

Reviewed and developed business proposals, feasibility studies and cost estimates, as well as a cost benefit analysis for ammonia-urea projects; debottlenecking projects in Kellogg, Topsoe, Linde and Pritchard design ammonia plants, and Snamprogetti and Stamicarbon urea process plants.

Developed PFDs, P&IDs, engineering flow diagrams and interlock logic diagrams for new ammonia and urea projects including ammonia storage tanks and utility units (boilers, water and wastewater systems) and pollution abatement projects. He reviewed and approved P&IDs for ammonia and urea plants, and installed new design reactors in the ammonia plant and reduced the capital cost of synthesis loop upgrade project by \$2,000,000.

He reviewed/approved process and equipment design /selection, pressure drop calculations, development of process and technical data sheets, heat transfer rating, equipment design, piping and fitting specification. He undertook troubleshooting and debottlenecking in the fertiliser plants and utility units. He presented a technical paper titled, 'Conversion of sulfinol system to BASF's aMDEA system', which was based on the work that resulted in savings of more than \$750,000 a year in an ammonia-urea complex.

Installed a new safety instrumented system on front-end of an ammonia plant that improved plant safety & integrity.

Process Safety and Technology

New Ammonia Storage Facilities: Engineered, project managed and commissioned 7 ammonia storage tanks and automated multiple delivery systems incorporating intrinsically safe design principles. The safety features of this system were highly appreciated by safety auditors, insurance agencies, the authorities and customers.

New Ammonia-Urea project in Greenfield site, South America: Venkat prepared functional design specifications (FDS), technical standards for new ammonia and urea projects. Also developed technology matrix for the selection of process licensor. Involved in risk assessment (RA) of ammonia storage and distribution facilities. The study recommendations—such as rerouting relief valve discharges to flares, overpressure protection systems, access and egress around the equipment, leak prevention techniques using dry gas seals, minimisation of valves and fittings etc. Similar studies were conducted at all other sites of the company. Identified process related risks in operating plants and included it in the global risk matrix of the company from where some of the high ranked risks were eliminated with the implementation of manufacturing improvement projects.

New Ammonia project in Louisiana, USA: Involved in the technical evaluation of various ammonia process technologies and participated in all levels of PHA/HAZOP and SIL/LOPA studies. Made recommendations to safety instrumented system to improve process safety and plant reliability.

Commissioning Manager for ammonia, urea, anhydrous ammonia storage facilities, flare stacks, water treatment, boilers and effluent treatment plants, and Operations Shift Engineer for ammonia, urea and utility plants.

He was the plant engineer in charge of operation and maintenance of fertiliser manufacturing plants, involving planned major turnarounds, implementing change management, effecting cost reductions through identification of critical equipment and related material changes, reduction in MTTF / improved MTBF etc.

Project Development and Management

He developed business proposals for board approval, including project scope, implementation plan, schedule and cost estimates. He was Project Manager for a range of projects, including the development and implementation of a new ammonia storage and loading/unloading facilities. He delivered >95% of the projects on time, budget and specification. He liaised with the technology providers and initiated and succeeded in obtaining development approvals from local and state authorities.