

(Concept Note/Scope of work)

Technical Specifications for Hiring of Three (3) Mist Spray Drone along with real time Air Quality data and image acquisition as Pilot Study for Delhi for Hotspot Pollution Control Services.

Introduction

Delhi, the capital city of India, has been grappling with severe air pollution, particularly during the winter months. The rapid urbanization, vehicular emissions, construction activities, and industrial pollution have significantly contributed to the deteriorating air quality. The Government of NCT of Delhi has identified the need for innovative measures to address the pollution crisis in critical hotspots across the city. One such measure is the deployment of drones equipped with mist spray technology to reduce airborne pollutants and improve air quality.

Objective:


The primary objective of this initiative is to deploy drones for the mist spraying of water and eco-friendly solutions in identified pollution hotspots across Delhi. This will help in settling dust particles, reducing particulate matter (PM) concentrations, and mitigating the adverse effects of air pollution on public health and the environment.

Scope of the work.

The scope of work for this pilot study includes the following:

- i. The deployment of three mist spray drones across identified pollution 13 hotspots in Delhi. (approx. 2.0 km radius of each hotspot)
- ii. The selected vendor will be responsible for supplying drones equipped with a minimum 17-liter liquid tank, capable of covering one acre within 15 minutes.
- iii. These drones must also integrate real-time air quality monitoring systems and high-resolution cameras (minimum 20 MP) for accurate data collection and reporting.
- iv. The vendor will ensure that drones are capable of real-time data transmission to the Department of Environment's Integrated Command and Control Centre, allowing for continuous monitoring and assessment.
- v. Post-deployment, the vendor will submit a detailed report summarizing the operations, data collected, and the effectiveness of the intervention.

Terms of References:

- i. The duration of pilot study is of fifteen (15) Days after the signing of Contract with the Department.
 - ii. A detailed written report to be provided after completion of the work to the Department.
 - iii. The data sets/reports/ IEC materials/ documentaries or any other relevant document is to be owned by the Department of Environment, GNCTD.
 - iv. Surprise Inspections will be conducted by the team of Department of Environment at the site.
 - v. Payment to be made from plan scheme head "Pollution Control and Hazard Management" of Department of Environment (GNCTD). Payment be made after successful completion of pilot study and report submission by vendor.
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- vi. The final decision regarding the bid will be made by the Committee constituted by the Department of Environment following the completion of the evaluation process.
- vii. Department of Environment, GNCTD may provide access of CORS. (a network of reference stations that provide high-precision geospatial data, which is crucial for accurate mapping, surveying, and various applications that require precise geographical positioning) Assistance to be taken by Survey of India for actual area covered by the Mist spray drone during the pilot study.

WHO CAN APPLY (MINIMUM ELIGIBILITY CRITERIA):


- i. Expert Institutes/ Research Institutes/ organizations working in the field of drone technology or relevant area relaxation in minimum experience criteria from 10 to 05 years.
- ii. Reputed Institution who has technical skills and sufficient manpower to carry out the work.
- iii. The Bidder Need to have a Reg. Office/Service Centre for after sales support at Delhi.

Bidder Responsibilities

1. Autonomous Flight Path: Pre-programmed routes to ensure comprehensive coverage for mist spray in most air polluted areas.
2. Drone should be equipped with 17-liter Liquid tank and capable to spray one acre area in 15 minutes approximately.
3. Real-Time Monitoring: Integration with environmental sensors to measure air quality, sending data to a central system.
4. Automated Scheduling: Regular spraying routines can be scheduled based on requirement
5. Firefighting Assistance: Drone should be designed to assist in firefighting projects.
6. The Drone should be mounted with an Air Quality Monitoring System that should measure Temperature, Humidity, Pressure, O₃, NO₂, CO, SO₂, VOC/TVOC, PM₁₀, PM_{2.5}, Altitude, Lat/Long on a real time basis.
7. The Drone services should be provided as per the written schedule given by Engineer in charge or any competent officer who has been duly assigned the charge of the activity of the particular set of drones every month.
8. The Real Time Air Quality Data (as mentioned in point no. 06) and image collected by the Drone should be transmitted online to the Department of Environment GNCTD, Air Lab DPCC and Green War Room and all data should be available with the Department of Environment GNCTD, Air Lab DPCC and Green War Room for evaluation of the same at any later date.
9. The offer asked for is for pilot study of 15 days for 3 drones. The period and number can be extended on satisfactory trial as per the decision of GNCTD with the consent of the vendor.
10. Bidder should provide following mandatory documents in technical bid, otherwise the bid shall be considered as non- responsive.
 - i. Copy of insurance coverage as per DRONE Rule, 2021 and its amendments. If any
 - ii. Copy of Type Certificate of Drone with sensors to be used issued by MoCA
 - iii. Copy of three Pilot licenses engaged in this pilot study
11. They should do the proper insurance coverage etc., and it will be responsible of the supplier of the services.

12. The Drone performance characteristics should be submitted by the supplier for proper evaluation of the same.
13. Good quality of at least 20 MP camera should also be part of the Drone apart from the Air Quality Monitoring System for proper recording and evidential value of the recording.
14. All communications should be duly encrypted and should be available exclusively to the Department of Environment (GNCTD).
15. The bidder must have previous experience of working with State Pollution Control Board or any other respective govt. department in India. Experience certificate in this regard to be attached with technical bid.
16. There will not be any exemption for Experience Criteria, all the bidders need to submit all the required documents and past work orders, successful completion certificate from the employer etc failing to this will liable to be rejected.
17. All data generated shall be processed using CORS established by Survey of India to bring it to national frame work. All data generated during the operation of the system shall be the exclusive propriety of GNCTD and it should not be shared with anybody or any entity, whatsoever, without written permission of the GNCTD. Any violation shall lead to imposition of fine and blacklisting of the selected Agency.
18. All disputes shall be settled through mutual negotiations and decision of the GNCTD shall be final in this regard.
19. The Appellate authority shall be Pr. Secretary (Environment & Forest) legal dispute if any will be subject to Delhi Jurisdiction.
20. Bidder is responsible for obtaining flying clearance from Gol security agencies for flying over the hot spot area in Delhi.
21. If the bidder is a Micro or Small Enterprise as per latest definitions under MSME rules, the bidder shall be exempted from the requirement of "Bidder Turnover" criteria "Experience Criteria" and submission of "EMD" subject to meeting of quality and technical specifications. If the bidder is OEM of the offered products, it would be exempted from the OEM Average Turnover" criteria also subject to meeting of quality and technical specifications. In case any bidder is seeking exemption from Turnover / Experience Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer.
22. If the bidder is a Startup, the bidder shall be exempted from the requirement of "Bidder Turnover" criteria and Experience Criteria" subject to their meeting of quality and technical specifications. If the bidder is OEM of the offered products, it would be exempted from the "OEM Average Turnover" criteria also subject to meeting of quality and technical specifications. In case any bidder is seeking exemption from Turnover / Experience Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer.
23. The minimum average annual financial turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be as indicated above in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the bidder is less than 3-year-old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria. Experience Criteria: In respect of the filter applied for experience criteria, the Bidder or its OEM {themselves or through reseller(s)} should have regularly, manufactured and supplied same or similar Category Products to any Central / State Govt Organization / PSU / Public Listed Company for number of Financial years as indicated above in the bid document before the bid opening date. Copies of relevant contracts to be submitted along with bid in support of having supplied



- some quantity during each of the Financial year. In case of bunch bids, the category of primary product having highest value should meet this criterion.
24. OEM Turn Over Criteria: The minimum average annual financial turnover of the OEM of the offered product during the last three years, ending on 31st March of the previous financial year, should be as indicated in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the OEM is less than 3 year old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria.
 25. Estimated Bid Value (INR 6, 48,000) indicated above is being declared solely for the purpose of guidance on EMD amount and for determining the Eligibility Criteria related to Turn Over, Past Performance and study / Past Experience etc.
 26. This has no relevance or bearing on the price to be quoted by the bidders and is also not going to have any impact on bid participation. Also this is not going to be used as a criteria in determining reasonableness of quoted prices which would be determined by the buyer based on its own assessment of reasonableness and based on competitive prices received in Bid / RA process.
 27. Past Performance: The Bidder or its OEM {themselves or through re-seller(s)} should have supplied same or similar Category Products for 40% of bid quantity, in at least one of the last three Financial years before the bid opening date to any Central / State Govt Organization / PSU / Public Listed Company. Copies of relevant contracts (proving supply of cumulative order quantity in any one financial year) to be submitted along with bid in support of quantity supplied in the relevant Financial year. In case of bunch bids, the category related to primary product having highest bid value should meet this criterion.
 28. The interest free Earnest Money Deposit (EMD) of 5% of the estimated value of the contract to be submitted by way of Fixed Deposit Receipt drawn on any nationalized/scheduled bank in favour of "DDO, Department of Environment" payable at Delhi. In case of bidder fails to secure the agreement, the EMD will be forfeited. However, if the bidder is successful in securing the contract, the EMD is adjusted against their security deposit or performance guarantee. The performance guarantee may be invoked by the Department in case of failure of bidder to adhere to the terms & conditions of the contract. In case of delays in executing of pilot study, the Department may seek extension of the Performance guarantee which will require to be acceded to by the Organisation. The Performance guarantee would be finally released 60 days after completion of all contractual obligations. However, institutions/ organisations under the administrative control of Government are exempted from furnishing the Performance guarantee.
 29. The bidder is required to provide a demonstration with fully paved surfaces and all necessary equipment prior to the commencement of work.
 30. The bidder must have a minimum average annual turnover of 20 lakhs over the past three years. Additionally, the Original Equipment Manufacturer (OEM) must have an average turnover of 50 lakhs for the last three years.
 31. The drone must have a payload capacity of 20 liters.
 32. The drone's flight altitude should be maintained between 60 and 120 meters
 33. Bidder must provide detailed "Technical Proposal" of the execution plan with optical sensor, air quality monitoring sensor and mist spray equipment (with liquid holding capacity) with their full technical specification. In case any bidder failed to provide "Technical Proposal" in technical bid, their bid shall be considered non-responsive.
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34. Following are the deliverables of the pilot study:

- Mist spray as per scheduled by Department of Environment, GNCTD.
- Live streaming of Image during data capture to the Department of Environment GNCTD, Air Lab DPCC and Green War Room
- Ortho rectified image with 5cm or better resolution
- Air Quality data as mentioned in point no. 06.



Director (Environment)

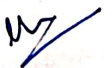
DEPARTMENT FO ENVIRONMENT GOVT. OF NCT OF DELHI

6th level, C-Wing, Delhi Secretariat, IP Estate, New Delhi- 110002

Annexure-A

Terms and Conditions

1. The duration of pilot study is of fifteen (15) Days after the signing of Contract with the Department.
2. A detailed written report to be provided after completion of the work to the Department.
3. The data sets/reports/ IEC materials/ documentaries or any other relevant document is to be owned by the Department of Environment, GNCTD.
4. Surprise Inspections will be conducted by the team of Department of Environment at the site.
5. Payment to be made from plan scheme head "Pollution Control and Hazard Management" of Department of Environment (GNCTD). Payment be made after successful completion of pilot study and report submission by firm/vendor.
6. The estimated tentative cost of the project is INR 6, 48,000.(The cost will be calculate as cost of service per sq. km)
7. The final decision regarding the bid will be made by the Committee constituted by the Department of Environment following the completion of the evaluation process.
8. Department of Environment, GNCTD may provide access of CORS. (a network of reference stations that provide high-precision geospatial data, which is crucial for accurate mapping, surveying, and various applications that require precise geographical positioning).
9. Expert Institutes/ Research Institutes/ organizations/firm working in the field of drone technology or relevant area, relaxation in minimum experience criteria from 10 to 05 years and who has technical skills and sufficient manpower to carry out the work may apply.
10. The Bidder Need to have a Reg. Office/Service Centre for after sales support at Delhi.
11. Drone should be equipped with 17-liter Liquid tank and capable to spray one acre area in 15 minutes approximately.
12. Autonomous Flight Path: Pre-programmed routes to ensure comprehensive coverage for mist spray in most air polluted areas
13. Real-Time Monitoring: Integration with environmental sensors to measure air quality, sending data to a central system.
14. Automated Scheduling: Regular spraying routines can be scheduled based on requirement
15. Firefighting Assistance: Drone should be designed to assist in firefighting projects.
16. The Drone should be mounted with an Air Quality Monitoring System that should measure Temperature, Humidity, Pressure, O₃, NO₂, CO, SO₂, VOC/TVOC, PM₁₀, PM_{2.5}, Altitude, Lat/Long on a real time basis.
17. The Real Time Air Quality Data (as mentioned in point no. 16) and image collected by the Drone should be transmitted online to the Department of Environment GNCTD, Air Lab DPCC and Green War Room and all data should be available with the Department of Environment GNCTD, Air Lab DPCC and Green War Room for evaluation of the same at any later date.
18. The offer asked for is for pilot study of 15 days for 3 drones. The period and number can be extended on satisfactory trial as per the decision of GNCTD with the consent of the firm/vendor.



19. Bidder should provide following mandatory documents in technical bid, otherwise the bid shall be considered as non- responsive.

- a. Copy of insurance coverage as per DRONE Rule, 2021 and its amendments. If any.
- b. Copy of Type Certificate of Drone with sensors to be used issued by MoCA
- c. Copy of three Pilot licenses engaged in this pilot study
- d. Scanned Copy of work experience relaxation in minimum experience criteria from 10 to 05 years.
- e. Scanned Copy of PAN Card IT Return last Three Years
- f. Scanned Copy of GST No with up to date filed return last Three Years
- g. Scanned Copy of Registration of firm and drone
- h. Scanned Copy of instrument of EMD
- i. Scanned Copy of three Pilot licenses engaged in this pilot study
- j. Undertaking indicating that firm is not blacklisted by any government or regulatory authority.
- k. Undertaking for quoted prices shall remain fixed and unchanged during the entire validity period of tender
- l. Undertaking for adhere to all the terms and conditions specified in the tender document
- m. Undertaking for Bank Solvency for Guarantee
- n. Scanned Copy MSME documents.

20. Bidder should do the proper insurance coverage etc., and it will be responsible of the supplier of the services.

21. The Drone performance characteristics should be submitted by the supplier for proper evaluation of the same.

22. Good quality of at least 20 MP camera should also be part of the Drone apart from the Air Quality Monitoring System for proper recording and evidential value of the recording.

23. All communications should be duly encrypted and should be available exclusively to the Department of Environment (GNCTD).

24. The bidder must have previous experience of working with State Pollution Control Board or any other respective govt. department in India. **Experience certificate** in this regard to be attached with technical bid.

25. There will not be any exemption for Experience Criteria, all the bidders need to submit all the required documents and past work orders, successful completion certificate from the employer etc failing to this will liable to be rejected.

26. All data generated shall be processed using CORS established by Survey of India to bring it to national frame work. All data generated during the operation of the system shall be the exclusive propriety of GNCTD and it should not be shared with anybody or any entity, whatsoever, without written permission of the GNCTD. Any violation shall lead to imposition of fine and blacklisting of the selected Agency. Assistance to be taken by Survey of India for actual area covered by the Mist spray drone during the pilot study

27. All disputes shall be settled through mutual negotiations and decision of the GNCTD shall be final in this regard.

28. The Appellate authority shall be Pr. Secretary (Environment & Forest) legal dispute if any will be subject to Delhi Jurisdiction.

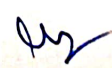
29. The rate shall be inclusive of all applicable taxes, cartages, loading & unloading at site and nothing will be paid extra in this regard.

30. The tender can be withdrawn at any time without assigning any reason.

31. Bid validity period is 120 days from date of opening of tender



32. The delivery date of the service/item will be announced approximately one week after the award of the tender.
33. Bidder is responsible for obtaining flying clearance from Gol security agencies for flying over the hot spot area in Delhi.
34. If the bidder is a Micro or Small Enterprise as per latest definitions under MSME rules, the bidder shall be exempted from the requirement of "Bidder Turnover" criteria and "Experience Criteria" subject to meeting of quality and technical specifications. If the bidder is OEM of the offered products, it would be exempted from the OEM Average Turnover" criteria also subject to meeting of quality and technical specifications. In case any bidder is seeking exemption from Turnover / Experience Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer.
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36. The minimum average annual financial turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be as indicated above in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the bidder is less than 3-year-old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria. Experience Criteria: In respect of the filter applied for experience criteria, the Bidder or its OEM {themselves or through reseller(s)} should have regularly, manufactured and supplied same or similar Category Products to any Central / State Govt Organization / PSU / Public Listed Company for number of Financial years as indicated above in the bid document before the bid opening date. Copies of relevant contracts to be submitted along with bid in support of having supplied some quantity during each of the Financial year. In case of bunch bids, the category of primary product having highest value should meet this criterion.
37. OEM Turn Over Criteria: The minimum average annual financial turnover of the OEM of the offered product during the last three years, ending on 31st March of the previous financial year, should be as indicated in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the OEM is less than 3 year old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria.
38. Estimated Bid Value (INR 6,48,000) indicated above is being declared solely for the purpose of guidance on EMD amount and for determining the Eligibility Criteria related to Turn Over, Past Performance and study / Past Experience etc.
39. This has no relevance or bearing on the price to be quoted by the bidders and is also not going to have any impact on bid participation. Also this is not going to be used as a criteria in determining reasonableness of quoted prices which would be determined by the buyer based on its own assessment of reasonableness and based on competitive prices received in Bid / RA process.



40. Past Performance: The Bidder or its OEM {themselves or through re-seller(s)} should have supplied same or similar Category Products for 40% of bid quantity, in at least one of the last three Financial years before the bid opening date to any Central / State Govt Organization / PSU / Public Listed Company. Copies of relevant contracts (proving supply of cumulative order quantity in any one financial year) to be submitted along with bid in support of quantity supplied in the relevant Financial year. In case of bunch bids, the category related to primary product having highest bid value should meet this criterion.
41. The interest free Earnest Money Deposit (EMD) of 5% of the estimated value of the contract to be submitted by way of Fixed Deposit Receipt drawn on any nationalized/scheduled bank in favour of "DDO, Department of Environment" payable at Delhi. In case of bidder fails to secure the agreement, the EMD will be forfeited. However, if the bidder is successful in securing the contract, the EMD is adjusted against their security deposit or performance guarantee. The performance guarantee may be invoked by the Department in case of failure of bidder to adhere to the terms & conditions of the contract. In case of delays in executing of pilot study, the Department may seek extension of the Performance guarantee which will require to be acceded to by the Organisation. The Performance guarantee would be finally released 60 days after completion of all contractual obligations. However, institutions/ organisations under the administrative control of Government are exempted from furnishing the Performance guarantee.
42. The bidder is required to provide a demonstration with fully paved surfaces and all necessary equipment prior to the commencement of work.
43. The bidder must have a **minimum average annual turnover of 20 lakhs** over the past three years. Additionally, the Original Equipment Manufacturer (OEM) must have an **average turnover of 50 lakhs for the last three years**.
44. The drone must have a payload capacity of 20 liters.
45. The drone's flight altitude should be maintained between 60 and 120 meters
46. Bidder must provide detailed "Technical Proposal" of the execution plan with optical sensor; air quality monitoring sensor and mist spray equipment (with liquid holding capacity) with their full technical specification. In case any bidder failed to provide "Technical Proposal" in technical bid, their bid shall be considered non-responsive.
47. The technical bids will be opened through online, first on **14.11.2024 at 06:00 PM** by the committee in the Department of Environment, Govt. of NCT of Delhi, 6th level, C-Wing, Delhi Secretariat, IP Estate, New Delhi- 110002. In case holiday is declared by the Govt. on the day of opening of the tender, the tender will be open on next working day. The financial bids will be opened after finalization of technical bids.
48. Following are the deliverables of the pilot study:
- Mist spray as per scheduled by Department of Environment, GNCTD.
 - Live streaming of Image during data capture to the Department of Environment GNCTD, Air Lab DPCC and Green War Room
 - Ortho rectified image with 5cm or better resolution
 - Air Quality data as mentioned in point no. 16

N. J. Singh
06-11-2024
Director (Environment)

List of documents required/to be uploaded

Annexure-B

S.No	Name of Documents
1	Scanned Copy of work experience a.relaxation in minimum experience criteria from 10 to 05 years.
2	Scanned Copy of PAN Card IT Return last Three Years
3	Scanned Copy of GST No with up to date filed return last Three Years
4	Scanned Copy of Registration of firm and drone
5	Scanned Copy of instrument of EMD
6	Scanned Copy of insurance coverage as per DRONE Rule, 2021 and its amendments. If any.
7	Scanned Copy of Type Certificate of Drone with sensors to be used issued by MoCA
8	Scanned Copy of three Pilot licenses engaged in this pilot study
9	Undertaking indicating that firm is not blacklisted by any government or regulatory authority.
10	Undertaking for quoted prices shall remain fixed and unchanged during the entire validity period of tender
11	Undertaking for adhere to all the terms and conditions specified in the tender document
12	Undertaking for Bank Solvency for Guarantee
13	Scanned Copy MSME documents

Alagap
06-11-2024
Director (Environment)