

Analyser systems — Guide to technical enquiry and bid evaluation

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National foreword

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The UK participation in its preparation was entrusted by Technical Committee GEL/65, Measurement and control, to Subcommittee GEL/65/4, Process instruments for gas and liquid analysis, which has the responsibility to:

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- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Summary of pages

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**Guide d'appel d'offre technique
et d'évaluation d'offre**

Analyser systems –

**Guide to technical enquiry
and bid evaluation**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ANALYSER SYSTEMS – GUIDE TO TECHNICAL ENQUIRY AND BID EVALUATION

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

IEC 61832, which is a technical report, has been prepared by subcommittee 65D: Analysing equipment, of IEC technical committee 65: Industrial-process measurement and control.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
65D/42/CDV	65D/53/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

This document which is purely informative is not to be regarded as an International Standard.

With the kind permission of the Engineering Equipment and Materials Users Association this report is based on, and includes extracts from, EEMUA Publication 138 SI.

INTRODUCTION

The second clause of this report lays out the headings and any relevant associated comments for the specification of a complete analyser system. Not all analyser systems are the same and individual requirements for total content will invariably differ. However, this report is laid out in such a way that individual clauses can be selected or omitted as required. The recommended approach is to include all clause headings and, where appropriate, make the statement "Not applicable".

The third clause of this report covers procedures for bid assessment and gives suggested points against which bids should be assessed.

The word analyser has been used throughout this report to refer to instruments variously known as on-line analysers, process stream analysers, quality analysers, quality measuring instruments, process quality monitors, continuous emissions monitors, water pollution monitors, and safety and health related process monitors.

Where reference is made to other standards, it should be noted that national authorities may have statutory requirements that are mandatory.

ANALYSER SYSTEMS – GUIDE TO TECHNICAL ENQUIRY AND BID EVALUATION

1 General

1.1 Scope and object

This report is intended as a guide to assist in the development of a specification for analysers and their associated support systems for enquiry purposes and the subsequent assessment of the bids presented by the prospective vendors.

This report is not intended as a design specification in its own right and design guidance has been deliberately omitted. It should be read in conjunction with other standards calling up examples of design detail, e.g. NAMUR, EEMUA, ISA. The technical report IEC/TR 61831, also being published, will supplement design guidance.

To simplify the specification and bid process it is desirable to have a recommended procedure for both the enquiry documentation and the response from the analyser vendor. This document is intended to provide such a framework.

1.2 Reference documents

IEC 60079-1, *Electrical apparatus for explosive gas atmospheres – Part 1: Construction and verification test of flameproof enclosures of electrical apparatus*

IEC/TR 60079-2, *Electrical apparatus for explosive gas atmospheres – Part 2: Electrical apparatus – Type of protection "p"*

IEC 60079-10, *Electrical apparatus for explosive gas atmospheres – Part 10: Classification of hazardous areas*

IEC 60079-11, *Electrical apparatus for explosive gas atmospheres – Part 11: Intrinsic safety "i"*

IEC 60079-13, *Electrical apparatus for explosive gas atmospheres – Part 13: Construction and use of rooms or buildings protected by pressurization*

IEC 60079-14, *Electrical apparatus for explosive gas atmospheres – Part 14: – Electrical installations in hazardous areas (other than mines)*

IEC 61082 (all parts), *Preparation of documents used in electrotechnology*

IEC 61285, *Industrial-process control – Safety of analyser houses*

IEC 61355, *Classification and designation of documents for plants, systems and equipment*

IEC 61506, *Industrial-process measurement and control – Documentation of application software*

IEC/TR 61831, *Guide to the design and installation of on-line analyser systems¹⁾*

ISO 9000 (all parts), *Quality management and quality assurance standards*

¹⁾ To be published.

VDI/VDE	Richtlinie 351.6, Blatt 1: Gasanalytische Betriebsmeßeinrichtungen und -anlagen (1978)
VDI/VDE	Richtlinie 351.6, Blatt 2: Flüssigkeitsanalytische Betriebsmeßeinrichtungen und -anlagen (1981)
NFPA 30	Flammable and Combustibles Liquids Code
EEMUA Publication No. 138 –	Design and Installation of On-Line Analyser Systems
EEMUA Publication No. 138 SI –	Design and Installation of On-Line Analyser Systems: A Guide to Technical Enquiry and Bid Evaluation
NAMUR	Arbeitsblatt 64: Statusmeldungen "Geräteausfall", "Wartungsbedarf", "Funktionskontrolle" von Feldgeräten (ENTWURF)

1.3 Preliminary details

1.3.1 Brief project description

The specification document should contain a brief description of the project associated with the analyser installations including type and nature of the process for which the analyser system is needed and details of its site location.

1.3.2 Scope of supply

The specification document should contain a brief description of the number of analysis streams and analysers required, the type, number and location of analyser houses (if required), tag numbers for analysers and any proposed houses, dimensional constraints, documentation requirements and the major obligations expected of the vendor, e.g. design work, manufacture, procurement, testing, transportation to site, commissioning and training.

1.3.3 Type of response expected from the vendor

The type of response required of the vendor should be clearly stated, e.g. answer all sections on an individual basis, highlight deviations from specification with technical reasons for non-compliance with the alternatives proposed.

It should be made clear that any drawings and data presented with the bid should be relevant to the bid.

The language in which the bid must be submitted and the currency associated with the bid should be specified.

1.3.4 Critical criteria on bid rejection

Consistency of response from all vendors is necessary to provide a fair basis for technical comparison of bids.

It should be made clear to the vendor that non-compliance with all of the requested response requirements (as stated in 1.3.3) may, at the sole discretion of the specifier, lead to automatic rejection of the bid.

A high degree of importance should be placed on technical competence in sample system design as this is the area whereby the analyser systems will most likely fail. Typical drawings or examples of past similar applications are acceptable for reference purposes only but will not be acceptable for bid cost justifications.

Design proposals should consider maintenance requirements and will be considered in evaluation of bids.

Appropriate vendor quality systems certification should be included here if it is required e.g. ISO 9000 series.

2 Specification details

2.1 Vendor/client interfaces

Interface points should be clearly defined in terms of site work tie-ins.

The specification should make clear the requirements for testing, calibration materials and temporary utilities, and who will be responsible for supplying these items.

Transfer of ownership should be clearly specified, e.g. on shipping, or receipt, or on completion of site installation, etc.

Where analysers/systems are to be stored for significant periods (i.e. months) prior to installation vendors should be requested to confirm what impact this will have upon the warranty period. An approved extension should be obtained if possible.

Any transportation responsibilities have to be specified.

2.2 Procurement responsibilities

It should be made clear whether the vendor is to procure the analysers or the client will procure and free issue them to the vendor for installation.

When analysers are procured by the vendor the right for the client to inspect the analysers prior to dispatch to the vendors' works should be reserved.

The vendor is to inform the client when analyser inspections are due at the analyser vendor's works.

The end user should reserve the right, subject to associated cost variation, to override vendor/contractor selection of type and make of analyser or other equipment prior to order. Otherwise any subsequent changes should be carried out under change orders.

If the end user has a recommended or preferred vendor list then this should be submitted with the enquiry.

When analysers are supplied "free issue" to the vendor this should not free the vendor from obligations to ensure the analysers meet performance requirements when installed within the overall system.

2.3 Standards and codes of practice

The specification should reference all codes and standards applicable to the work. A list of national and international documents is given in annex E for reference when drawing up the specification.

The vendor should acknowledge the standards and codes listed in the specification and be prepared to have such documents available in the event of dispute.

Codes of practice and standards specific to the client should be supplied by the client to the vendor with the specification.

Acceptable electrical approvals should be specified, e.g. PTB (a German testing organisation), BASEEFA (rated for explosion protected electrical service, or the HSE in Great Britain), UL (Underwriter's laboratories), Factory Mutua; US), CSA (Canadian Standards Association), etc.

2.4 Documentation requirements

2.4.1 General

At all stages throughout a project, good documentation is essential to understanding and in ensuring reliability of the design, functionality, and operation of the final product.

For guidance on document production, the vendor's attention should be drawn to IEC 61082, IEC 61355 and IEC 61506.

2.4.2 Quotation stage

The vendor is expected to respond to the specification in a controlled manner in order to be fairly assessed. The specification should identify all the drawings and documentation necessary to assess the bid.

2.4.3 Project stage

During the project the vendor should supply drawings for approval by the client.

Drawing approval should be built into the project milestones to ensure a "hold" at that point.

Completion and approval of sample system design, including specified field connections (see 2.1), relief valve calculations, house layout, electrical distribution, safety system logic and house/analyser system housekeeping logic and control should form a project milestone and, if required, be part of a stage payment scheme.

General construction drawings may not be a necessity for approval, as it is difficult to translate them accurately to an actual building, but if required, the client should specify the right to see these drawings (or insist on production of such drawings) prior to construction. These are important in gaining a guide for ensuring accessibility for maintenance and siting of drains and vents.

2.4.4 Project completion

The specification should require that the analysers and systems will not be accepted until completion and approval of all documentation requested in the specification. A useful mechanism is to include this requirement as a formal stage payment item.

Project completion documentation delivered by the vendor should include all design drawings, calculations, material schedules, spare parts lists, warranties, equipment operation/maintenance manuals, etc.

2.5 Warranty

Requested warranties should be specified.

Supplied warranties should be requested for inclusion in the bid.

2.6 General specification

2.6.1 Data sheets

Data sheets are an excellent way to supplement specification requirements to a vendor.

In the simple case of buying analysers only direct from the analyser vendor, it can be sufficient to use data sheets as a complete specification of requirements. Such data sheets should be comprehensive, including not only analyser type and performance requirements, but application, certification, utility and sampling requirements.

Suggested example of data sheets can be found in annex A.

2.6.2 Environment

It is important to define the environmental conditions in which the analysers and systems will be installed.

Information should include all relevant environmental conditions, for instance

- temperature extremes;
- humidity extremes;
- atmospheric pressure variations;
- indication of salinity (e.g. coastal location, etc.);
- indication of background contaminants (e.g. low levels of H₂S etc.);
- indication of presence and type of any corrosive compounds;
- special climatic requirements (e.g. snow loading, erosion, sand storms, etc.).

For housing design and effects on ventilation requirements, information on wind speeds and directions should be given. Typically wind information should include expected gusting ratios, minimum average speeds exceeded 90 % of time and maximum average speeds exceeded 5 % of time.

2.6.3 Hazardous area classification

The area classification relating to where the analysers and systems are to be installed should be clearly defined. Attention must be paid to any possible influence the analyser installation will impose on this classification.

The user should specify area classification for both inside and outside analyser housings. The specification must be clear on possible area classification difference within and outside an analyser housing.

2.6.4 Equipment electrical certification

When installing houses, the area classification within the house will be dependent on ventilation design and samples/services associated with the analyser/s.