



GS 140-2

CHEMICAL DOSING PACKAGE

August 1993

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BP GROUP RECOMMENDED PRACTICES AND SPECIFICATIONS FOR ENGINEERING											
Doc. No. GS 140-2		Issue Date Latest Amendment Date	August 1993								
Document Title CHEMICAL DOSING PACKAGE											
APPLICABILITY - Does not preclude adaptation for other applications Regional Applicability: United Kingdom											
SCOPE AND PURPOSE This document specifies the general requirements for the design and testing of Chemical Dosing Packages. Its purpose is for the specification of fit-for-purpose Chemical Dosing Packages at minimum cost.											
AMENDMENTS <table border="0"> <thead> <tr> <th>Amd</th> <th>Date</th> <th>Page(s)</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td colspan="4"> </td> </tr> </tbody> </table>				Amd	Date	Page(s)	Description				
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CUSTODIAN (See Quarterly Status List for Contact) Mechanical Systems											
Issued by:- Engineering Practices Group, BP International Limited, Research & Engineering Centre Chertsey Road, Sunbury-on-Thames, Middlesex, TW16 7LN, UNITED KINGDOM Tel: +44 1932 76 4067 Fax: +44 1932 76 4077 Telex: 296041											

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FOREWORD

Introduction to BP Group Recommended Practices and Specifications for Engineering

The Introductory Volume contains a series of documents that provide an introduction to the BP Group Recommended Practices and Specifications for Engineering (RPSEs). In particular, the 'General Foreword' sets out the philosophy of the RPSEs. Other documents in the Introductory Volume provide general guidance on using the RPSEs and background information to Engineering Standards in BP. There are also recommendations for specific definitions and requirements.

Value of this Guidance for Specification

This Guidance for Specification was developed under the BP Exploration XEU Simple Specifications Initiative. This initiative is intended to simplify the purchasing requirements through a minimum conditions of satisfaction approach in regions where there is a mature supplier resource.

Application

This Guidance for Specification is intended to guide the purchaser in the use or creation of a fit-for-purpose specification for enquiry or purchasing activity.

Text in italics is Commentary. Commentary provides background information which supports the requirements of the Specification, and may discuss alternative options. It also gives guidance on the implementation of any 'Specification' or 'Approval' actions; specific actions are indicated by an asterisk (*) preceding a paragraph number.

This document may refer to certain local, national or international regulations but the responsibility to ensure compliance with legislation and any other statutory requirements lies with the user. The user should adapt or supplement this document to ensure compliance for the specific application.

Specification Ready for Application

A Specification (BP Spec 140-2) is available which may be suitable for enquiry or purchasing without modification. It is derived from this BP Group Guidance for Specification by retaining the technical body unaltered but omitting all commentary, omitting the data page and inserting a modified Foreword.



Feedback and Further Information

Users are invited to feed back any comments and to detail experiences in the application of BP RPSE's, to assist in the process of their continuous improvement.

For feedback and further information, please contact Standards Group, BP International or the Custodian. See Quarterly Status List for contacts.



1. INTRODUCTION

1.1 Scope

This document specifies the requirements for chemical dosing packages comprising storage tank(s), dosing pumps and associated pipework, for use on hydrocarbon production, processing and exporting facilities.

It is intended for use in conjunction with a functional specification and associated data sheets and drawings which give specific project requirements.

*

The requirements detailed within this document are applicable irrespective of final location. Details which are site specific e.g. tank capacity, environmental data will be provided by the purchaser.

1.2 Quality Assurance

Verification of the vendor's quality system is normally part of the pre-qualification procedure, and is therefore not specified in the core text of this specification. If this is not the case, clauses should be inserted to require the vendor to operate and be prepared to demonstrate the quality system to the purchaser. The quality system should ensure that the technical and QA requirements specified in the enquiry and purchase documents are applied to all materials, equipment and services provided by sub-contractors and to any free issue materials.

Further suggestions may be found in the BP Group RPSEs Introductory Volume

2. GENERAL REQUIREMENTS

2.1 For each chemical the main equipment of the facility shall normally consist of a tank and dosing pump(s). However, there may be instances where tote tanks will be used in lieu of dedicated tanks within the package: any provision to be made for this event will be identified within the data sheets but in all cases pump(s) will be required.

2.2 The overall design should recognise that where the package contains dosing facilities for more than one chemical and where the chemicals require dilution there is a possibility of contamination of one chemical by another and that spillage/leakage of one chemical could affect the facilities of another. The design therefore, should minimise the potential for contamination etc. and recognise that there may be a high level of operator involvement in the operation of the dosing facilities.

2.3 In case of conflict between this document and inquiry or requisition, the order of precedence shall be:-

- (a) Local Authority or Statutory Regulations
- (b) The Equipment Requisition and Data Sheets



- (c) This Document
- (d) Other Industry and National Standards and Specifications.

- 2.4 The vendor shall co-ordinate the design and ensure the satisfactory functioning of the complete package, i.e. tanks, dosing pumps and, if applicable, controls and other ancillaries. In cases where the vendor supplies equipment that he has not manufactured, the vendor shall ensure that the designs of these are compatible with each other and with his own equipment in all respects. The satisfactory functioning of the complete package shall form part of the vendor's guarantee.
- * 2.5 The location of the package and the applicable hazardous area classification will be specified by the Purchaser. The package shall comply in all respects with the requirements of the specified classification.
- 2.6 For floating installation, equipment shall be capable of operating at the sustained maximum inclination as stated in the data sheets.
- 2.7 Unless identified in the data sheets all equipment shall be mounted on a single skid frame. The skid frame shall be provided with lifting lugs to enable the package to be moved by the use of an overhead crane.
- 2.8 When indicated in the data sheets the vendor shall include, within his scope of supply, all necessary spreader beams, slings, shackles and lifting gear to enable the package to be handled at the job site.
- 2.9 The package Vendor should recognise that the chemical dosing package will form part of a hydrocarbon processing plant and as such will be required to operate continuously with a minimum of down time for maintenance. This requirement should be included when determining package layout and when selecting items of equipment.

3. TANKS

- 3.1 All tanks shall be designed to a recognised international standard e.g. [BS 799](#) Part 5, [BS 2594](#) and [BS 4994](#). Vendors shall state the standard used within their bid.
- 3.2 The nett capacity of each tank shall normally be identified in the data sheets. In the absence of this information the nett capacity shall be sufficient for 30 hours operation at the maximum dosing rate.
- 3.3 The design and location of the tanks shall be such as to satisfy the dosing pumps NPSH requirements under all operating conditions.



- 3.4 All tanks shall be provided with a blanked valved drain connection. The drain shall terminate at an easily accessible location.
- 3.5 The filling connection on each tank shall be flanged. Any requirement for a filling funnel for filling from drums is identified in the data sheets.

4. CHEMICAL DILUTION

- * 4.1 Any requirement for chemical dilution is identified by the Purchaser. When required it will be based on the use of water from the Service Water System. A single supply will be provided by the purchaser and the vendor shall include within his scope of supply the distribution system within the package. The design of the dilution system must ensure that under no circumstances can the service water system become contaminated by a chemical used for dosing and that one chemical cannot become contaminated by another.
- * 4.2 Any requirement for mechanical mixers or agitators is identified by the Purchaser.

5. DOSING PUMPS

- 5.1 All dosing pumps shall comply with [API 675](#).
- 5.2 The dosing pumps may be electric motor or air motor driven either individually or via a common shaft. Any preference for the type of motor or drive configuration is given in the data sheets.
- 5.3 Any requirements for stand-by units and details of the pumps duties are given in the data sheets.
- 5.4 When installed electric motors shall be to BP Group [GS 112-3](#) Low Voltage Induction Motors.

6. UTILITY SUPPLIES

- 6.1 In all cases a single supply of each utility will be made available by the Purchaser. The Vendor within his scope of work shall be responsible for the distribution of that utility within his package.
- 6.2 Normal operating and design conditions for each utility are given in the data sheets.



7. CONTROL AND INSTRUMENTATION

7.1 General

- 7.1.1 The package shall be provided with its own unit control equipment logic system and alarm annunciation necessary for the protection and operation of the package, as an integral part of the package.
- 7.1.2 Facilities shall be provided to repeat information and alarms to a remote control room, signals shall be wired to output terminals in the unit control panel for connection by others.
- 7.1.3 The unit control panel and equipment shall be installed in a front access cubicle. The control panel shall have an IP 55 enclosure and be suitably protected against a saline atmosphere.
- 7.1.4 The unit control panel shall be mounted either on or off the equipment skid as indicated on the data sheets. If the panel is mounted on the skid it shall be protected from vibration by means of suitable anti vibration mountings. Connections between the panel and the remainder of the package shall be by the vendor. If the panel is mounted remotely from the skid all cables etc. shall be routed to a junction box located on the skid and the panel shall have a matching junction box: connections between the junction boxes will be undertaken by the purchaser.
- 7.1.5 All dosing pumps stop/start buttons shall be located on the unit control panel.

7.2 Indication and Alarms

As part of his bid the vendor shall identify all recommended local indicators, control panel indications, control panel alarms and automatic shutdowns that he considers necessary to monitor the performance of the package and to provide adequate protection of the equipment.

Instruments shall comply with [IEC 51](#).

All faults which ultimately will lead to a shutdown shall have a pre-alarm which shall be set to give reasonable warning of an imminent shutdown.

In the event of an equipment trip, a 'first out' facility shall be provided to identify the original fault.

Repeat 'volt free' contacts shall be provided for remote indication of each alarm and shutdown condition, wired to panel outgoing terminals. Facilities shall be provided to permit remote acceptance of alarms.



8. PAINTING

The painting system shall either be in accordance with BP Group GS 106-5 or the manufacturers standard providing it gives the same or better degree of protection. The Vendor shall include within his bid details of the painting system he proposes to use.

9. TESTING AND INSPECTION

As part of his proposal the Vendor shall include details of the inspection and testing he proposes to undertake in order to ensure that the equipment meets the requirements. These details will be reviewed as part of the bid review Process and may be extended by the Purchaser.

10. DOCUMENTATION

- 10.1 All documentation shall show the relevant purchase order and item number.
- 10.2 For all packages the following documents shall be submitted and the number of copies required for approval and for final issues shall be as indicated on the purchaser order:-
- (a) General arrangement drawings showing main dimensions, weights, arrangements of components, package terminal points and the minimum space for the erection and future maintenance of the package.
 - (b) Foundation plan showing location and details of foundation bolts and static dynamic foundation loadings.
 - (c) Electrical schematic, wiring and interconnection diagrams.
 - (d) Comprehensive data sheets for all major items, including completed data sheets included in the enquiry/purchase order.
 - (e) Installation, operation and maintenance instructions for all equipment included in the purchase order.
 - (f) Recommended list of commissioning spares and spares for two year operation. Recommended list of spares for five year operation.
 - (g) Test reports and test certificates.
 - (h) Utility usages.



(i) Schematic/P&ID

10.3

As part of his bid the vendor shall include the information requested in (a), (b), (d), (f), (h) and (i) above.



DEFINITIONS AND ABBREVIATIONS

Definitions

Standardised definitions may be found in the BP Group RPSEs Introductory Volume.

Abbreviations

NPSH Net Positive Suction Head



LIST OF REFERENCED DOCUMENTS

A reference invokes the latest published issue or amendment unless stated otherwise.

Referenced standards may be replaced by equivalent standards that are internationally or otherwise recognised provided that it can be shown to the satisfaction of the purchaser's professional engineer that they meet or exceed the requirements of the referenced standards.

BS 799 Part 5	Specification for Oil Storage Tanks
BS 2594	Carbon Steel Welded Horizontal Cylindrical Storage Tanks
BS 4994	Design and Construction of Vessels and Tanks in Re-enforced Plastics
API 675	Positive Displacement Pumps - Controlled Volume
IEC 51	Direct Acting Indicating Analogue Electrical Measuring Instruments and their Accessories
BP Group GS 106-5	Painting of Offshore Packages
BP Group GS 112-3	Low voltage Induction Motors (replaces BP Std 221)

