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Guidance on Practice for Drum Decanting in Lubricant Blend Plants

GP 82-21

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GP 82-21

Revision History		
Rev	Date	Comments
1	23/09/2004	First draft for comment
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Table of Contents

	Page
Foreword	2
Introduction	4
1. Scope	5
2. Terms and definitions	5
3. Symbols and abbreviations	6
4. Handling of full drums	6
4.1. General	6
4.2. Equipment	6
5. Heating of full drums	6
5.1. General	6
5.2. Heating cabinets	7
5.3. Electric induction heaters	7
6. Drum decanting	8
6.1. Dump tanks	8
6.2. Additive addition directly into the blend vessel	9
6.3. Automated Drum Decanting Units	11
A.1. Outline specification	13
A 1.1 Function	13
A 1.2. Electrical requirements	14
A 1.3. Inspection and testing	14
A 1.4. HSSE features	15
B.1. General operation	16
B.1.1. Decanting	16
B.1.2. Rinsing	16



Introduction

Many additives and other raw materials are purchased in drummed form for blending into finished lubricants in our plants. Handling of these drums and the decanting of material from them (either fully or partially) introduces a number of HSSE risks, and also raises issues of accuracy of measurement.

Traditionally, drums have been decanted manually into floor mounted or mobile dump tanks for subsequent transfer into blenders. Equipment is available to reduce the amount of manual handling, particularly of full drums, and give much better measurement accuracy (with consequent benefits to product quality and material wastage) than can be achieved using such processes.

This GP gives guidance on the use of traditional manual techniques to minimise HSSE risk, and includes details of typical automated equipment which should be the preferred method for decanting drums.

Guidance is also given on the heating of drums where necessary before decanting.



1. Scope

This GP provides guidance for the handling and decanting of drummed additives and other raw materials in lubricant blend plants. It includes guidance on the selection, design, and installation of equipment to reduce the extent of manual handling required.

2. Terms and definitions

For the purposes of this GP the following terms and definitions apply:

Drum

A standard large steel drum, typically of 208 l (55 gal) capacity, with a closed head fitted with 1 large and 1 small bung. The term may also apply to plastic drums of similar capacity.

Dump tank

A small tank of typically 500 l - 5000 l (130 - 1300 gal) capacity recessed into the floor beneath a blend vessel for the addition of additives. The tank may be heated by temperature controlled steam or hot oil coils which can be internal or external. Connected into the blender pipework so that its contents are drawn into the recirculation loop of the blend vessel with its own reticulation system. May also refer to a larger unit mounted on a mobile frame.

Drum decanting unit

An automated device for the drawing of product from drums, normally by means of a suction lance.

Drum Rotator

A device for the rotating of full, part full or empty drums to allow positioning of drums for emptying or flushing.

Heating cabinet

A fixed cabinet, typically of steel construction, containing heating elements (generally steam or hot oil) capable of raising the temperature of a number of full drums to facilitate decanting.

Induction heater

A portable device that fits closely around a steel drum and induces heat in the drum body by electric induction.

Lance

That part of the Drum Decanting Unit that is automatically lowered into the drum through the bung hole to draw out product by suction. The lance may also be connected to a manually controlled and operated movement system, and may also be fitted with heating coils.

Load cell

An electronic unit which, when connected into a suitable circuit and display, provides an indication of weight.

Recirculation system

The arrangement of pipes, valves and pump around a blend vessel that allows material to be pumped from the bottom of the vessel to the top as an aid to mixing. This will normally have the ability to connect to a drum flushing system.



3. Symbols and abbreviations

For the purpose of this GP the following symbols and abbreviations apply:

ANSI	American National Standard Institute
DDU	Drum decanting unit
MSDS	Material Safety Data Sheet
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
PPE	Personal Protective Equipment

4. Handling of full drums

4.1. General

- a. Drums shall always be moved in a fully sealed condition to prevent spillage. Care shall especially be taken to tighten bungs before moving drums if they have been loosened to prevent excessive pressure build-up during heating.

4.2. Equipment

- a. Full additive drums shall always be handled using appropriate mechanical equipment. Manual handling, by rolling or spinning on the rim, should not be used except to manoeuvre drums for picking up, or after positioning, by such mechanical equipment.
- b. Suitable mechanical equipment includes purpose made clamps or tines fitted to forklift trucks, walk behind powered lifters and purpose made hand trolleys. Moving of drums on pallets by fork lift truck or hand operated pallet truck shall also be acceptable, provided that care is taken to ensure that the drums cannot fall from the pallet during transport.
- c. Temporary, modified, or “in-house” manufactured equipment shall not be used for handling of full drums.
- d. Roller conveyor tracks should be used where possible to transfer full drums to minimise traffic in working areas.

5. Heating of full drums

5.1. General

- a. Many drummed additives will require heating to reduce the product viscosity sufficiently to allow decanting. Detailed guidance on suitable equipment, its design, installation and control, is given in ETP GP 82-22. These notes cover the handling of drummed additives during the heating process.
- b. Appropriate PPE (e.g. gloves, eye protection) shall be used at all times when handling heated drums.
- c. Bungs should be loosened to allow the drums to vent during the heating process due to thermal expansion or vapour emission but tightened before transporting to prevent spillage.
- d. If the product MSDS states that a product can produce gaseous emissions on heating, the need for special PPE shall be assessed and the maximum allowable temperature clearly marked on the drum.

