BUSINESS GUIDELINE 6 GB

MODIFICATIONS TO STANDARD PUMP DESIGN

THE EFFECTS ON DELIVERY, MANUFACTURING AND COSTS

CONTENTS

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1. Introduction

1.1 The term „Standard Pump Design“ refers in this connection to the manufacturers „Normal Production Pattern“ which in most cases complies with a recognized International or European standard.

1.2 It is all too common for costomers and end-users to request and endeavour to impose modifications to the standard pump design in accordance with their own specifications. This means additional costs which are not covered by the price of the standard pump design.

1.3 The defining, assessing and application of costs arising from such modifications is extremely complex.
There can be no general percentage increase and cost factors can vary enormously, even up to 100% or more depending on the price bracket of the basic normal production pattern, the numbers and degree of modifications from the normal production pattern.

1.4 When determining the cost of the modifications, it is insufficient to consider only the direct costs of the additional direct labour and materials. It is most important to define and assess administrative costs, stock and stocking costs and cost resulting from delays caused by modifications. All these costs can be of great significance.

2. Definitions

2.1 „Normal Production Pattern“ (Standard Pump Design) refers to the specification of the individual manufacturer which:

- has been defined and published by him.
- can be in accordance with a National standard (e.g. BSI, DIN), a European standard (EN), an International standard (ISO) or an agreed user´s specification (e.g. API, ANSI).

In most of the standards are layed down:

- Pump dimensions
- Technical requirements
- Safety requirements

In the safety standards are specified the fundamental safety requirements which have to be accomplished according to the E.C. directive „Machinery“ 98/37/EG

The following European or International standards are essentially applicable to pumps and pump units for liquids:

ISO 9905 Technical specifications for centrifugal pumps, Class I.

ISO 9908 Technical specifications for centrifugal pumps, Class III.

EN 292-1 Safety of machinery, basic terminology, methodology.

EN 292-2 Safety of machinery, technical principles and specifications.

EN 733 End suction centrifugal pumps with bearing bracket (rating 10 bar)

EN 734 Side channel pumps, PN 40.

EN 735	Centrifugal pumps and units, overall dimensions and tolerances.
EN 809	Pumps and pump units for liquids. General safety requirements.
EN 1151	Circulation pumps having an electrical effect not exceeding 200 watts, for domestic hot water installations.
EN 22858	End suction centrifugal pumps (rating 16 bar). Designation, nominal duty point and dimensions.
EN 23661	End suction centrifugal pumps, baseplate and installation dimensions.
EN 25199	Technical specifications for centrifugal pumps, Class II.
EN 60335-2-41	Safety of household and similar electrical appliances. Part 2: Particular requirements for electric pumps for liquids having a temperature not exceeding 35°C.
EN 60335-2-51	Safety of household and similar electrical appliances. Part 1: Particular requirements for stationary circulation pumps for heating and service water installations.
EN 1829	High pressure cleaners. High pressure water jet machines more than 250 bar. Safety requirements.

For information, the following standards are currently being drafted or under publication*:

pr EN 13386*	Submersible motor pumps for liquids having a temperature not exceeding 60°C. Safety requirements.
EN 12157*	Liquid pumps for machine tool cooling.
ISO 15783*	Centrifugal pumps – technical requirements. Magnetic drive and canned motor pumps.
EN ISO 14847*	Rotary positive displacement pumps and systems. Technical requirements.

Further information on Standards or European Standards Bodies may be obtained from your National Pump Manufacturers Association.

2.2 In conjunction with a Normal Production Pattern, it is necessary to define a sales programme and an example of this could be:

a) Normal Production Pattern series, manufactured and assembled from stock components. No modifications accepted.

b) Standard Production Pattern with standard alternatives, utilising components or sub-assemblies available from stock. No other modifications accepted.

c) Special Production Pattern, with or without standard alternatives, incorporating a component or sub-assembly of existing design but not available from stock. (Example of non-stock sub-assembly-mechanical seal). No re-design work accepted.

d) Single Production Pattern, with or without standard alternatives incorporating modifications involving re-design work. Quotations for such modifications will require individual considerations.

3. Modifications

3.1 Modifications covered by this guideline are any deviations from the specification notified by the manufacturer under the definitions above but excluding the following:

a) special provisions for painting, packing and transport. (see guideline 9 GB for reference).

b) special documentation. (see guideline 1 GB for reference).

c) special tests.

d) requirements of quality control.

3.2 In addition, the question of modifications after receipt of order is covered in a separate guideline (11 GB) but the check list attached to this guideline will found most helpful.

4. Check list covering modifications and their influence on cost.

4.1 The check list shows a number of typical modifications and the cost areas affected by their imposition.

4.2 The check list´s contents are not all embracing and manufacturers will need to build up their own enlarged check list.

4.3 The significance and importance of the various items will also vary with the type of pump under consideration.

4.4 The cost effects are not quantified as this must be done by each manufacturer individually after cost investigations within his own organisation.

4.5 The check list shows some of the areas where significant additional costs can arise and the manufacturer should, by utilising this list, plus his own additions, be able to define and then assess the cost of the modifications requested.

4.6 Having defined and assessed costs resulting from modifications, it is, of course, a question of the sales policy of each individual manufacturer as to whether these are passed on to the user or how they are otherwise dealt with.

4.7 A useful side benefit of the check list is its use as a simple aid for the manufacturer to demonstrate to the customer the cost disadvantage arising from ordering equipment not in accordance with the Normal Production Pattern.

5. Effects on after sales service.

5.1 In general, spare parts for the Normal Production Pattern are available ex-stock.

5.2 Where modifications have been accepted, the user must make provision for spares covering at least one running period.