

TABLE OF CONTENTS

BASIC ANALYSIS

About This Report.....	1
Executive Summary.....	3
About Methionine.....	6
Introduction.....	6
Commercial Forms & Applications.....	7
L-Methionine Production Pathways.....	8
Process Overview.....	9
Product(s) Generated.....	9
Process Inputs.....	9
Technology Maturity Assessment.....	10
Highlights & Remarks.....	12
Industrial Site.....	13
Introduction.....	13
Process Unit Description.....	15
Site Infrastructure Description.....	19
Key Process Input and Output Figures.....	23
Labor Requirements.....	23
Capital Investment.....	24
Fixed Capital.....	25
Working Capital.....	27
Additional Capital Requirements.....	28
Total Capital Investment.....	29
Operating Costs.....	30
Operating Variable Costs.....	32

Operating Fixed Costs.....	33
Depreciation.....	33
Total Operating Cost.....	33
Product Value Analysis.....	35
Corporate Overhead.....	36
Return on Capital Employed (ROCE).....	36
Process Economics Summary.....	37
Product Value Composition.....	37
Economic Datasheet.....	37
Economic Remarks.....	39
References.....	40
Analysis Methodology.....	42
APPENDIX A - ABOUT INTRATEC.....	A-1
APPENDIX B - TERMS & CONDITIONS.....	B-1
APPENDIX C - REPORT SHARING TERMS.....	C-1
APPENDIX D - EXTENDED ANALYSIS.....	D-1
Utilities Consumption Breakdown.....	D-2
Utilities Consumption Figures.....	D-2
Impact of Utilities on Total Operating Cost.....	D-3
Economic Analysis for Different Capacities.....	D-4
Introduction.....	D-4
Capital Investment Comparison.....	D-4
Operating Cost & Product Value Comparison.....	D-5
Project Implementation & Construction Schedule.....	D-7
Materials & Utilities Pricing Data.....	D-9
Analysis Pricing Basis.....	D-9
Historical Prices.....	D-9

LIST OF TABLES

Economic Analysis Summary.....	5
Process Technology Maturity Scale.....	11
Raw Materials Consumption.....	23
Products Generation.....	23
Labor Requirements.....	23
Plant Cost Estimate Accuracy Range (USD Million).....	26
Owner's Cost Summary.....	26
Fixed Capital Summary.....	27
Working Capital Breakdown.....	27
Additional Capital Requirements Breakdown.....	28
Operating Variable Costs Breakdown.....	32
Operating Fixed Costs Breakdown.....	33
Operating Cost Summary.....	33
Corporate Overhead Costs Breakdown.....	36
Bio-Methionine Production from Glucose - Economic Datasheet.....	38
Process Contingency Factor Estimation Methodology.....	47
Project Contingency Factor Estimation Methodology.....	48
Fixed Capital Estimate Accuracy Range.....	52
Maintenance Cost Estimation Methodology.....	55
Marketing & Advertising Cost Estimation Methodology.....	57
Research & Development Cost Estimation Methodology.....	57
Expected ROCE Factor Estimation Methodology.....	58
Net Utility Consumption Rates.....	D-2
Utilities Share in Total Operating Cost.....	D-3
Capital Investment Analysis for Different Capacities.....	D-5

* Available in 'Extended' version only

Operating Cost & Product Value Analysis for Different Capacities..... D-6

Project Phases Schedule..... D-7

Materials & Utilities Prices (United States)..... D-9

* Available in 'Extended' version only

LIST OF FIGURES

Process Schematic Diagram.....	4
L-Methionine Production Pathways Diagram.....	8
Industrial Site Configuration.....	14
Methionine Production Unit - Block Flow Diagram.....	16
Plant Cost Summary (USD Million).....	25
Capital Investment Summary (USD Million).....	29
Operating Cost Breakdown (USD/mt).....	34
Product Value Composition (USD/mt).....	37
Production Cost Report Development Methodology.....	43
Cost Contribution of Each Utility.....	D-3
Capital Investment (USD Million) Versus Plant Capacity.....	D-4
Operating Cost Versus Plant Capacity.....	D-5
Implementation & Construction Schedule.....	D-8

* Available in 'Extended' version only