
Transport Oxygen Concentrators: Market Shares, Strategies, and Forecasts, Worldwide, 2017 to 2023

Transport Oxygen Concentrator target markets are for medical homecare, sleep CPAP/BiPAP, exercise endurance enhancement. Funding sources are immediately from CMS Medicare, governments, private pay, and the insurance companies. Distribution is from on-line, Amazon, and local distributors.

Table of Contents

Transport Oxygen Concentrator Executive Summary	21
Transport Oxygen Concentrator	21
Home Oxygen Market, Continues to Use Transport Concentrators	25
Transport Oxygen Concentrator Home Medical Market Driving Forces	26
Change in Home Oxygen Market	28
Pressure To Reduce Costs As Part Of the Deficit Reduction Act (DRA)	29
Homecare Services Model Replaces Distribution Model	30
Transport Oxygen Concentrators Market Driving Forces	31
Transport Oxygen Concentrator Market Shares	32
Transport Oxygen Concentrator Market Forecasts	34
1. Transport Oxygen Concentrator Market Description and Market Dynamics	36
1.1 Oxygen Concentrator	36
1.1 Oxygen Concentrator Equipment	37
1.2 Transport Oxygen Concentrators Address Air Quality Issues	37
1.2.1 Chinese Oxygen Equipment Market Driving Forces	37

1.2.2	Places People Live with the Worst Air Quality	42
1.2.3	Raging Wildfires Across Northern California Generated Thick Plumes Of Smoke	45
1.3	CMS Oxygen and Oxygen-Related Equipment	46
1.3.1	CMS Oxygen Reimbursement Definitions	47
1.3.2	CMS Qualifying Arterial Blood Gas Studies	48
1.3.3	CMS Home Sleep Oximetry Studies	49
1.3.4	Home Oxygen Concentrator Equipment Medicare Reimbursement	52
1.3.5	Home Medical Equipment Market	53
1.3.6	Home Health Care	53
1.3.7	Third-party reimbursement	54
1.4	Homecare Market Growth Factors	55
1.4.2	Growth In Population Over Age 65	57
1.5	Oxygen Concentrator Uses	58
1.5.1	Transport Oxygen Concentrator Functions	58
1.5.2	Separation Of Oxygen From Air	59
1.5.3	Technical Trade-Offs Necessary To Design An Oxygen Concentrator	60
1.6	The Goal of Oxygen Therapy	60
1.6.1	How To Change The Amount of Oxygen In The Air We Breathe	61
1.6.2	Oxygen Concentrator Components	62
1.6.3	Lifestyle in the Home Health Care Business	64
1.6.4	Continuous Flow Transport Oxygen Concentrator	64
1.7	Types of Oxygen Systems	65
1.7.1	Treatment Trends.	66
1.7.2	Technological Trends.	67
1.7.3	Health Care Cost Containment Trends	67
1.7.4	Society’s Mainstreaming of People with Disabilities	67
1.8	Distribution Channels	68

1.8.1	Oxygen Therapy Systems	68
1.9	Oxygen Concentrator Applicable Population	68
1.10	Marketing Globally	69
2	Transport Oxygen Concentrator Market Shares and Forecasts	73
2.1	Transport Oxygen Concentrator	73
2.1.1	Home Oxygen Market, Continues to Use Transport Concentrators	77
2.1.2	Transport Oxygen Concentrator Home Medical Market Driving Forces	78
2.1.3	Change in Home Oxygen Market	80
2.1.4	Pressure To Reduce Costs As Part Of the Deficit Reduction Act (DRA)	81
2.1.5	Homecare Services Model Replaces Distribution Model	82
2.1.8	Transport Oxygen Concentrators Market Driving Forces	83
2.2	Transport Oxygen Concentrator Market Shares	84
2.2.1	Transport Oxygen Concentrator Market Shares, Units and Dollars	87
2.2.2	Transport Oxygen Concentrators Coded by Medicare	88
2.2.3	Philips Transport Oxygen Concentrators: Philips Respironics EverFlo Q	88
2.2.4	Chart / AirSep	89
2.2.5	Chart Industries / SeQual	89
2.2.6	Chart Industries / CAIRE	89
2.3	Transport Oxygen Concentrator Market Forecasts	90
2.3.1	Transport Medical Oxygen Concentrator Segment Market Forecasts: Medical, Sleeping, Exercise	96
2.3.2	Transport Oxygen Concentrator Evolving Market Position	96
2.3.3	Oxygen Concentrator Installed Base Analysis	100
2.3.4	Homecare Is Poised To Grow	104
2.3.5	Unified Supply Network	104
2.3.6	Telemedicine Being Integrated Into Homecare	105

2.4 Respiratory Disease Market Metrics	107
2.4.1 Percentage of Older People by State.	110
2.4.2 Medical Conditions Requiring Supplemental Oxygen	114
2.4.3 High Flow Oxygen	116
2.5 Transport Oxygen Concentrator Prices	117
2.6 Oxygen Concentrator Regional Market Analysis	125
2.6.1 Transport Oxygen Concentrator Regional Market Forecasts	126
2.6.2 North American Home Medical Equipment	127
2.6.3 United States	129
2.6.4 Japan	129
2.6.5 NTK is the market leader for oxygen concentrators in Japan.	130
2.6.6 Philips Positioning in Europe	131
2.6.7 Germany	132
2.6.8 France Oxygen Concentrators	132
2.6.9 Philips Global Market Position	133
2.6.10 Chart	138
3. Transport Oxygen Concentrator Product Description	139
3.1 Respironics EverFlo 5LPM Oxygen Concentrator	139
3.1.1 Respironics Rechargeable Li Ion Battery for EverGo	141
3.1.2 Respironics SimplyGo	141
3.1.3 Phillips Healthcare SimplyFlo	145
3.1.4 Philips EverFlo	149
3.2.2 Philips Respironics EverFlo Q Stationary Oxygen Concentrator	150
3.2 DeVilbiss iGo	154
3.3 SeQual eQuinox	154
3.4 Chart Industries' CAIRE Inc	155

3.4.1	Chart SeQual Eclipse 5®	155
3.5	Oxlife Independence	159
3.6	Invacare Solo 2	159
3.7	Inogen	160
3.7.1	Inogen At Home Oxygen Concentrator	160
3.8	NTK	161
3.8	Chinese Oxygen Concentrators	163
3.9	Nuvo	172
4	Transport Oxygen Concentrator Research and Technology	173
4.1	Standardizing Definition Of Liter Flow Equivalentts	173
4.2	Oxygen Concentrator Air Management	174
4.2.1	Pressure Swing Adsorption (PSA) Technology	176
4.2.2	Pressure Swing Adsorption Principles	176
4.2.3	Pressure Swing Adsorption Principles	178
4.2.4	Comparison of Conventional Oxygen Concentrators and Advanced Technology Fractionators	179
4.2.5	SeQual Advanced Technology Fractionator (ATF®)	181
4.2.6	Advanced Technology Fractionator	185
4.2.7	Conventional Oxygen Concentrators	186
4.2.8	Multi Bed Oxygen Concentrators	186
4.2.9	SeQual ATF Endurance Testing Status	189
4.3	Oxygen Concentrator Air Travel	190
4.4	Types of Oxygen Systems	191
4.4.1	Technological Trends	191

Transport Oxygen Concentrator: Table of Contents and List of Tables and Figures

4.4.2	Ambulatory Oxygen	193
4.4.3	Oxygen Concentrators	193
4.4.4	Medical Applications / Oxygen Concentrators	194
4.4.5	Portable Oxygen Concentrator Fluidic System Trends	194
4.4.6	Inogen Compressor	195
4.4.7	Air Squared Compact, Quiet, Efficient, And Oil-Free Medical Compressors	195
4.4.8	Air Squared Sub-1-HP Scroll Portable Oxygen Concentrator Compressors	195
4.4.9	Stationary Oxygen Concentrator Compressors (Thomas or Gast)	196
4.4.10	Zeolite	197
4.5	Respiratory Disease Conditions	197
4.5.1	Increased Demand Impacts Industry	198
4.5.2	Bronchiectasis	198
4.5.3	Chronic Bronchitis	199
4.5.4	Chronic Obstructive Pulmonary Disease (COPD)	200
4.5.5	Emphysema	200
4.5.6	Muscular Dystrophy	200
4.5.7	Respiratory Syncytial Virus (RSV)	202
4.5.8	Asthma	202
4.6	American Lung Association	203
4.7	Medicare Prescription Drug, Improvement, and Modernization Act	203
5	Transport Oxygen Concentrator Company Profiles	205
5.1	Applied Home Healthcare Equipment	205
5.2	Besco	206
5.3	Chart Industries	207
5.3.1	Chart / Caire Medical	208
5.3.2	Chart Industries Revenue	209

5.3.3	Chart Industries Respiratory Sales	213
5.3.4	Chart Caire / AirSep / Sequal	214
5.3.5	Chart Industries Product Groups	215
5.3.6	Chart Industries Cold Boxes	217
5.3.7	Chart Industries Global Presence	218
5.3.8	Chart Industries Markets	219
5.3.9	Chart Industries Segments and Products	219
5.3.10	Chart Industries Process Systems	220
5.3.11	Chart Industries Distribution and Storage Segment	221
5.3.12	Chart Industries Cryogenic Bulk Storage Systems	221
5.3.13	Chart Industries Storage And End-Use Of Hydrocarbon And Industrial Gases	222
5.3.14	Chart Industries / AirSep	223
5.3.15	Chart Industries/Caire Liquid Oxygen Continuous Flow/Demand Flow Versatility	224
5.3.16	CAIRE / SeQual Technologies	224
5.3.17	Chart Industries / SeQual	225
5.3.18	SeQual Oxygen Systems	226
5.4	Drive DeVilbiss Healthcare	226
5.4.1	DeVilbiss Healthcare Moves Production Back to the USA	228
5.4.2	Drive Medical Facilities Locations	230
5.4.3	Drive Medical Markets	230
5.4.4	Drive Medical	231
5.4.5	Drive Medical / DeVilbiss Healthcare, Worldwide Leadership in Respiratory, Sleep and Durable Medical Products	231
5.4.6	Drive Medical Product Line	232
5.5	First Class Medical	233
5.5.1	1st Class Medical Used and Refurbished Concentrators:	233
5.6	Foshan Keyhub Electronic Industries Co., Ltd.	234
5.6.1	Foshan Keyhub Shunde, Guangdong Province, China	236

Transport Oxygen Concentrator: Table of Contents and List of Tables and Figures

5.6.2	Keyhub Shunde Oxygen Concentrators And Inner Core Component Production Capacity	236
5.7	Gardner Denver / Thomas Compressors	241
5.7.1	Gardner Denver Thomas Medical	249
5.7.2	Gardner Denver Thomas Engineering Department	255
5.7.3	Gardner Denver Thomas OEM	255
5.7.4	Gardner Denver Thomas Product Industries	256
5.7.5	Gardner Denver Thomas Respiratory Therapy Product Design	261
5.7.6	Gardner Denver Thomas Embedded Control Systems	262
5.8	GSE	263
5.9	Inogen	265
5.9.1	Inogen Rentals	270
5.9.2	Inogen Manufacturing Capacity	271
5.9.3	Inogen Expands Manufacturing Capacity to Accommodate Growth	273
5.9.4	Inogen Direct-To-Consumer Marketing Strategies	273
5.9.5	Inogen Acquires Breathe Oxygen Services	275
5.9.6	Inogen One G3 Versatile Portable Oxygen Concentrator	276
5.9.7	Inogen Is Reliable, Trusted, And Proven	277
5.10	Invacare	279
5.10.1	Invacare Revenue	280
5.10.2	Invacare Quote to Order Wheelchair Process	281
5.10.3	Invacare Non-Delivery Oxygen	281
5.10.4	Invacare Business	283
5.10.5	Invacare Growth	286
5.10.6	Invacare Geographical Segments And Product Categories	287
5.10.7	Invacare Mobility And Seating Products and Status of Consent Decree	287
5.10.8	Invacare Lifestyle Products	289
5.10.9	Invacare Respiratory Therapy Products	291
5.10.10	Invacare Institutional Products Group (IPG)	292

Transport Oxygen Concentrator: Table of Contents and List of Tables and Figures

5.11	Jiuxin Medical	293
5.11.1	Jiuxin Medical Jogger Portable Ventilator	293
5.11.2	Jiuxin Medical ICU Ventilator Detachable 10.4" TFT Color Screen	294
5.12	Leistung Engineering	295
5.12.1	Leistung Key Strategy	296
5.13	Longfian Scitech	297
5.13.1	Longfian Scitech JAY-20 Industry Oxygen	298
5.13.2	Longfian Scitech JAY-20 Industry Oxygen	299
5.13.3	Longfian Scitech Oxygen Analyzer	300
5.14	Merits	301
5.15	Nidek Medical	302
5.16	NTK	304
5.17	Precision Medical	304
5.18	O2 Concepts	306
5.19	Philips Healthcare	306
5.19.1	Philips Manufacturing Capacity	310
5.19.2	Royal Philips Healthcare Global Presence	311
5.19.3	Philips Enables Consumer Lifestyle	313
5.19.4	Philips Addresses Healthcare Landscape	314
5.19.5	Philips Accelerate! Positioning	318
5.20	ResMed	319
5.20.1	ResMed / Inova Labs	320
5.20.2	Inova Labs	320
5.20.3	ResMed / Inova Labs / LifeChoice Activox 4L	320
5.21	Oxygen Concentrator Companies	321

List of Figures

Figure 1.	Transport Oxygen Concentrator Functions	22
Figure 2.	Stationary Oxygen Concentrator Advantages	25
Figure 3.	Transport Oxygen Concentrator Home Medical Market Driving Forces	26
Figure 4.	Home Medical Stationary Oxygen Concentrator Systems Market Factors	27
Figure 5.	Impact of Available Capital on Transport Oxygen Concentrators Markets	31
Figure 6.	Transport Oxygen Concentrator Market Shares, Dollars, 2016	33
Figure 7.	Transport Medical Oxygen Concentrator Market Shipments Forecasts, Dollars, Worldwide, 2017-2023	35
Figure 8.	Chinese Oxygen Market Factors	38
Figure 9.	Beijing China Air Pollution, People Wear Masks	39
Figure 10.	Air Pollution in China	40

Transport Oxygen Concentrator: Table of Contents and List of Tables and Figures

Figure 11. Oxygen Concentrator Advantages	42
Figure 12. . China Has The Highest Level Of Particulates In The World	43
Figure 13. US Napa Area And San Rafael, All Of The North Bay, Experiencing The Highest Air Pollution Readings Ever Observed in Area	45
Figure 14. Homecare Market Growth Factors	56
Figure 15. Benefits of Homecare	56
Figure 16. Oxygen Concentrator Applicable Population	69
Figure 17. Marketing Transport Oxygen Concentrators Globally	71
Figure 18. Transport Oxygen Concentrator Functions	74
Figure 19. Stationary Oxygen Concentrator Advantages	77
Figure 20. Transport Oxygen Concentrator Home Medical Market Driving Forces	78
Figure 21. Home Medical Stationary Oxygen Concentrator Systems Market Factors	79
Figure 22. Impact of Available Capital on Transport Oxygen Concentrators Markets	83
Figure 23. Transport Oxygen Concentrator Market Shares, Dollars, 2016	85
Figure 24. Stationary Oxygen Concentrator Market Shares, Dollars, Worldwide, 2016	86
Figure 25. Transport Oxygen Concentrator Market Shares, Units and Dollars, Worldwide, 2016	87
Figure 26. Transport Medical Oxygen Concentrator Market Shipments Forecasts, Dollars, Worldwide, 2017-2023	92
Figure 27. Transport Oxygen Concentrator Market Forecasts, Shipments, Dollars Worldwide, 2017-2023	93
Figure 28. Transport Medical Oxygen Concentrator Shipment Market Forecasts, Units and Dollars, Worldwide, 2017-2023	94

Figure 29. Transport Medical Oxygen Concentrator Segment Market Forecasts, Medical, Sleeping, Exercise, Dollars, Worldwide, 2017-2023	96
Figure 30. Transport Oxygen Concentrator Evolving Market Position	97
Figure 31. Transport Oxygen Concentrator People on Oxygen Market Forecasts, Number of People, Worldwide, 2017-2023	98
Figure 32. Worldwide Patients on Oxygen Market Forecasts, Worldwide, 2017-2023	99
Figure 33. China Allows Media to Report on Air Pollution Crisis	102
Figure 34. Philips Chronicles Medical Chronic Disease Market Trends	108
Figure 35. HME Expenditures By Provider	111
Figure 36. HME Expenditures By Per Cent Increase	112
Figure 37. Global Obesity	115
Figure 38. Transport Oxygen Concentrator Homecare Regional Market Segments, 2016	126
Figure 39. Transport Oxygen Concentrators, Regional Market Segments, 2016	127
Figure 40. Philips Positioning in Europe	131
Figure 41. Respiroics EverGo Product Specifications	139
Figure 42. Respiroics SimplyGo	142
Figure 43. Respiroics SimplyGo Portable Oxygen Concentrator	143
Figure 44. Respiroics SimplyGo Specifications	144
Figure 45. Phillips Healthcare SimplyFlo	145
Figure 46. Philips Respiroics SimplyFlo Functions	146
Figure 47. Philips Respiroics SimplyFlo Oxygen Concentrator	147

Transport Oxygen Concentrator: Table of Contents and List of Tables and Figures

Figure 48.	Phillips Respironics SimplyGo Portable Oxygen Concentrator	148
Figure 49.	Philips EverFlo Stationary Oxygen Concentrator	149
Figure 50.	Philips EverFlo Stationary Oxygen Concentrator Functions	150
Figure 51.	Philips Respironics EverFlo Q Stationary Oxygen Concentrator	150
Figure 52.	Respironics 31-Pound EverFlo Q Features	151
Figure 53.	Respironics 31-Pound EverFlo Q Platform Functions	152
Figure 54.	Philips EverFlo Q General System Specifications	153
Figure 55.	Chart SeQual Eclipse 5® Portable Oxygen Concentrator	156
Figure 56.	Chart SeQual Eclipse 5® Portable Oxygen Concentrator Specifications	158
Figure 57.	NTK Original Equipment Oxygen Sensors	161
Figure 58.	NTK Oxygen Concentrator Description	162
Figure 59.	NTK Oxygen Concentrator	163
Figure 60.	Beijing China Air Pollution, People Wear Masks	164
Figure 61.	Air Pollution in China	165
Figure 62.	Chinese Oxygen Concentrators	166
Figure 63.	Foshan Keyhub Electronic Industries Co., Ltd. Oxygen Concentrators	168
Figure 64.	Longfian Home Use and Travel Stationary Oxygen Concentrator (JAY-1)	170
Figure 65.	Speedway Industry Ltd Oxygen Concentrator	171
Figure 66.	Air Chemical Composition	174
Figure 67.	Air Management Terminology	175

Transport Oxygen Concentrator: Table of Contents and List of Tables and Figures

Figure 68.	Stratification and Relative Adsorption of Gas as Air flows through a column of molecular sieve	177
Figure 69.	Conventional Two-Bed Oxygen Concentrator Air Flow	180
Figure 70.	SeQual ATF-Based Concentrator	182
Figure 71.	SeQual ATF Design Characteristics	183
Figure 72.	SeQual ATF Operating Pressures Versus Time Graph	184
Figure 73.	Comparison Of A 5 Liter Per Minute (LPM) Capacity Conventional Oxygen Concentrator With A 5 LPM ATF System	185
Figure 74.	Comparison Of Multi Bed And A Typical Oxygen Concentrator	187
Figure 75.	Sequal ATM-Based Concentrator Major Components	188
Figure 76.	Besco Portable Oxygen Equipment	206
Figure 77.	Besco Portable Oxygen Concentrator	207
Figure 78.	Chart Industries Regional Presence	210
Figure 79.	Chart Industries Healthcare Market Participation	211
Figure 80.	Chart 2016 Life Sciences Sales by Region and Segment	212
Figure 81.	Chart Industries Global Presence	218
Figure 82.	DeVilbiss Healthcare Regional Market Presence	229
Figure 83.	Foshan Keyhub Electronic Industries Co., Ltd. Oxygen Concentrator Assembly Line	235
Figure 84.	Foshan Keyhub Electronic Industries Co., Ltd. Oxygen Concentrator Assembly	239
Figure 85.	Gardner Denver / Thomas Compressor	241
Figure 86.	Gardner Denver / Thomas Compressors	242

Transport Oxygen Concentrator: Table of Contents and List of Tables and Figures

Figure 87. Typical Applications For Thomas Products	243
Figure 88. Gardner Denver Thomas Manufactured Products	244
Figure 89. Gardner Denver Thomas Leading Global Manufacturer Product Set	245
Figure 90. Gardner Denver Thomas Industries Served	246
Figure 91. Gardner Denver Thomas Strategy	247
Figure 92. Gardner Denver Operations Product Range	248
Figure 93. Selected Thomas Compressors	253
Figure 94. Gardner Denver Compressed Air, Compressed Gas, Vacuum, and Fluid Transfer Technology Industries Served	257
Figure 95. Gardner Denver Thomas Areas of Specialization:	257
Figure 96. Gardner Denver Thomas Strategy	258
Figure 97. Gardner Denver 24 Acquisitions in 15 Years	259
Figure 98. Gardner Denver Positioning	260
Figure 99. Gardner Denver Thomas Pump And Compressor Solutions	262
Figure 100. GSE Medical Compressor	263
Figure 101. Inogen Direct-To-Consumer Marketing Strategies	274
Figure 102. Invacare Product Mix Shifts 2016 and 2017	284
Figure 103. Invacare Non-Acute Health Care Distribution Network Functions	285
Figure 104. Other Invacare Product Sets for Homecare	290
Figure 105. Invacare Homecare 25,000 Home Medical Equipment Providers	292
Figure 106. Jiuxin Medical Jogger Portable Ventilator	293

Figure 107.	Jiuxin Medical ICU Ventilator Features	294
Figure 108.	Leistung Product Range Categories	296
Figure 109.	Longfian Scitech JAY-20 Industry Oxygen	298
Figure 110.	Longfian Scitech Oxygen Analyzer	300
Figure 111.	Longfian Scitech Oxygen Analyzer Specifications	301
Figure 112.	Nidek International Presence	303
Figure 113.	Precision Medical Respiratory Products:	305
Figure 114.	Philips Global Presence	311
Figure 115.	Philips Global Trends And Challenges	313
Figure 116.	Philips Positions To Simplify Global Healthcare Delivery For The Long Term	315
Figure 117.	Philips Healthcare Delivery Product Positioning	316
Figure 118.	Philips Delivering Margin Improvement and Decreasing Manufacturing Overhead	317