

---

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

---

New levels of patient independence are achieved for people who need prescribed medical oxygen. Portable oxygen concentrators are working for longer durations. They are more portable and are more sturdy.

## Table of Contents

<b>Portable Oxygen Concentrator Executive Summary</b>	<b>28</b>
<b>Portable Oxygen Concentrator</b>	<b>28</b>
Home Oxygen Market, Moves to Portable Concentrators	29
Portable Oxygen Concentrator Home Medical Market Driving Forces	31
Change in Home Oxygen Market	33
Pressure To Reduce Costs As Part Of the Deficit Reduction Act (DRA)	34
Direct to Consumer Model Replaces Distribution and Home Services Model	35
Portable Oxygen Concentrators (POCs) Market Driving Forces	36

Portable Oxygen Concentrator Market Shares	37
Portable Oxygen Concentrator Market Forecasts	39
<b>1. Portable Oxygen Concentrator Market Description and Market Dynamics</b>	<b>41</b>
<b>1.1 Homecare Market Growth Factors</b>	<b>41</b>
3.1.1 Growth In Population Over Age 65	43
<b>1.2 Oxygen Concentrator Uses</b>	<b>43</b>
1.2.1 Portable Oxygen Concentrator Functions	44
1.2.2 Separation Of Oxygen From Air	45
1.2.3 Technical Trade-Offs Necessary To Design A Portable Oxygen Concentrator (POC)	45
<b>1.3 Oxygen Concentrator Insurance Coverage</b>	<b>46</b>
1.3.1 Oxygen Concentrator CMS HCPCS Code	49
1.3.2 Medicare Reimbursement	49
<b>1.4 The Goal of Oxygen Therapy</b>	<b>49</b>
1.4.1 How To Change The Amount of Oxygen In The Air We Breathe	50
1.4.2 Oxygen Concentrator Components	51
1.4.3 Lifestyle in the Home Health Care Business	53
1.4.4 Portable Oxygen Concentrator Airline Travel	53
1.4.5 Portable Oxygen Concentrator Pulse Mode	55
1.4.6 Continuous Flow Portable Oxygen Concentrator	55
<b>1.5 Types of Oxygen Systems</b>	<b>56</b>
1.5.1 Treatment Trends.	56
1.5.2 Technological Trends.	57
1.5.3 Health Care Cost Containment Trends.	57
1.5.4 Society’s Mainstreaming of People with Disabilities.	58
1.5.5 Distribution Channels	58
1.5.6 Oxygen Therapy Systems	58

<b>1.6</b>	<b>Oxygen Concentrator Applicable Population</b>	<b>59</b>
<b>1.7</b>	<b>Home Oxygen Concentrator Equipment Medicare Reimbursement</b>	<b>60</b>
1.7.1	Home Medical Equipment Market	60
1.7.2	Home Health Care	61
1.7.3	Third-party reimbursement	62
1.7.4	Portable Oxygen Patients Need Stationary Oxygen Concentrator's at Night	63
<b>1.8</b>	<b>Treatment Trends</b>	<b>63</b>
1.8.1	Competition Forms Basis Of U.S. Medical Care Services Delivery	64
<b>1.9</b>	<b>European Homecare Market Trends</b>	<b>65</b>
<b>1.10</b>	<b>Marketing Globally</b>	<b>66</b>
<b>1.11</b>	<b>Market Drivers For Healthcare Cost Containment</b>	<b>68</b>
<b>2</b>	<b>Portable Oxygen Concentrator Market Shares and Forecasts</b>	<b>70</b>
<b>2.1</b>	<b>Portable Oxygen Concentrator</b>	<b>70</b>
2.1.1	Home Oxygen Market, Moves to Portable Concentrators	71
2.1.2	Portable Oxygen Concentrator Home Medical Market Driving Forces	73
2.1.3	Change in Home Oxygen Market	75
2.1.4	Pressure To Reduce Costs As Part Of the Deficit Reduction Act (DRA)	76
2.1.5	Direct to Consumer Model Replaces Distribution and Home Services Model	77
2.1.6	Portable Oxygen Concentrators (POCs) Market Driving Forces	78
<b>2.2</b>	<b>Portable Oxygen Concentrator Market Shares</b>	<b>79</b>
2.2.1	Portable Oxygen Concentrators	80
2.2.2	Portable Oxygen Concentrators Coded by Medicare	86
2.2.3	Inogen Portable Oxygen Concentrator	86
2.2.4	Inogen Product Development	86
2.2.5	Inogen Homecare Services Business	87
2.2.6	Philips Respironics EverGo	88

**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

2.2.7	Respironics EverGo Portable Oxygen Concentrator	88
2.2.8	Invacare XPO2™ Portable Concentrator	89
2.2.9	Philips Respironics EverGo Portable Oxygen Concentrator from Respironics FAA Approved For Air Travel	89
2.2.10	Chart / AirSep	90
2.2.11	Chart / AirSep NewLife Elite	90
2.2.12	Chart Industries / SeQual	91
2.2.13	Chart Industries / CAIRE	91
<b>2.3</b>	<b>Portable Oxygen Concentrator Market Forecasts</b>	<b>91</b>
2.3.1	Worldwide Patients on Oxygen Market Forecasts, Worldwide, 2017-2023	96
3.1.2	Unit Analysis	101
2.3.2	Homecare Is Poised To Grow	106
2.3.3	Unified Supply Network	106
2.3.4	Telemedicine Being Integrated Into Homecare	107
2.3.5	Competitive Bidding Program Cuts Reimbursement	109
2.3.6	Reimbursement Shifts	110
2.3.7	Pulse vs Continuous Flow	111
2.3.8	Conserving Devices	121
<b>2.4</b>	<b>Respiratory Disease Market Metrics</b>	<b>130</b>
2.4.1	Percentage of Older People by State	133
<b>2.5</b>	<b>Oxygen Concentrator Prices</b>	<b>137</b>
2.5.1	Sequal Eclipse Rental Prices	145
2.5.2	Daily Rate *	145
2.5.3	Weekly Rate	145
2.5.4	Additional Weeks	145
2.5.5	Inogen One Rental Prices	145
2.5.6	Daily Rate *	145
2.5.7	Weekly Rate	145

**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

2.5.8	Additional Weeks	145
	Inogen One G2 Rental Prices	145
	Daily Rate *	145
	Weekly Rate	145
	Additional Weeks	145
	Respironics EverGo Rental	146
	Daily Rate *	146
	Weekly Rate	146
	Additional Weeks	146
	Invacare XPO2 Rental Prices	147
	Daily Rate *	147
	Weekly Rate	147
	Additional Weeks	147
<b>2.6</b>	<b>Medical Conditions Requiring Supplemental Oxygen</b>	<b>147</b>
2.6.1	Global Obesity	149
<b>2.7</b>	<b>Oxygen Concentrator Regional Market Analysis</b>	<b>150</b>
2.7.1	Oxygen Concentrator Regional Market Forecasts	152
2.7.2	North American Home Medical Equipment	154
2.7.3	United States	156
2.7.4	Japan	156
2.7.5	NTK Market Leader For Oxygen Concentrators in Japan.	157
2.7.6	Philips Acceleration of Participation in Japanese Market	157
2.7.7	Teijin Pharma Home Healthcare Oxygen Concentrators In Japan	162
2.7.8	Longfian Scitech Targets China, Africa, Russia, and the Arab Countries	164
2.7.9	China	164
2.7.10	Chinese Built Units Used Widely In Homecare, Hospitals, Clinics, Beauty Salons And In Sports	165
2.7.11	Invacare Geographically Diverse	166
2.7.12	Nidek Global Presence	167

2.7.13	Gardner Denver Global Presence	168
2.7.14	Chart Industries Global Presence	170
2.7.15	European Homecare Market	171
2.7.16	Germany	173
2.7.17	France Oxygen Concentrators	173
2.7.18	Philips Global Market Position	174
2.7.19	Chart	179
2.7.20	Inogen Direct to Consumer Regional Strategy	180
2.7.21	Inogen Private Label Partner Applied Home Healthcare Equipment	181
2.7.22	Inogen Concentration of Customers	182
2.7.23	Inogen International	182
<b>3. Portable Oxygen Concentrator Product Description</b>		<b>184</b>
<b>3.1</b>	<b>Inogen Portable Oxygen Concentrators</b>	<b>184</b>
2.7.24	Inogen One G4 System	188
3.1.1	InogenOne G3, G2, and at Home Systems	190
3.1.2	Inogen One G3	194
3.1.3	Inogen One G3 Portable Oxygen Concentrators	195
3.1.4	Inogen One G2 Portable Oxygen Concentrators	196
<b>3.2</b>	<b>Invacare®</b>	<b>198</b>
3.2.1	Invacare Portable Oxygen Concentrators	198
3.2.2	Invacare® SOLO2® Portable Oxygen Concentrator	201
3.2.3	Invacare® XPO2™ Portable Oxygen Concentrator	206
3.2.4	Invacare XPO2™ Portable Oxygen Sensi-Pulse Technology	208
<b>3.3</b>	<b>Drive Medical Oxus Reliability Plus</b>	<b>212</b>
3.3.1	Drive Medical Oxus Portable Oxygen Concentrator	214
3.3.1	Drive Medical Oxus Portable Oxygen Concentrator	217
3.3.2	Drive / DeVilbiss Healthcare iGo Portable Oxygen Concentrator	220

**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

3.3.3	DeVilbiss Battery Charger	221
3.3.4	Portable Oxygen Concentrator HCPCS Code	224
3.3.5	DeVilbiss Oxygen Concentrator	225
3.3.6	DeVilbiss Sensing Device iGo Product Highlights	225
<b>3.4</b>	<b>Chart Industries' CAIRE Inc</b>	<b>228</b>
3.4.1	Chart AirSep Freestyle 5	228
3.4.2	Chart Industries AirSep FreeStyle	231
3.4.3	Chart Industries AirSep LifeStyle	237
3.4.4	Chart Industries' CAIRE	240
3.4.5	Chart SeQual Eclipse 5® Portable Oxygen Concentrator	242
3.4.6	Chart SeQual eQuinox™	245
<b>3.5</b>	<b>Philips Healthcare</b>	<b>247</b>
3.5.1	Phillips Healthcare SimplyGo	247
3.5.2	Phillips Healthcare SimplyGo Mini	256
3.5.3	Philips Healthcare EverGo	259
<b>3.6</b>	<b>ResMed / Inova Labs / Lifechoice Activox 4 L Portable Oxygen Concentrator</b>	<b>261</b>
3.6.1	Inova Labs Activox 4L Portable Oxygen Concentrator	261
3.6.2	Inova Labs Activox Duo 2 Portable Oxygen Concentrator	265
3.6.3	OxLife Independence O2 Concepts Portable Oxygen Concentrator	272
3.6.4	Inova Oxlife Independence Features	274
3.6.5	Inova Oxlife Continuous and Pulse Flow in One Concentrator	275
3.6.6	Inova Labs Life Choice Portable Oxygen Concentrator	276
<b>3.7</b>	<b>GCE</b>	<b>279</b>
3.7.1	GCE Zen-O lite	279
<b>3.8</b>	<b>Chinese Medical Oxygen Concentrators</b>	<b>281</b>
3.8.1	Besco	284
3.8.2	Chinese Oxygen Concentrators	287

3.8.3	Guangdong Lejin Medicine Co., Ltd. Portable Oxygen Concentrator 1L (LJ-MS-42)	287
3.8.4	Foshan Keyhub Electronic Industries Co., Ltd.	288
3.8.5	Longfian Home Use and Travel Portable Oxygen Concentrator (JAY-1)	291
3.8.6	2016 Made in China Portable Oxygen Concentrator	292
3.8.7	Zhejiang Shengwei High Pressure Vessel Co. Portable Oxygen Concentrator for Home & Travelling Uses	294
3.8.8	Zhengzhou Huaer Electro-Optics Technology Co. 2014 Mini Portable Oxygen Concentrator	295
3.8.9	Maks3 3L Medical Portable Oxygen Concentrator	295
3.8.10	Nanjing Foinoe Co., LtSingle Flow Portable Oxygen Concentrator	296
3.8.11	Wuhan HNC Technology Co., Ltd. Portable Oxygen Generator Concentrator	297
<b>4. Oxygen Concentrator Technology</b>		<b>298</b>
<b>4.1</b>	<b>Standardizing The Definition Of Liter Flow Equivalents</b>	<b>298</b>
<b>4.2</b>	<b>Oxygen Concentrator Compressor</b>	<b>299</b>
4.2.1	Oxygen Concentrator Compressors	299
4.2.2	Inogen Compressor	301
4.2.3	Air Squared Compact, Quiet, Efficient, And Oil-Free Medical Compressors	301
4.2.4	Air Squared Sub-1-HP Scroll Portable Oxygen Concentrator Compressors	302
4.2.5	Stationary Oxygen Concentrator Compressors (Thomas or Gast)	303
<b>4.3</b>	<b>Oxygen Concentrator Air Management</b>	<b>303</b>
4.3.1	Pressure Swing Adsorption (PSA) Technology	305
4.3.2	Pressure Swing Adsorption Principles	305
4.3.3	Pressure Swing Adsorption Principles	307
4.3.4	Comparison of Conventional Oxygen Concentrators and Advanced Technology Fractionators	308
4.3.5	SeQual Advanced Technology Fractionator (ATF®)	310
4.3.6	Advanced Technology Fractionator	314
4.3.7	Conventional Oxygen Concentrators	314



**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

4.3.8	Multi Bed Oxygen Concentrators	315
4.3.9	SeQual ATF Endurance Testing Status	318
<b>4.4</b>	<b>Oxygen Concentrator Air Travel</b>	<b>319</b>
<b>4.5</b>	<b>Oxygen Conservation Devices</b>	<b>321</b>
<b>4.6</b>	<b>Centers for Medicare and Medicaid</b>	<b>323</b>
4.6.1	CMS Reimbursement Codes	325
<b>4.7</b>	<b>Types of Oxygen Systems</b>	<b>326</b>
4.7.1	Liquid Oxygen Systems	327
4.7.2	Cylinder Oxygen Systems	328
4.7.3	Oxygen Conserving Devices	328
<b>4.8</b>	<b>Pulsation Detection Device</b>	<b>328</b>
<b>4.9</b>	<b>Technological Trends</b>	<b>329</b>
4.9.1	Ambulatory Oxygen	330
4.9.2	Liquid Oxygen	330
4.9.3	Oxygen Concentrators	331
4.9.4	Medical Applications / Oxygen Concentrators	331
4.9.5	Portable Oxygen Concentrator Fluidic System Trends	332
<b>4.10</b>	<b>Medical Compressors</b>	<b>332</b>
4.10.1	Thomas Industries	333
4.10.2	Horizon Pump From Rietschle Thomas Targeted to Portable Oxygen Concentrators	334
<b>4.11</b>	<b>Gast Compressor Medical Applications</b>	<b>338</b>
<b>4.12</b>	<b>Zeolite</b>	<b>342</b>
<b>4.13</b>	<b>Respiratory Disease Conditions</b>	<b>342</b>
4.13.1	Increased Demand Impacts Industry	343
4.13.2	Bronchiectasis	343

4.13.3	Chronic Bronchitis	344
4.13.4	Chronic Obstructive Pulmonary Disease (COPD)	345
4.13.5	Emphysema	345
4.13.6	Muscular Dystrophy	345
4.13.7	Respiratory Syncytial Virus (RSV)	347
4.13.8	Asthma	347
 <b>5. Portable Oxygen Equipment Company Description</b>		 <b>348</b>
 5.1	 Applied Home Healthcare Equipment	 348
 5.2	 Besco	 349
 5.3	 Chart Industries	 351
5.3.1	Chart / Caire Medical	352
5.3.2	Chart Industries Revenue	353
5.3.3	Chart Industries Respiratory Sales	357
5.3.4	Chart Caire / AirSep / Sequal	358
5.3.5	Chart Industries Product Groups	359
5.3.6	Chart Industries Cold Boxes	361
5.3.7	Chart Industries Global Presence	362
5.3.8	Chart Industries Markets	363
5.3.9	Chart Industries Segments and Products	363
5.3.10	Chart Industries Process Systems	364
5.3.11	Chart Industries Distribution and Storage Segment	365
5.3.12	Chart Industries Cryogenic Bulk Storage Systems	365
5.3.13	Chart Industries Storage And End-Use Of Hydrocarbon And Industrial Gases	366
5.3.14	Chart Industries / AirSep	367
5.3.15	Chart Industries/Caire Liquid Oxygen Continuous Flow/Demand Flow Versatility	368
5.3.16	CAIRE / SeQual Technologies	368
5.3.17	Chart Industries / SeQual	369

5.3.18	SeQual Oxygen Systems	370
<b>5.4</b>	<b>Drive DeVilbiss Healthcare</b>	<b>370</b>
5.4.1	DeVilbiss Healthcare Moves Production Back to the USA	372
5.4.2	Drive Medical Facilities Locations	374
5.4.3	Drive Medical Markets	374
5.4.4	Drive Medical	375
5.4.5	Drive Medical / DeVilbiss Healthcare, Worldwide Leadership in Respiratory, Sleep and Durable Medical Products	375
5.4.6	Drive Medical Product Line	376
<b>5.5</b>	<b>First Class Medical</b>	<b>377</b>
5.5.1	1st Class Medical Used and Refurbished Concentrators:	377
<b>5.6</b>	<b>Foshan Keyhub Electronic Industries Co., Ltd.</b>	<b>378</b>
5.6.1	Foshan Keyhub Shunde, Guangdong Province, China	380
5.6.2	Keyhub Shunde Oxygen Concentrators And Inner Core Component Production Capacity	380
<b>5.7</b>	<b>Gardner Denver / Thomas Compressors</b>	<b>385</b>
5.7.1	Gardner Denver Thomas Medical	393
5.7.2	Gardner Denver Thomas Engineering Department	399
5.7.3	Gardner Denver Thomas OEM	399
5.7.4	Gardner Denver Thomas Product Industries	400
5.7.5	Gardner Denver Thomas Respiratory Therapy Product Design	406
5.7.6	Gardner Denver Thomas Embedded Control Systems	406
<b>5.8</b>	<b>GSE</b>	<b>407</b>
<b>5.9</b>	<b>Inogen</b>	<b>409</b>
5.9.1	Inogen Rentals	414
5.9.2	Inogen Manufacturing Capacity	415
5.9.3	Inogen Expands Manufacturing Capacity to Accommodate Growth	417
5.9.4	5.7.4 Inogen Direct-To-Consumer Marketing Strategies	417

**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

2.7.5	Inogen Acquires Breathe Oxygen Services	419
5.9.5	Inogen One G3 Versatile Portable Oxygen Concentrator	420
5.9.6	Inogen Is Reliable, Trusted, And Proven	421
<b>5.10</b>	<b>Invacare</b>	<b>423</b>
5.10.1	5.8.1 Invacare Revenue	424
2.7.2	Invacare Quote to Order Wheelchair Process	425
5.10.2	Invacare Non-Delivery Oxygen	425
5.10.3	Invacare Business	427
5.10.4	Invacare Growth	430
5.10.5	Invacare Geographical Segments And Product Categories	431
5.10.6	Invacare Mobility And Seating Products and Status of Consent Decree	431
5.10.7	Invacare Lifestyle Products	433
5.10.8	Invacare Respiratory Therapy Products	435
5.10.9	Invacare Institutional Products Group (IPG)	436
<b>5.11</b>	<b>Jiuxin Medical</b>	<b>437</b>
5.11.1	Jiuxin Medical Jogger Portable Ventilator	437
5.11.2	Jiuxin Medical ICU Ventilator Detachable 10.4" TFT Color Screen	438
<b>5.12</b>	<b>Leistung Engineering</b>	<b>439</b>
5.12.1	Leistung Key Strategy	440
<b>5.13</b>	<b>Longfian Scitech</b>	<b>441</b>
5.13.1	Longfian Scitech JAY-20 Industry Oxygen	442
5.13.2	Longfian Scitech JAY-20 Industry Oxygen	443
5.13.3	Longfian Scitech Oxygen Analyzer	444
<b>5.14</b>	<b>Merits</b>	<b>445</b>
<b>5.15</b>	<b>Nidek Medical</b>	<b>446</b>
<b>5.16</b>	<b>NTK</b>	<b>448</b>

**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

<b>5.17</b>	<b>Precision Medical</b>	<b>448</b>
<b>5.18</b>	<b>O2 Concepts</b>	<b>450</b>
<b>5.19</b>	<b>Philips Healthcare</b>	<b>450</b>
5.19.1	Philips Manufacturing Capacity	454
5.19.2	5.17.2 Royal Philips Healthcare Global Presence	455
5.19.3	5.17.3 Philips Enables Consumer Lifestyle	457
5.19.4	5.17.4 Philips Addresses Healthcare Landscape	458
5.19.5	5.17.5 Philips Accelerate! Positioning	461
<b>5.20</b>	<b>ResMed</b>	<b>463</b>
5.20.1	ResMed / Inova Labs	463
5.20.2	Inova Labs	464
5.20.3	ResMed / Inova Labs / LifeChoice Activox 4L	464
<b>5.21</b>	<b>Zadro Health Solutions</b>	<b>464</b>
<b>5.22</b>	<b>Oxygen Concentrator Companies</b>	<b>465</b>
<b>Figure 1.</b>	<b>Portable Oxygen Concentrator Advantages</b>	<b>29</b>
<b>Figure 2.</b>	<b>Portable Oxygen Concentrator Home Medical Market Driving Forces</b>	<b>31</b>
<b>Figure 3.</b>	<b>Home Medical Portable Oxygen Concentrator Systems Market Factors</b>	<b>32</b>
<b>Figure 4.</b>	<b>Portable Oxygen Concentrators (POCs) Market Driving Forces</b>	<b>36</b>
<b>Figure 5.</b>	<b>Oxygen Concentrator Market Shares, Dollars, 2016</b>	<b>38</b>
<b>Figure 6.</b>	<b>Portable Oxygen Concentrator Market Shipments Forecasts, Dollars, Worldwide, 2017-2023</b>	<b>40</b>
<b>Figure 7.</b>	<b>Homecare Market Growth Factors</b>	<b>41</b>

**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

Figure 8. Invacare View of Benefits of Homecare	42
Figure 9. Oxygen Concentrator Patient Population	59
Figure 10. Marketing Globally	67
Figure 11. Portable Oxygen Concentrator Advantages	71
Figure 12. Portable Oxygen Concentrator Home Medical Market Driving Forces	73
Figure 13. Home Medical Portable Oxygen Concentrator Systems Market Factors	74
Figure 14. Portable Oxygen Concentrators (POCs) Market Driving Forces	78
Figure 15. Portable Oxygen Concentrator Company Products	80
Figure 16. Portable Oxygen Concentrators	81
Figure 17. Top Selling Portable Oxygen Concentrators	82
Figure 18. Oxygen Concentrator Market Shares, Dollars, 2016	83
Figure 19. Portable Oxygen Concentrator Market Shares, Dollars, Worldwide, 2016	84
Figure 20. Portable Oxygen Concentrator Market Shares, Units and Dollars, Worldwide, 2016	85
Figure 21. Portable Oxygen Concentrator Market Shipments Forecasts, Dollars, Worldwide, 2017-2023	93
Figure 22. Portable Homecare Oxygen Concentrator Market Forecasts, Shipments, Dollars, Worldwide, 2017-2023	94
Figure 23. Oxygen Concentrator Shipment Market Forecasts, Pulsed and Continuous, Units and Dollars, Worldwide, 2017-2023	95
Figure 24. Worldwide Patients on Oxygen Market Forecasts, Worldwide, 2017-2023	96
Figure 25. China Allows Media to Report on Air Pollution Crisis	99

**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

Figure 26. Portable Medical Oxygen Concentrator Shipment Market Forecasts, Units, Worldwide, 2017-2023	101
Figure 27. Medical Oxygen Concentrator Penetration Analysis Market Forecasts, Units Percent of Total Market, Worldwide, 2017-2023	102
Figure 28. Medical Oxygen Concentrator Segment Analysis Market Forecasts, Stationary and Portable, Units Percent of Total Market, Worldwide, 2017-2023	104
Figure 29. Factors Hindering Market Acceptance Of Portable Oxygen Concentrators:	105
Figure 30. Portable Pulsed and Continuous Oxygen Concentrator Shipment Market Forecasts, Units and Dollars, Worldwide, 2017-2023	112
Figure 31. Portable Oxygen Unit Oxygen Production Capabilities	120
Figure 32. Pulse Delivery Method Factors That Determine Oxygen Output	122
Figure 33. Oxygen Conserving Devices	124
Figure 34. Oxygen Conserving Devices	125
Figure 35. Portable Oxygen Concentrator Nocturnal Options	126
Figure 36. Portable Oxygen Concentrator Pulse and Continuous Options	127
Figure 37. Invacare XPO2 Portable Oxygen Concentrator	128
Figure 38. Invacare Solo 2 Transportable Oxygen Concentrator	129
Figure 39. Philips Medical Chronic Disease Market Trends	131
Figure 40. Percentage of Older People by State	133
Figure 41. HME Expenditures By Provider	134
Figure 42. HME Expenditures By Per Cent Increase	135
Figure 43. Global Obesity	150

Figure 44.	Oxygen Concentrator Homecare Regional Market Segments, 2016	152
Figure 45.	Oxygen Concentrator Homecare Regional Market Segments, 2016	153
Figure 46.	Portable Oxygen Concentrator Shipment Market Forecasts by Region, Units, Worldwide, 2017-2023	154
Figure 47.	Philips Participation in Japanese Market	158
Figure 48.	Opportunities in Japanese Market	159
Figure 49.	Philips Acceleration of Participation in Japanese Market	160
Figure 50.	Invacare Geographically Diversity	166
Figure 51.	Nidek Global Presence	167
Figure 52.	Gardner Denver Global Presence	168
Figure 53.	Gardner Denver Global Presence	169
Figure 54.	Chart Industries Global Presence	171
Figure 55.	Philips Positioning in Europe	172
Figure 56.	Inogen Portable Oxygen Concentrator Strategy	185
Figure 57.	Inogen Portable Oxygen Concentrator Portable Product Offerings	185
Figure 58.	Inogen Portable Oxygen Concentrator Portable Product Benefits	186
Figure 59.	Inogen One G4 System	188
Figure 60.	Ingen One System Features:	189
Figure 61.	InogenOne G3, G2, and at Home Systems	190
Figure 62.	InogenOne G3, G2, and at Home Systems	191
Figure 63.	Inogen Key Product Specifications	193



**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

Figure 64.	Inogen One G3 Portable Oxygen Concentrators	195
Figure 65.	Inogen One G2 Portable Oxygen Concentrators	196
Figure 66.	Invacare Portable Oxygen Concentrators	198
Figure 67.	Invacare Platinum Mobile Oxygen Concentrator Features	199
Figure 68.	Invacare Branded Portable Oxygen	200
Figure 69.	Invacare® SOLO2® Portable Oxygen Concentrator	201
Figure 70.	Invacare SOLO2 Concentrator Features Invacare® Sensi-Pulse™ Technology Features	203
Figure 71.	Invacare SOLO2 Concentrator Features Invacare® Sensi-Pulse™ Technology Provider Benefits	204
Figure 72.	Invacare SOLO2 Concentrator Features Invacare® Sensi-Pulse™ Technology Patient Benefits	205
Figure 73.	Invacare XPO2 Portable Oxygen Concentrator	206
Figure 74.	Invacare® XPO2™ Portable Oxygen Concentrator	207
Figure 75.	Invacare XPO2™ Portable Oxygen Sensi-Pulse Technology Features	209
Figure 76.	Invacare Sensi-Pulse XPO2™ Portable Oxygen Technology Provider Benefits	209
Figure 77.	Invacare XPO2™ Portable Oxygen Delivered	210
Figure 78.	Invacare Sensi-Pulse Technology Patient Benefits	211
Figure 79.	Drive Medical Oxus Reliability Plus	212
Figure 80.	Drive Medical Oxus Reliability Plus Features	213
Figure 81.	Drive Medical Oxus Portable Oxygen Concentrator Functions	214
Figure 82.	Drive Medical Oxus Portable Oxygen Concentrators Benefits:	216

Figure 83.	Drive Medical Oxus Portable Oxygen Concentrator Functions	217
Figure 84.	Drive Medical Oxus Stationary Oxygen Concentrator Specifications	219
Figure 85.	DeVilbiss Healthcare iGo Portable Oxygen Concentrator	220
Figure 86.	DeVilbiss iGo Portable Oxygen System Product Highlights	222
Figure 87.	DeVilbiss iGo Portable Oxygen System	223
Figure 88.	DeVilbiss iGo Portable Oxygen System	224
Figure 89.	iGo Portable Oxygen Concentrator Multiple Power Options	226
Figure 90.	Run-Time Estimates For The iGo With A New, Fully Charged Battery Pack	227
Figure 91.	Chart AirSep Freestyle 5	228
Figure 92.	Airsep FreeStyle 5 Patient Features	228
Figure 93.	Airsep FreeStyle 5 Patient Homecare Provider Features	229
Figure 94.	AirSep FreeStyle Clinician Features:	230
Figure 95.	AirSep FreeStyle	231
Figure 96.	Chart AirSep FreeStyle and FreeStyle 5 Oxygen Concentration	232
Figure 97.	Chart AirSep FreeStyle Specifications	233
Figure 98.	Chart AirSep FreeStyle Portable Oxygen Concentrator	234
Figure 99.	Chart AirSep FreeStyle Features	235
Figure 100.	Chart Industries AirSep LifeStyle	237
Figure 101.	AirSep LifeStyle POC Specifications	239
Figure 102.	Chart Industries' CAIRE	240
Figure 103.	Chart Industries' CAIRE Portable Oxygen	241

Figure 104.	Chart SeQual Eclipse 5® Portable Oxygen Concentrator	242
Figure 105.	Chart SeQual Eclipse 5® Portable Oxygen Concentrator Specifications	244
Figure 106.	Chart SeQual eQuinox™	245
Figure 107.	Phillips Healthcare SimplyGo	247
Figure 108.	Phillips Healthcare SimplyGo Portable Oxygen Concentrator Functions	248
Figure 109.	Respironics SimplyGo Portable Oxygen	250
Figure 110.	SimplyGO Portable Oxygen Concentrator by Philips Respironics	251
Figure 111.	Respironics SimplyGO Features	252
Figure 112.	Respironics Battery Duration of SimplyGO:	254
Figure 113.	Respironics Battery Duration of SimplyGO:	254
Figure 114.	Respironics SimplyGO:	255
Figure 115.	Phillips Healthcare SimplyGo Mini	256
Figure 116.	Philips Positioning for Durability	257
Figure 117.	Philips EverGo	259
Figure 118.	Philips Respironics Oxygen Concentrator EverGo Features	260
Figure 119.	Inova Labs Activox 4L Portable Oxygen Concentrator	261
Figure 120.	Inova Labs LifeChoice Activox 4L	262
Figure 121.	Inova Labs LifeChoice Activox 4L Features	264
Figure 122.	Inova Labs Activox Duo 2 Portable Oxygen Concentrator	265
Figure 123.	Inova Labs Activox Duo 2 Portable Oxygen Concentrator Portability	266
Figure 124.	Inova Labs Activox Portable Oxygen Concentrator Features	267

Figure 125.	Inova Labs Activox Portable Oxygen Concentrator PULSE-WAVE™	268
Figure 126.	Inova Labs Activox Portable Oxygen Concentrator PULSE-WAVE™ Features	269
Figure 127.	Inova Labs Activox Portable Oxygen Concentrator Control Panel	270
Figure 128.	Inova Labs Activox Portable Oxygen Concentrator Internal Battery Runtimes	271
Figure 129.	O2 Concepts OxLife Independence Portable Oxygen Concentrator	272
Figure 130.	Oxlife Independence	273
Figure 131.	Oxlife Independence Portable Oxygen Concentrator Features	274
Figure 132.	Inova Labs Life Choice Portable Oxygen Concentrator	276
Figure 133.	Inova Labs Life Choice Portable Oxygen Concentrator Accessories	277
Figure 134.	LifeChoice Portable Oxygen Concentrator Sleep Mode Setting	278
Figure 135.	GCE Zen-O lite	279
Figure 136.	Zen-O lite Ultra-Light Portable Oxygen Concentrator Functions	280
Figure 137.	Beijing China Air Pollution, People Wear Masks	282
Figure 138.	Air Pollution in China	283
Figure 139.	Besco Oxygen Concentrator From China	284
Figure 140.	Chinese Oxygen Concentrators	286
Figure 141.	Foshan Keyhub Electronic Industries Co., Ltd.	288
Figure 142.	Oxygen Concentrator Compressor Features	299
Figure 143.	Air Chemical Composition	303
Figure 144.	Air Management Terminology	304

**Portable Oxygen Concentrators: Table of Contents and List of Tables and Figures**

Figure 145.	Stratification and Relative Adsorption of Gas as Air flows through a column of molecular sieve	306
Figure 146.	Conventional Two-Bed Oxygen Concentrator Air Flow	309
Figure 147.	SeQual ATF-Based Concentrator	311
Figure 148.	SeQual ATF Design Characteristics	312
Figure 149.	SeQual ATF Operating Pressures Versus Time Graph	313
Figure 150.	Comparison Of A 5 Liter Per Minute (LPM) Capacity Conventional Oxygen Concentrator With A 5 LPM ATF System	314
Figure 151.	Comparison Of Multi Bed And A Typical Oxygen Concentrator	315
Figure 152.	SeQual ATM-Based Concentrator Major Components	317
Figure 153.	Types of Oxygen Systems	326
Figure 154.	Thomas Industries Compressor Features	333
Figure 155.	Rietschle Thomas 2250 Pressure/Vacuum Pump	335
Figure 156.	Gast Oxygen Concentrator Compressors	339
Figure 157.	Gast Medical Oxygen Concentrator Compressor	340
Figure 158.	Gast Oxygen Concentrator Compressor Features	341
Figure 159.	Besco Portable Oxygen Equipment	350
Figure 160.	Besco Portable Oxygen Concentrator	351
Figure 161.	Chart Industries Regional Presence	354
Figure 162.	Chart Industries Healthcare Market Participation	355
Figure 163.	Chart 2016 Life Sciences Sales by Region and Segment	356

Figure 164.	Chart Industries Global Presence	362
Figure 165.	DeVilbiss Healthcare Regional Market Presence	373
Figure 166.	Foshan Keyhub Electronic Industries Co., Ltd. Oxygen Concentrator Assembly Line	379
Figure 167.	Foshan Keyhub Electronic Industries Co., Ltd. Oxygen Concentrator Assembly	383
Figure 168.	Gardner Denver / Thomas Compressor	385
Figure 169.	Gardner Denver / Thomas Compressors	386
Figure 170.	Typical Applications For Thomas Products	387
Figure 171.	Gardner Denver Thomas Manufactured Products	388
Figure 172.	Gardner Denver Thomas Leading Global Manufacturer Product Set	389
Figure 173.	Gardner Denver Thomas Industries Served	390
Figure 174.	Gardner Denver Thomas Strategy	391
Figure 175.	Gardner Denver Operations Product Range	392
Figure 176.	Selected Thomas Compressors	397
Figure 177.	Gardner Denver Compressed Air, Compressed Gas, Vacuum, and Fluid Transfer Technology Industries Served	401
Figure 178.	Gardner Denver Thomas Areas of Specialization:	401
Figure 179.	Gardner Denver Thomas Strategy	402
Figure 180.	Gardner Denver 24 Acquisitions in 15 Years	403
Figure 181.	Gardner Denver Positioning	404
Figure 182.	Gardner Denver Thomas Pump And Compressor Solutions	406
Figure 183.	GSE Medical Compressor	407

Figure 184.	Inogen Direct-To-Consumer Marketing Strategies	418
Figure 185.	Invacare Product Mix Shifts 2016 and 2017	428
Figure 186.	Invacare Non-Acute Health Care Distribution Network Functions	429
Figure 187.	Other Invacare Product Sets for Homecare	434
Figure 188.	Invacare Homecare 25,000 Home Medical Equipment Providers	436
Figure 189.	Jiuxin Medical Jogger Portable Ventilator	437
Figure 190.	Jiuxin Medical ICU Ventilator Features	438
Figure 191.	Leistung Product Range Categories	440
Figure 192.	Longfian Scitech JAY-20 Industry Oxygen	442
Figure 193.	Longfian Scitech Oxygen Analyzer	444
Figure 194.	Longfian Scitech Oxygen Analyzer Specifications	445
Figure 195.	Nidek International Presence	447
Figure 196.	Precision Medical Respiratory Products:	449
Figure 197.	Philips Global Presence	455
Figure 198.	Philips Global Trends And Challenges	457
Figure 199.	Philips Positions To Simplify Global Healthcare Delivery For The Long Term	459
Figure 200.	Philips Healthcare Delivery Product Positioning	460
Figure 201.	Philips Delivering Margin Improvement and Decreasing Manufacturing Overhead	461