

# The Global Market for Wearable Electronics 2023-2033

<https://marketpublishers.com/r/GC054DD82B09EN.html>

Date: March 2023

Pages: 935

Price: US\$ 1,500.00 (Single User License)

ID: GC054DD82B09EN

## Abstracts

Wearable electronics have progressed hugely in the last few years, from simple activity tracking to personal healthcare tools. The market has experienced massive growth since 2020, but has slowed down lately, with many large corporations witnessing sales decline.

However demand from sectors such as remote medical monitoring will continue to drive the market moving forward. Wearable and mobile health monitoring technologies are important due to the rapidly aging global populations and the drastically increasing demand for in-home healthcare. Commercially available and near commercial wearable devices facilitate the transmission of biomedical informatics and personal health recording. Body worn sensors, which can provide real-time continuous measurement of pertinent physiological parameters noninvasively and comfortably for extended periods of time, are of crucial importance for applications of mobile medicine.

Monitoring of sleep, fitness, pet, and work & labour activities are also driving demand for wearable technology for improved analytics and performance. New energy harvesting materials and technologies will enable wearables that can be worn constantly without needing to remove or charge.

The Global Market for Wearable Electronics 2023-2033 offers comprehensive analysis of this fast-moving market. The report explores key trends, investments and products. Report contents include:

In-depth market review of current products and technology development in Smartwatches.

Sports and fitness trackers.

Sleep trackers and wearable monitors.

Smart glasses and head-mounted displays (VR, AR, MR, vision loss and eye trackers).

Military wearables.

Industrial and workplace monitoring.

Flexible and stretchable electronics.

E-textiles and smart clothing.

Pet wearables.

Wearable robotics.

Artificial skin.

Skin patches & wearable health alert and monitoring devices.

Continuous glucose monitoring (CGM), hydration and sweat sensors.

Wearable drug delivery.

Cosmetics patches.

Smart footwear.

Smart contact lenses.

Femtech devices.

Metaverse.

Smart wound care.

Smart jewellery.

Exoskeletons.

Hearables.

In depth product assessment including products, producers, functionalities and prices.

Global market revenues, historical and forecast to 2033 for wearable consumer electronics, hearables, medical wearables, gaming & entertainment wearables, electronic textiles and smart clothing and sub markets thereof.

More than 730 company profiles. Companies profiled include Abbott Laboratories, Add Care Ltd., AerBetic, Inc., Alimetry, Altek Biotechnology Corporation, AvaniX srl, BeBop Sensors, Biobeat Technologies, biolinQ Inc, Bionet Co., Ltd., Cari Health, Cipher Skin, Cogwear, Cosinuss GmbH, Dispelix Oy, dorsaVi Ltd, Enhanlabo Co., Ltd., Equivital Inc., Epicore Biosystems, FeellT, FILLTUNE Inc., Globo, HP1 Technologies Ltd., Isansys, Ixana, MediThinQ, miomove s.r.o, Neosensory, Neurava, Playermaker, Rombit, Rhaeos, Seventh Sense Biosystems, Shift Robotics Inc., Sky Labs Inc., SteadySense GmbH, Stryd, Sympatient, WearOptimo and Wellysis Corp.

## Contents

### **1 EXECUTIVE SUMMARY**

- 1.1 The evolution of electronics
- 1.2 The wearables revolution
- 1.3 The wearable tech market in 2023
- 1.4 Wearable market leaders
- 1.5 From rigid to flexible and stretchable
- 1.6 Flexible and stretchable electronics in wearables
- 1.7 Stretchable artificial skin
- 1.8 Organic and printed electronics
- 1.9 Role in the metaverse
- 1.10 Wearable electronics in the textiles industry
- 1.11 New conductive materials
- 1.12 Entertainment
- 1.13 Growth in flexible and stretchable electronics market
  - 1.13.1 Recent growth in Printed, flexible and stretchable products
  - 1.13.2 Future growth
  - 1.13.3 Advanced materials as a market driver
  - 1.13.4 Growth in remote health monitoring and diagnostics
- 1.14 Innovations at CES 2021-2023
- 1.15 Investment funding and buy-outs 2019-2023

### **2 CONSUMER ELECTRONICS WEARABLE TECHNOLOGY**

- 2.1 Market drivers and trends
- 2.2 Wearable sensors
- 2.3 Wearable actuators
- 2.4 Recent market developments
- 2.5 Wrist-worn wearables
  - 2.5.1 Overview
  - 2.5.2 Sports-watches, smart-watches and fitness trackers
  - 2.5.3 Health monitoring
  - 2.5.4 Energy harvesting for powering smartwatches
  - 2.5.5 Main producers and products
- 2.6 Sports and fitness
  - 2.6.1 Overview
  - 2.6.2 Wearable devices and apparel

- 2.6.3 Skin patches
- 2.6.4 Products
- 2.7 Hearables
  - 2.7.1 Overview
  - 2.7.2 Assistive Hearables
  - 2.7.3 Health & Fitness Hearables
  - 2.7.4 Multimedia Hearables
  - 2.7.5 Artificial Intelligence (AI)
  - 2.7.6 Companies and products
- 2.8 Sleep trackers and wearable monitors
  - 2.8.1 Built in function in smart watches and fitness trackers
  - 2.8.2 Smart rings
  - 2.8.3 Headbands
  - 2.8.4 Sleep monitoring devices
    - 2.8.4.1 Companies and products
- 2.9 Pet and animal wearables
- 2.10 Military wearables
- 2.11 Industrial and workplace monitoring
  - 2.11.1 Products
- 2.12 Global market revenues
  - 2.12.1 By product type, 2015-2033, billions USD
  - 2.12.2 Market share by product type
- 2.13 Market challenges
- 2.14 Company profiles 126 (127 company profiles)

### **3 MEDICAL AND HEALTHCARE WEARABLE TECHNOLOGY**

- 3.1 Market drivers
- 3.2 Current state of the art
  - 3.2.1 Wearable medical device products
  - 3.2.2 Temperature and respiratory rate monitoring
- 3.3 Wearable and health monitoring and rehabilitation
  - 3.3.1 Market overview
  - 3.3.2 Companies and products
- 3.4 Electronic skin patches
  - 3.4.1 Electronic skin sensors
  - 3.4.2 Nanomaterials-based devices
    - 3.4.2.1 Graphene
  - 3.4.3 Conductive hydrogels for soft and flexible electronics

- 3.4.4 Materials
  - 3.4.4.1 Summary of advanced materials
- 3.4.5 Temperature and respiratory rate monitoring
  - 3.4.5.1 Market overview
  - 3.4.5.2 Companies and products
- 3.4.6 Continuous glucose monitoring (CGM)
  - 3.4.6.1 Market overview
- 3.4.7 Minimally-invasive CGM sensors
  - 3.4.7.1 Technologies
- 3.4.8 Non-invasive CGM sensors
  - 3.4.8.1 Commercial devices
  - 3.4.8.2 Companies and products
- 3.4.9 Cardiovascular monitoring
  - 3.4.9.1 Market overview
  - 3.4.9.2 ECG sensors
    - 3.4.9.2.1 Companies and products
  - 3.4.9.3 PPG sensors
    - 3.4.9.3.1 Companies and products
- 3.4.10 Pregnancy and newborn monitoring
  - 3.4.10.1 Market overview
  - 3.4.10.2 Companies and products
- 3.4.11 Hydration sensors
  - 3.4.11.1 Market overview
  - 3.4.11.2 Companies and products
- 3.4.12 Wearable sweat sensors (medical and sports)
  - 3.4.12.1 Market overview
  - 3.4.12.2 Companies and products
- 3.5 Wearable drug delivery
  - 3.5.1 Companies and products
- 3.6 Cosmetics patches
  - 3.6.1 Companies and products
- 3.7 Femtech devices
  - 3.7.1 Companies and products
- 3.8 Smart footwear for health monitoring
  - 3.8.1 Companies and products
- 3.9 Smart contact lenses and smart glasses for visually impaired
  - 3.9.1 Companies and products
- 3.10 Smart woundcare
  - 3.10.1 Companies and products

- 3.11 Smart diapers
  - 3.11.1 Companies and products
- 3.12 Wearable robotics-exo-skeletons, bionic prostheses, exo-suits, and body worn collaborative robots
  - 3.12.1 Companies and products
- 3.13 Global market revenues
  - 3.13.1 By product type, 2015-2033, billions USD
  - 3.13.2 Market share, by product type
- 3.14 Market challenges
- 3.15 Company profiles 297 (332 company profiles)

## **4 GAMING AND ENTERTAINMENT WEARABLE TECHNOLOGY**

- 4.1 Commercialization
- 4.2 Virtual Reality (VR) devices
  - 4.2.1 VR headset products
- 4.3 Augmented (AR) headsets and smart glasses
  - 4.3.1 Products
- 4.4 Mixed Reality (MR) smart glasses
  - 4.4.1 Mixed Reality (MR) smart glass products
- 4.5 OLED microdisplays
- 4.6 MiniLED
  - 4.6.1 High dynamic range miniLED displays
  - 4.6.2 Quantum dot films for miniLED displays
  - 4.6.3 Perovskite colour enhancement film in MiniLEDs
- 4.7 MicroLED
  - 4.7.1 Production
    - 4.7.1.1 Integration
    - 4.7.1.2 Transfer technologies
  - 4.7.2 Comparison to LCD and OLED
  - 4.7.3 MicroLED display specifications
  - 4.7.4 Advantages
    - 4.7.4.1 Transparency
    - 4.7.4.2 Borderless
    - 4.7.4.3 Flexibility
  - 4.7.5 Costs
  - 4.7.6 AR/VR Smart glasses and head-mounted displays (HMDs)
  - 4.7.7 MicroLED contact lenses
  - 4.7.8 Products and prototypes

- 4.7.9 Product developers
- 4.8 Global market revenues
  - 4.8.1 By product type, 2018-2033, billions USD
- 4.9 Company profiles 581 (97 company profiles)

## **5 ELECTRONIC TEXTILES (E-TEXTILES) AND SMART APPAREL**

- 5.1 Market drivers
- 5.2 Performance requirements for E-textiles
- 5.3 Growth prospects for electronic textiles
- 5.4 Textiles in the Internet of Things
- 5.5 Types of E-Textile products
  - 5.5.1 Embedded e-textiles
  - 5.5.2 Laminated e-textiles
- 5.6 Materials and components
  - 5.6.1 Integrating electronics for E-Textiles
    - 5.6.1.1 Textile-adapted
    - 5.6.1.2 Textile-integrated
    - 5.6.1.3 Textile-based
  - 5.6.2 Manufacturing of E-textiles
    - 5.6.2.1 Integration of conductive polymers and inks
    - 5.6.2.2 Integration of conductive yarns and conductive filament fibers
    - 5.6.2.3 Integration of conductive sheets
  - 5.6.3 Flexible and stretchable electronics
  - 5.6.4 E-textiles materials and components
    - 5.6.4.1 Conductive and stretchable fibers and yarns
      - 5.6.4.1.1 Production
      - 5.6.4.1.2 Metals
      - 5.6.4.1.3 Carbon materials and nanofibers
        - 5.6.4.1.3.1 Graphene
        - 5.6.4.1.3.2 Carbon nanotubes
        - 5.6.4.1.3.3 Nanofibers
    - 5.6.4.2 Mxenes
    - 5.6.4.3 Hexagonal boron-nitride (h-BN)/Boron nitride nanosheets (BNNSs)
    - 5.6.4.4 Conductive polymers
      - 5.6.4.4.1 PDMS
      - 5.6.4.4.2 PEDOT: PSS
      - 5.6.4.4.3 Polypyrrole (PPy)
      - 5.6.4.4.4 Conductive polymer composites



- 5.6.4.4.5 Ionic conductive polymers
- 5.6.4.5 Conductive inks
  - 5.6.4.5.1 Aqueous-Based Ink
  - 5.6.4.5.2 Solvent-Based Ink
  - 5.6.4.5.3 Oil-Based Ink
  - 5.6.4.5.4 Hot-Melt Ink
  - 5.6.4.5.5 UV-Curable Ink
  - 5.6.4.5.6 Metal-based conductive inks
    - 5.6.4.5.6.1 Nanoparticle ink
    - 5.6.4.5.6.2 Silver inks
    - 5.6.4.5.6.3 Copper inks
    - 5.6.4.5.6.4 Gold (Au) ink
  - 5.6.4.5.7 Carbon-based conductive inks
    - 5.6.4.5.7.1 Carbon nanotubes
    - 5.6.4.5.7.2 Single-walled carbon nanotubes
    - 5.6.4.5.7.3 Graphene
  - 5.6.4.5.8 Liquid metals
    - 5.6.4.5.8.1 Properties
- 5.6.4.6 Electronic filaments
- 5.6.4.7 Phase change materials
  - 5.6.4.7.1 Temperature controlled fabrics
- 5.6.4.8 Shape memory materials
- 5.6.4.9 Metal halide perovskites
- 5.6.4.10 Nanocoatings in smart textiles
- 5.6.4.11 3D printing
  - 5.6.4.11.1 Fused Deposition Modeling (FDM)
  - 5.6.4.11.2 Selective Laser Sintering (SLS)
  - 5.6.4.11.3 Products
- 5.6.5 E-textiles components
  - 5.6.5.1 Sensors and actuators
    - 5.6.5.1.1 Physiological sensors
    - 5.6.5.1.2 Environmental sensors
    - 5.6.5.1.3 Pressure sensors
      - 5.6.5.1.3.1 Flexible capacitive sensors
      - 5.6.5.1.3.2 Flexible piezoresistive sensors
      - 5.6.5.1.3.3 Flexible piezoelectric sensors
    - 5.6.5.1.4 Activity sensors
    - 5.6.5.1.5 Strain sensors
      - 5.6.5.1.5.1 Resistive sensors

- 5.6.5.1.5.2 Capacitive strain sensors
- 5.6.5.1.6 Temperature sensors
- 5.6.5.1.7 Inertial measurement units (IMUs)
- 5.6.5.2 Electrodes
- 5.6.5.3 Connectors
- 5.7 Applications, markets and products
  - 5.7.1 Current E-textiles and smart clothing products
  - 5.7.2 Temperature monitoring and regulation
    - 5.7.2.1 Heated clothing
    - 5.7.2.2 Heated gloves
    - 5.7.2.3 Heated insoles
    - 5.7.2.4 Heated jacket and clothing products
    - 5.7.2.5 Materials used in flexible heaters and applications
  - 5.7.3 Stretchable E-fabrics
  - 5.7.4 Therapeutic products
  - 5.7.5 Sport & fitness
    - 5.7.5.1 Products
  - 5.7.6 Smart footwear
    - 5.7.6.1 Companies and products
  - 5.7.7 Wearable displays
  - 5.7.8 Military
  - 5.7.9 Textile-based lighting
    - 5.7.9.1 OLEDs
  - 5.7.10 Smart gloves
  - 5.7.11 Powering E-textiles
    - 5.7.11.1 Advantages and disadvantages of main battery types for E-textiles
    - 5.7.11.2 Bio-batteries
    - 5.7.11.3 Challenges for battery integration in smart textiles
    - 5.7.11.4 Textile supercapacitors
    - 5.7.11.5 Energy harvesting
      - 5.7.11.5.1 Photovoltaic solar textiles
      - 5.7.11.5.2 Energy harvesting nanogenerators
        - 5.7.11.5.2.1 TENGs
        - 5.7.11.5.2.2 PENGs
      - 5.7.11.5.3 Radio frequency (RF) energy harvesting
  - 5.7.12 Motion capture for AR/VR
- 5.8 Global market revenues
  - 5.8.1 Revenues by sector
  - 5.8.2 Market share, by product type

5.9 Market challenges

5.10 Company profiles 778 (153 company profiles)

## **6 RESEARCH METHODOLOGY**

## **7 REFERENCES**

## List Of Tables

### LIST OF TABLES

- Table 1. Types of wearable devices and applications.
- Table 2. Types of wearable devices and the data collected.
- Table 3. Main Wearable Device Companies by Shipment Volume, Market Share, and Year-Over-Year Growth, (million units).
- Table 4. New wearable tech products 2022-2023.
- Table 5. Wearable market leaders by market segment.
- Table 6. Applications in printed, flexible and stretchable electronics, by advanced materials type and benefits thereof.
- Table 7. Advanced materials for Printed, flexible and stretchable sensors and Electronics-Advantages and disadvantages.
- Table 8. Sheet resistance (RS) and transparency (T) values for transparent conductive oxides and alternative materials for transparent conductive electrodes (TCE).
- Table 9. Wearable electronics at CES 2021-2023.
- Table 10. Wearables Investment funding and buy-outs 2019-2022.
- Table 11. Market drivers and trends in wearable electronics.
- Table 12. Types of wearable sensors.
- Table 13. Wearable health monitors.
- Table 14. Sports-watches, smart-watches and fitness trackers producers and products.
- Table 15. Wearable sensors for sports performance.
- Table 16. Wearable sensor products for monitoring sport performance.
- Table 17. Companies and products in hearables.
- Table 18. Example wearable sleep tracker products and prices.
- Table 19. Smart ring products.
- Table 20. Sleep headband products.
- Table 21. Sleep monitoring products.
- Table 22. Pet wearable companies and products.
- Table 23. Wearable electronics applications in the military.
- Table 24. Wearable workplace products.
- Table 25. Global market for wearable consumer electronics, 2015-2033, by product type, millions of US dollars.
- Table 26. Market challenges in consumer wearable electronics.
- Table 27. Market drivers for printed, flexible and stretchable medical and healthcare sensors and wearables.
- Table 28. Examples of wearable medical device products.
- Table 29. Medical wearable companies applying products to COVID-19 monitoring and

analysis.

Table 30. Applications in flexible and stretchable health monitors, by advanced materials type and benefits thereof.

Table 31. Medical wearable companies applying products to temperate and respiratory monitoring and analysis.

Table 32. Technologies for minimally-invasive and non-invasive glucose detection-advantages and disadvantages.

Table 33. Commercial devices for non-invasive glucose monitoring not released or withdrawn from market.

Table 34. Minimally-invasive and non-invasive glucose monitoring products.

Table 35. Companies developing wearable sweat sensors.

Table 36. Wearable drug delivery companies and products.

Table 37. Companies and products, cosmetics and drug delivery patches.

Table 38. Companies developing femtech wearable technology.

Table 39. Companies and products in smart footwear.

Table 40. Companies and products in smart contact lenses.

Table 41. Companies and products in smart wound care.

Table 42. Companies developing smart diaper products.

Table 43. Companies developing wearable robotics.

Table 44. Global medical and healthcare wearables market, 2017-2033, millions of US dollars, by product.

Table 45. Market challenges in medical and healthcare sensors and wearables.

Table 46. Example VR headset products.

Table 47. Key requirements for AR wearable devices.

Table 48. Augmented reality (AR) smart glass products.

Table 49. Mixed Reality (MR) smart glass products.

Table 50. Comparison between miniLED displays and other display types.

Table 51. Comparison of AR Display Light Engines.

Table 52. Comparison to conventional LEDs.

Table 53. Types of microLED.

Table 54. Summary of monolithic integration, monolithic hybrid integration (flip-chip/wafer bonding), and mass transfer technologies.

Table 55. Summary of different mass transfer technologies.

Table 56. Comparison to LCD and OLED.

Table 57. Schematic comparison to LCD and OLED.

Table 58. Commercially available microLED products and specifications.

Table 59. microLED-based display advantages and disadvantages.

Table 60. MicroLED based smart glass products.

Table 61. tooz technologies smart glasses.

- Table 62. VR and AR MicroLED products.
- Table 63. Market drivers for printed, flexible, stretchable and organic electronic textiles.
- Table 64. Examples of smart textile products.
- Table 65. Performance requirements for E-textiles.
- Table 66. Commercially available smart clothing products.
- Table 67. Types of smart textiles.
- Table 68. Comparison of E-textile fabrication methods.
- Table 69. Types of fabrics for the application of electronic textiles.
- Table 70. Methods for integrating conductive compounds.
- Table 71. Methods for integrating conductive yarn and conductive filament fiber.
- Table 72. 1D electronic fibers including the conductive materials, fabrication strategies, electrical conductivity, stretchability, and applications.
- Table 73. Conductive materials used in smart textiles, their electrical conductivity and percolation threshold.
- Table 74. Metal coated fibers and their mechanisms.
- Table 75. Applications of carbon nanomaterials and other nanomaterials in e-textiles.
- Table 76. Applications and benefits of graphene in textiles and apparel.
- Table 77. Properties of CNTs and comparable materials.
- Table 78. Properties of hexagonal boron nitride (h-BN).
- Table 79. Types of flexible conductive polymers, properties and applications.
- Table 80. Typical conductive ink formulation.
- Table 81. Comparative properties of conductive inks.
- Table 82. Comparison of pros and cons of various types of conductive ink compositions.
- Table 83: Properties of CNTs and comparable materials.
- Table 84. Properties of graphene.
- Table 85. Electrical conductivity of different types of graphene.
- Table 86. Comparison of the electrical conductivities of liquid metal with typical conductive inks.
- Table 87. Nanocoatings applied in the smart textiles industry-type of coating, nanomaterials utilized, benefits and applications.
- Table 88. 3D printed shoes.
- Table 89. Sensors used in electronic textiles.
- Table 90. Features of flexible strain sensors with different structures.
- Table 91. Features of resistive and capacitive strain sensors.
- Table 92. Typical applications and markets for e-textiles.
- Table 93. Commercially available E-textiles and smart clothing products.
- Table 94. Example heated jacket products.
- Table 95. Heated jacket and clothing products.
- Table 96. Examples of materials used in flexible heaters and applications.

Table 97. Commercialized smart textiles/or e-textiles for healthcare and fitness applications.

Table 98. Example earable sensor products for monitoring sport performance.

Table 99. Companies and products in smart footwear.

Table 100. Wearable electronics applications in the military.

Table 101. Advantages and disadvantages of batteries for E-textiles.

Table 102. Comparison of prototype batteries (flexible, textile, and other) in terms of area-specific performance.

Table 103. Advantages and disadvantages of photovoltaic, piezoelectric, triboelectric, and thermoelectric energy harvesting in of e-textiles.

Table 104. Teslasuit.

Table 105. Global electronic textiles and smart clothing market 2017-2033, revenues by sector (billions USD).

Table 106. Market and technical challenges for E-textiles and smart clothing.

## List Of Figures

### LIST OF FIGURES

- Figure 1. Evolution of electronics.
- Figure 2. Wearable technology inventions.
- Figure 3. Wove Band.
- Figure 4. Wearable graphene medical sensor.
- Figure 5. Stretchable transistor.
- Figure 6. Artificial skin prototype for gesture recognition.
- Figure 7. Applications timeline for organic and printed electronics.
- Figure 8. Applications of wearable flexible sensors worn on various body parts.
- Figure 9. Systemization of wearable electronic systems.
- Figure 10. Baby Monitor.
- Figure 11. Wearable health monitor incorporating graphene photodetectors.
- Figure 12. FitBit Charge 5.
- Figure 13. Wearable bio-fluid monitoring system for monitoring of hydration.
- Figure 14. Nuheara IQbuds? Max.
- Figure 15. Beddr SleepTuner.
- Figure 16. Beddr SleepTuner.
- Figure 17. Global market for wearable consumer electronics, 2015-2033, by product type, millions of US dollars.
- Figure 18. Global market for wearables, 2021-2033, by market share of product type
- Figure 19. The Apollo wearable device.
- Figure 20. Cyclops HMD.
- Figure 21. C2Sense sensors.
- Figure 22. Coachwhisperer device.
- Figure 23. Cogwear headgear.
- Figure 24. CardioWatch 287.
- Figure 25. FRENZ Brainband.
- Figure 26. NightOwl Home Sleep Apnea Test Device.
- Figure 27. eQ02+LlfeMontor.
- Figure 28. Cove wearable device.
- Figure 29. German bionic exoskeleton.
- Figure 30. UnlimitedHand.
- Figure 31. Apex Exosuit.
- Figure 32. Humanox Shin Guard.
- Figure 33. Airvida E1.
- Figure 34. Footrax.



- Figure 35. eMacula.
- Figure 36. G2 Pro.
- Figure 37. REFLEX.
- Figure 38. Ring ZERO.
- Figure 39. Mawi Heart Patch.
- Figure 40. Ayo wearable light therapy.
- Figure 41. Nowatch.
- Figure 42. ORII smart ring.
- Figure 43. Proxxi Voltage.
- Figure 44. RealWear HMT-1.
- Figure 45. Moonwalkers from Shift Robotics Inc.
- Figure 46. SnowCookie device.
- Figure 47. Soter device.
- Figure 48. Feelzing Energy Patch.
- Figure 49. Williot tags.
- Figure 50. Connected human body and product examples.
- Figure 51. Companies and products in wearable health monitoring and rehabilitation devices and products.
- Figure 52. Smart e-skin system comprising health-monitoring sensors, displays, and ultra flexible PLEDs.
- Figure 53. Graphene medical patch.
- Figure 54. Graphene-based E-skin patch.
- Figure 55. Enfucell wearable temperature tag.
- Figure 56. TempTraQ wearable wireless thermometer.
- Figure 57. Technologies for minimally-invasive and non-invasive glucose detection.
- Figure 58. Schematic of non-invasive CGM sensor.
- Figure 59. Adhesive wearable CGM sensor.
- Figure 60. VitalPatch.
- Figure 61. Wearable ECG-textile.
- Figure 62. Wearable ECG recorder.
- Figure 63. Nexkin.
- Figure 64. Bloomlife.
- Figure 65. Nanowire skin hydration patch.
- Figure 66. NIX sensors.
- Figure 67. Wearable sweat sensor.
- Figure 68. Wearable graphene sweat sensor.
- Figure 69. Gatorade's GX Sweat Patch.
- Figure 70. Sweat sensor incorporated into face mask.
- Figure 71. D-mine Pump.

- Figure 72. Lab-on-Skin.
- Figure 73. My UV Patch.
- Figure 74. Overview layers of L'Oreal skin patch.
- Figure 75. Brilliantly Warm.
- Figure 76. Ava Fertility tracker.
- Figure 77. S9 Pro breast pump.
- Figure 78. Tempdrop.
- Figure 79. Digitsole Smartshoe.
- Figure 80. Schematic of smart wound dressing.
- Figure 81. REPAIR electronic patch concept. Image courtesy of the University of Pittsburgh School of Medicine.
- Figure 82. ABENA Nova smart diaper.
- Figure 83. Honda Walking Assist.
- Figure 84. ABLE Exoskeleton.
- Figure 85. ANGEL-LEGS-M10.
- Figure 86. AGADEXO Shoulder.
- Figure 87. Enyware.
- Figure 88. AWN-12 occupational powered hip exoskeleton.
- Figure 89. CarrySuit passive upper-body exoskeleton.
- Figure 90. Axosuit lower body medical exoskeleton.
- Figure 91. FreeGait.
- Figure 92. InMotion Arm.
- Figure 93. Biomotum SPARK.
- Figure 94. PowerWalk energy.
- Figure 95. Keeego.
- Figure 96. MATE-XT.
- Figure 97. CDYS passive shoulder support exoskeleton.
- Figure 98. ALDAK.
- Figure 99. HAL Lower Limb.
- Figure 100. DARWING PA.
- Figure 101. Dephy ExoBoot.
- Figure 102. EksoNR.
- Figure 103. Emovo Assist.
- Figure 104. HAPO.
- Figure 105. Atlas passive modular exoskeleton.
- Figure 106. ExoAtlet II.
- Figure 107. ExoHeaver.
- Figure 108. Exy ONE.
- Figure 109. ExoArm.

- Figure 110. ExoMotus.
- Figure 111. Gloreha Sinfonia.
- Figure 112. BELK Knee Exoskeleton.
- Figure 113. Apex exosuit.
- Figure 114. Honda Walking Assist.
- Figure 115. BionicBack.
- Figure 116. Muscle Suit.
- Figure 117. Japet.W powered exoskeleton.
- Figure 118. Ski~Mojo.
- Figure 119. AIRFRAME passive shoulder.
- Figure 120. FORTIS passive tool holding exoskeleton.
- Figure 121. Integrated Soldier Exoskeleton (UPRISE).
- Figure 122. UNILEXA passive exoskeleton.
- Figure 123. HandTutor.
- Figure 124. MyoPro.
- Figure 125. Myosuit.
- Figure 126. archelis wearable chair.
- Figure 127. Chairless Chair.
- Figure 128. Indego.
- Figure 129. Polyspine.
- Figure 130. Hercule powered lower body exoskeleton.
- Figure 131. ReStore Soft Exo-Suit.
- Figure 132. Hand of Hope.
- Figure 133. REX powered exoskeleton.
- Figure 134. Elevate Ski Exoskeleton.
- Figure 135. UGO210 exoskeleton.
- Figure 136. EsoGLOVE Pro.
- Figure 137. Roki.
- Figure 138. Powered Clothing.
- Figure 139. Againer shock absorbing exoskeleton.
- Figure 140. EasyWalk Assistive Soft Exoskeleton Walker.
- Figure 141. Skel-Ex.
- Figure 142. EXO-H3 lower limbs robotic exoskeleton.
- Figure 143. Ikan Tilta Max Armor-Man 2
- Figure 144. AMADEO hand and finger robotic rehabilitation device.
- Figure 145. Atalante autonomous lower-body exoskeleton.
- Figure 146. Global medical and healthcare wearables market, 2017-2033, millions of US dollars, by product.
- Figure 147. Global market for medical and healthcare sensors and wearables,

2021-2033, by market share of product type.

Figure 148. Libre 3.

Figure 149. Libre Sense Glucose Sport Biowearable.

Figure 150. AcuPebble SA100.

Figure 151. Vitalgram.

Figure 152. Alertgy NICGM wristband.

Figure 153. ALLEVX.

Figure 154. Gastric Alimetry.

Figure 155. Alva Health stroke monitor.

Figure 156. amofit S.

Figure 157. MIT and Amorepacific's chip-free skin sensor.

Figure 158. Sigi Insulin Management System.

Figure 159. The Apollo wearable device.

Figure 160. Apos3.

Figure 161. Artemis is smart clothing system.

Figure 162. KneeStim.

Figure 163. PaciBreath.

Figure 164. Structure of Azalea Vision's smart contact lens.

Figure 165. Belun Ring.

Figure 166. Evo Patch.

Figure 167. Neuronaute wearable.

Figure 168. biped.ai device.

Figure 169. circul+ smart ring.

Figure 170. Cala Trio.

Figure 171. BioSleeve.

Figure 172. Cognito's gamma stimulation device.

Figure 173. Cogwear Headband.

Figure 174. First Relief.

Figure 175. Jewel Patch Wearable Cardioverter Defibrillator .

Figure 176. enFuse.

Figure 177. EOPatch.

Figure 178. Epilog.

Figure 179. FloPatch.

Figure 180. gSKIN.

Figure 181. Hinge Health wearable therapy devices.

Figure 182. MYSA - 'Relax Shirt'.

Figure 183. Atusa system.

Figure 184. Kenzen ECHO Smart Patch.

Figure 185. The Kernel Flow headset.

- Figure 186. KnowU.
- Figure 187. LifeSpan patch.
- Figure 188. Mawi Heart Patch.
- Figure 189. MetaSCOPE.
- Figure 190. WalkAid.
- Figure 191. Monarch Wireless Wearable Biosensor
- Figure 192. Modoo device.
- Figure 193. Munevo Drive.
- Figure 194. Electroskin integration schematic.
- Figure 195. Modius Sleep wearable device.
- Figure 196. Neuphony Headband.
- Figure 197. Nix Biosensors patch.
- Figure 198. BODY-CASE.
- Figure 199. Otolith wearable device.
- Figure 200. Peerbridge Cor.
- Figure 201. Point Fit Technology skin patch.
- Figure 202. Sylvee 1.0.
- Figure 203. RootiRx.
- Figure 204. Sylvee 1.0.
- Figure 205. Silvertree Reach.
- Figure 206. Smardii smart diaper.
- Figure 207. Subcuject.
- Figure 208. Nerivio.
- Figure 209. Feelzing Energy Patch.
- Figure 210. Ultrahuman wearable glucose monitor.
- Figure 211. Vaxxas patch.
- Figure 212. S-Patch Ex.
- Figure 213. Zeit Medical Wearable Headband.
- Figure 214. Vuzix Blade.
- Figure 215. AR operation.
- Figure 216. TCL Leiniaio Air.
- Figure 217. Engo Eyewear.
- Figure 218. Lenovo ThinkReality A3.
- Figure 219. Magic Leap 1.
- Figure 220. Microsoft HoloLens 2.
- Figure 221. OPPO Air Glass AR.
- Figure 222. Snap Spectacles AR (4th gen).
- Figure 223. Vuzix Blade Upgraded.
- Figure 224. NReal Light MR smart glasses.

- Figure 225. Schematic for configuration of full colour microLED display
- Figure 226. BOE glass-based backplane process.
- Figure 227. MSI curved quantum dot miniLED display.
- Figure 228. Nanolumi Chameleon G Film in LED/LCD Monitor.
- Figure 229. Vuzix microLED microdisplay Smart Glasses.
- Figure 230. Pixels per inch roadmap of  $\mu$ -LED displays from 2007 to 2019.
- Figure 231. Mass transfer for  $\mu$ LED chips.
- Figure 232. Schematic diagram of mass transfer technologies.
- Figure 233. Comparison of microLED with other display technologies.
- Figure 234. Lextar 10.6 inch transparent microLED display.
- Figure 235. Transition to borderless design.
- Figure 236. Mojo Vision smart contact lens with an embedded MicroLED display.
- Figure 237. Cellid AR glasses, Exploded version.
- Figure 238. Air Glass.
- Figure 239. Panasonic MeganeX.
- Figure 240. Thunderbird Smart Glasses Pioneer Edition.
- Figure 241. Vuzix microLED micro display Smart Glasses.
- Figure 242. Leopard demo glasses by WaveOptics.
- Figure 243. Global gaming and entertainment wearable technology market, 2018-2033, millions units, by product.
- Figure 244. Skinetic vest.
- Figure 245. IntelliPix design for 0.26" 1080p microLED display.
- Figure 246. Dapeng DPVR P1 Pro 4k VR all-in-one VR glasses.
- Figure 247. Vive Focus 3 VR headset Wrist Tracker.
- Figure 248. Huawei smart glasses.
- Figure 249. Jade Bird Display micro displays.
- Figure 250. JBD's 0.13-inch panel.
- Figure 251. 0.22" Monolithic full colour microLED panel and inset shows a conceptual monolithic polychrome projector with a waveguide.
- Figure 252. Kura Technologies' AR Glasses.
- Figure 253. Smart contact lenses schematic.
- Figure 254. OQmented technology for AR smart glasses.
- Figure 255. VISIRIUM Technology smart glasses prototype.
- Figure 256. SenseGlove Nova.
- Figure 257. MeganeX.
- Figure 258. A micro-display with a stacked-RGB pixel array, where each pixel is an RGB-emitting stacked microLED device (left). The micro-display showing a video of fireworks at night, demonstrating the full-colour capability (right). N.B. Areas around the display

- Figure 259. JioGlass mixed reality glasses type headset.
- Figure 260. Vuzix uLED display engine.
- Figure 261. Xiaomi Smart Glasses.
- Figure 262. Timeline of the different generations of electronic textiles.
- Figure 263. Examples of each generation of electronic textiles.
- Figure 264. Conductive yarns.
- Figure 265. Electronics integration in textiles: (a) textile-adapted, (b) textile-integrated (c) textile-based.
- Figure 266. Stretchable polymer encapsulation microelectronics on textiles.
- Figure 267. Wove Band.
- Figure 268. Wearable graphene medical sensor.
- Figure 269. Conductive yarns.
- Figure 270. Classification of conductive materials and process technology.
- Figure 271. Structure diagram of Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub>.
- Figure 272. Structure of hexagonal boron nitride.
- Figure 273. BN nanosheet textiles application.
- Figure 274. SEM image of cotton fibers with PEDOT:PSS coating.
- Figure 275. Schematic of inkjet-printed processes.
- Figure 276: Silver nanocomposite ink after sintering and resin bonding of discrete electronic components.
- Figure 277. Schematic summary of the formulation of silver conductive inks.
- Figure 278. Copper based inks on flexible substrate.
- Figure 279: Schematic of single-walled carbon nanotube.
- Figure 280. Stretchable SWNT memory and logic devices for wearable electronics.
- Figure 281. Graphene layer structure schematic.
- Figure 282. BGT Materials graphene ink product.
- Figure 283. PCM cooling vest.
- Figure 284. SMPU-treated cotton fabrics.
- Figure 285. Schematics of DIAPLEX membrane.
- Figure 286. SMP energy storage textiles.
- Figure 287. Nike x Acronym Blazer Sneakers.
- Figure 288. Adidas 3D Runner Pump.
- Figure 289. Under Armour Archi-TechFuturist.
- Figure 290. Reebok Reebok Liquid Speed.
- Figure 291. Radiate sports vest.
- Figure 292. Adidas smart insole.
- Figure 293. Applications of E-textiles.
- Figure 294. EXO2 Stormwalker 2 Heated Jacket.
- Figure 295. Flexible polymer-based heated glove, sock and slipper.

- Figure 296. ThermaCell Rechargeable Heated Insoles.
- Figure 297. Myant sleeve tracks biochemical indicators in sweat.
- Figure 298. Flexible polymer-based therapeutic products.
- Figure 299. iStimUweaR .
- Figure 300. Digitsole Smartshoe.
- Figure 301. Basketball referee Royole fully flexible display.
- Figure 302. A mechanical glove, Robo-Glove, with pressure sensors and other sensors jointly developed by General Motors and NASA.
- Figure 303. Power supply mechanisms for electronic textiles and wearables.
- Figure 304. Micro-scale energy scavenging techniques.
- Figure 305. Schematic illustration of the fabrication concept for textile-based dye-sensitized solar cells (DSSCs) made by sewing textile electrodes onto cloth or paper.
- Figure 306. 3D printed piezoelectric material.
- Figure 307. Application of electronic textiles in AR/VR.
- Figure 308. Global electronic textiles and smart clothing market 2017-2033, revenues by sector (billions USD).
- Figure 309. Global market for electronics and smart textiles, 2020-2033, by market share of product type.
- Figure 310. BioMan+.
- Figure 311. EXO Glove.
- Figure 312. LED hooded jacket.
- Figure 313. Heated element module.
- Figure 314. Carhartt X-1 Smart Heated Vest.
- Figure 315. Cionic Neural Sleeve.
- Figure 316. Graphene dress. The dress changes colour in sync with the wearer's breathing.
- Figure 317. Descante Solar Thermo insulated jacket.
- Figure 318. G+ Graphene Aero Jersey.
- Figure 319. HiFlex strain/pressure sensor.
- Figure 320. KiTT motion tracking knee sleeve.
- Figure 321. Healables app-controlled electrotherapy device.
- Figure 322. LumeoLoop device.
- Figure 323. Electroskin integration schematic.
- Figure 324. Nextiles' compression garments.
- Figure 325. Nextiles e-fabric.
- Figure 326. .Nuada.
- Figure 327. Palarum PUP smart socks.
- Figure 328. Smardii smart diaper.
- Figure 329. Softmatter compression garment.



Figure 330. Softmatter sports bra with a woven ECG sensor.

Figure 331. MoCap Pro Glove.

Figure 332. Teslasuit.

Figure 333. ZOZOFIT wearable at-home 3D body scanner.

Figure 334. YouCare smart shirt.

## I would like to order

Product name: The Global Market for Wearable Electronics 2023-2033

Product link: <https://marketpublishers.com/r/GC054DD82B09EN.html>

Price: US\$ 1,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/GC054DD82B09EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:  
Last name:  
Email:  
Company:  
Address:  
City:  
Zip code:  
Country:  
Tel:  
Fax:  
Your message:

**\*\*All fields are required**

Customer signature \_\_\_\_\_

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970