2023 FUS Industry

Focused Ultrasound Foundation

Overview

Large medical device companies are continuing to show strong interest in partnering with start-up focused ultrasound companies, helping to move the commercial field forward. New in 2022 we saw investment from the pharmaceutical industry in companies working to advance focused ultrasound for drug delivery. We also saw a focused ultrasound company receive a 2022 Edison Award in the Science and Medical Outpatient Treatment category and we continue to see industry companies receive Breakthrough Device Designation from the FDA.

During 2022, 17 new focused ultrasound companies entered the ecosystem—ten manufacturers, five OEMs and two microbubble companies. From publicly available sources and industry reporting, we estimate the field employs nearly 3,000 individuals spread around the world. Just under half of the worldwide employee count is concentrated in the United States, Israel, and France. The median company size is 12 employees and 66 percent of companies have 20 or fewer employees. There are over 1,000 focused ultrasound devices in use for commercial treatment around the world; these are fairly evenly distributed between North America, Europe, and Asia.

VIII. FUS Industry

VIII. 2 Overview

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Geographic Distribution of Companies

2022

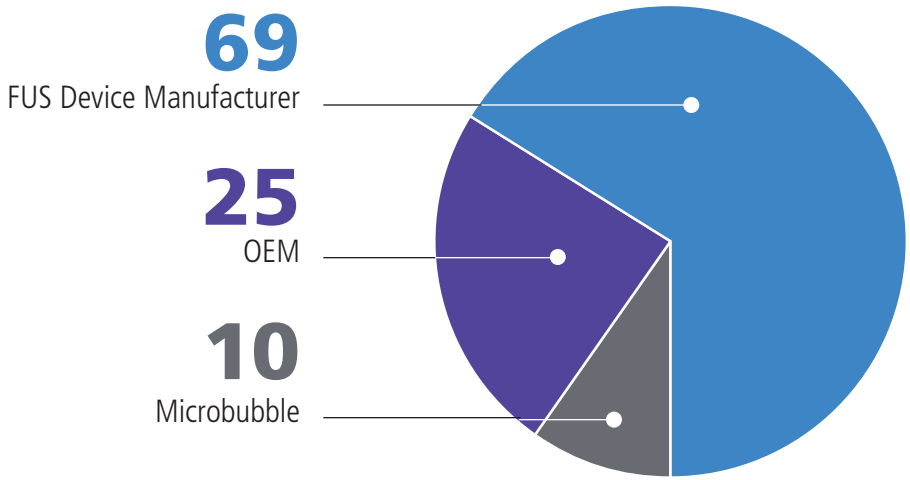
	North America	Europe	Asia
104 FUS companies	48	26	30
69 FUS device manufacturers	31	16	22
16 Companies with approvals	3	4	9

Companies

104

FUS companies*

Company distribution by type



* This analysis includes all FUS industry companies where employee information was available, including FUS device manufacturers, OEM, and microbubble companies.

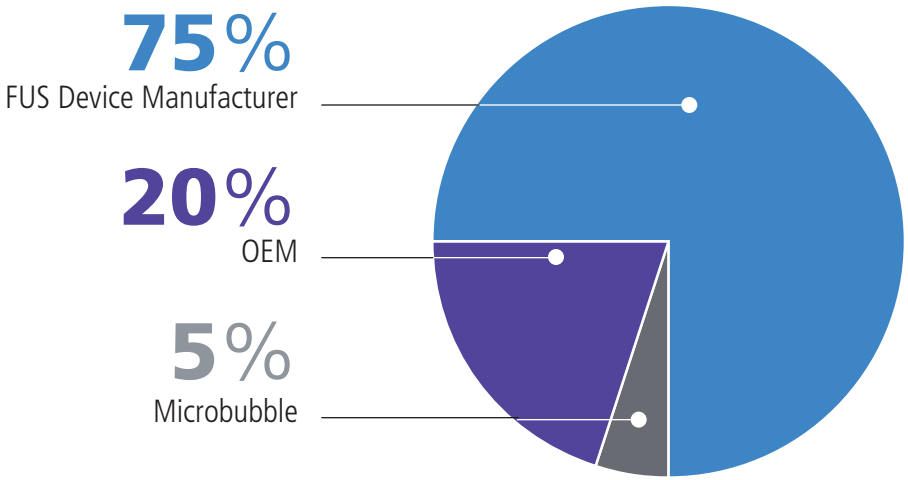
Just as a reminder, the company timelines include the year the company became involved in the focused ultrasound industry instead of the date of incorporation. For many early-stage focused ultrasound manufacturing companies, this date is one and the same; however, for the OEM and/or microbubble companies, it is often different.

Employees

2838

Employees*

Employee distribution



* Number of employees estimated from publicly available sources and directly reported by companies on our annual survey.

Most of the focused ultrasound industry employment is by focused ultrasound device manufacturers. Despite these companies being early stage and having small workforces, they are more numerous than OEM and microbubble companies. The largest geographic location of focused ultrasound employment is the United States, followed by Israel and France. These three countries comprise 50 percent of the labor pool with the remainder of the employees broadly distributed around the globe.

Employee Distribution*

12
employees
is the median company size

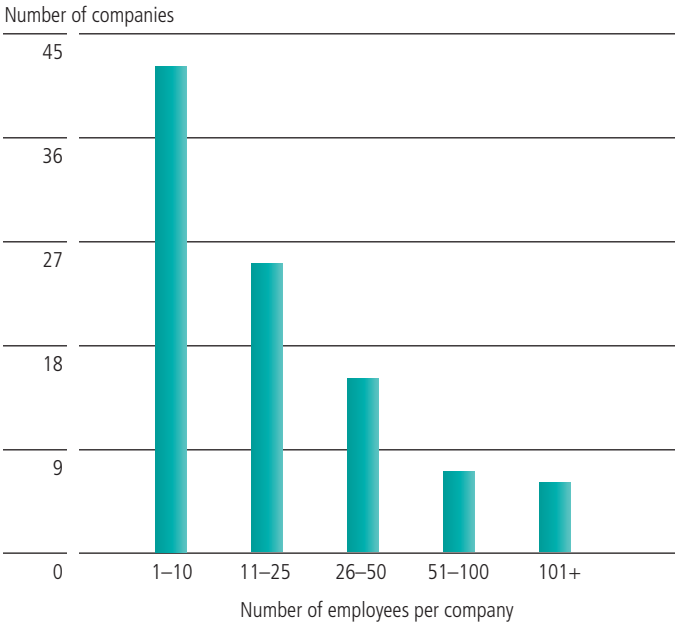
10%
of the total workforce is employed by the
52 smallest companies

66%
of companies have
20 or fewer employees

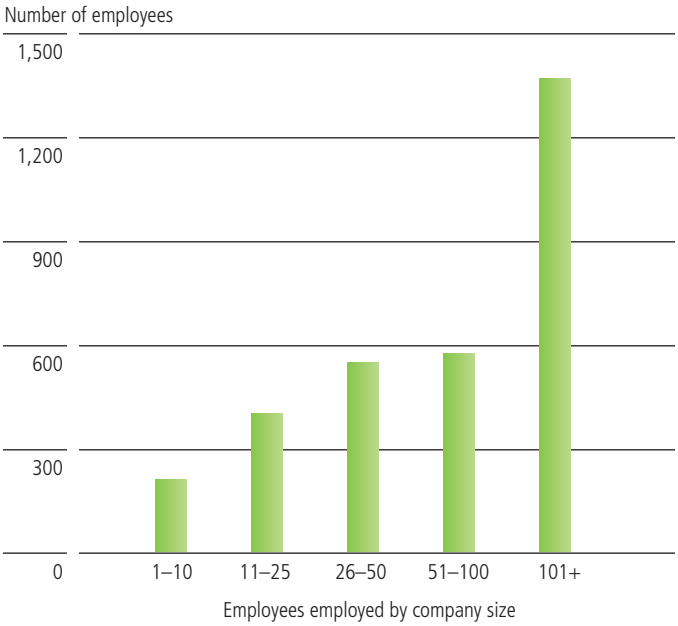
50%
of the total workforce is employed by the
8 largest companies

* This analysis includes device manufacturers, OEM, and microbubble companies.

Number of Companies



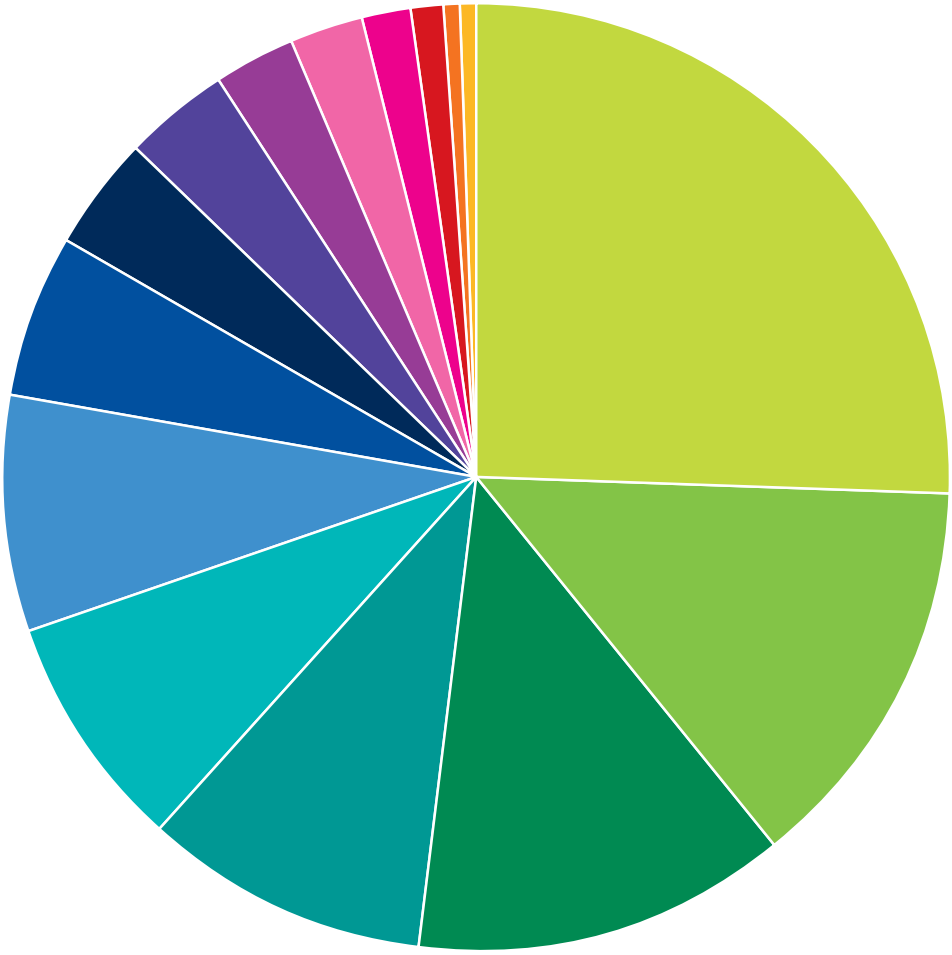
Number of Employees



FUS Employee Locations

2,019 employees*

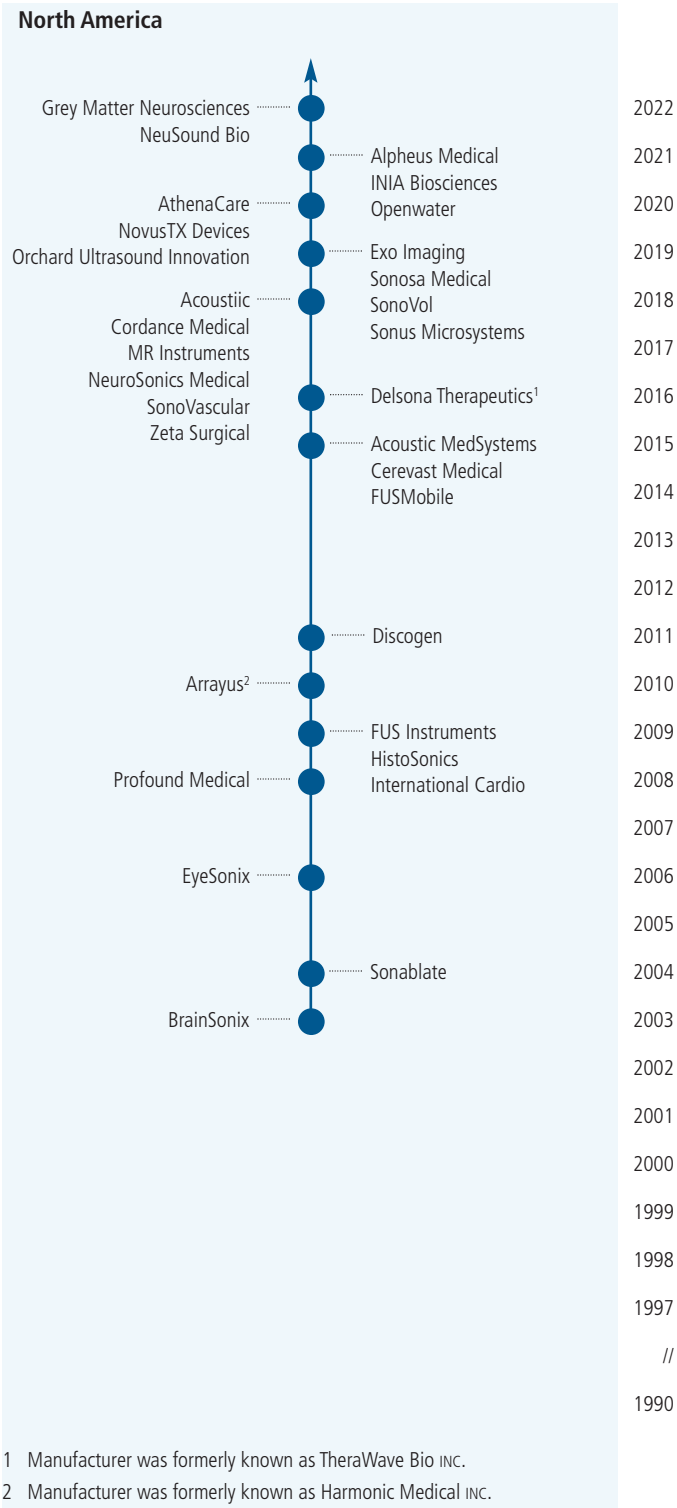
United States	516
Israel	272
France	259
South Korea	196
Canada	160
China	159
Japan	115
Germany	75
Taiwan	72
United Kingdom	59
Switzerland	50
Denmark	34
Finland	23
Norway	10
Malaysia	7
Columbia	5
Italy	3
United Arab Emirates	2
The Netherlands	1
Spain	1



*Number of employees directly reported by companies on our annual survey.

North America—Timelines of Companies

Clinical Device Manufacturers

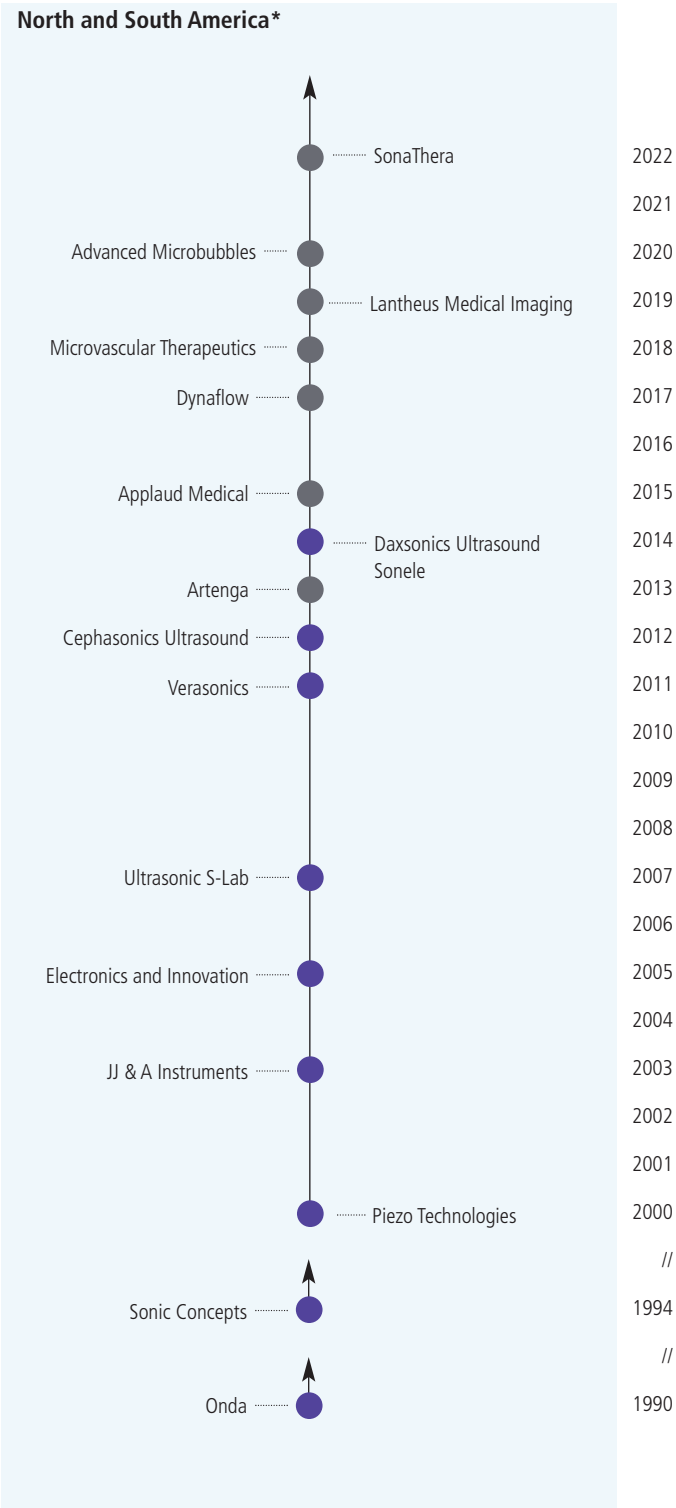


1 Manufacturer was formerly known as TheraWave Bio INC.

2 Manufacturer was formerly known as Harmonic Medical INC.

Other FUS Companies

Microbubble OEM



North America—Companies

North America

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CLINICAL DEVICE MANUFACTURERS

✚ Acoustic MedSystems INC | Savoy, Illinois, United States, acousticmed.com

Acoustiic INC | Seattle, Washington, United States, acoustiic.com

Alpheus Medical INC | North Oakdale, Minnesota, United States, alpheusmedical.com

Arrayus Technologies INC[2] | Burlington, Ontario, Canada, arrayus.ca

AthenaCare LLC | Salt Lake City, Utah, United States

BrainSonix CORP | Sherman Oaks, California, United States, brainsonix.com

Cerevast Medical INC | Bothell, Washington, United States, cerevast.com

Cordance Medical INC | Mountain View, California, United States, cordancemedical.com

Delsona Therapeutics INC[1] | New York, New York, United States

Discogen | Weston, Florida, United States, discogen.com

Exo Imaging INC | Redwood City, California, United States, exo-imaging.com

EyeSonix | Long Beach, California, United Sates, eyesonix.com

FUS Instruments INC | Toronto, Ontario, Canada, fusinstruments.com

FUSMobile INC | Alpharetta, Georgia, United States, fusmobile.com

Grey Matter Neurosciences | Toronto, Ontario, Canada

HistoSonics INC | Ann Arbor, Michigan, United States, histosonics.com

INIA Biosciences INC | Boston, Massachusetts, United States, iniabiosciences.com

International Cardio CORP LLC | Edina, Minnesota, United States, hifu-rx.com

MR Instruments INC | Hopkins, Minnesota, United States, mrinstruments.com

NeuroSonics Medical INC | Baltimore, Maryland, United States, neurosonicsmedical.com

NeuSound Bio | California, United States

NovusTX Devices INC | Calgary, Alberta, Canada, novustx-devices.com

Openwater | San Francisco, California, United States, openwater.cc

Orchard Ultrasound Innovation | Sunnyvale, California, United States, orchardultrasound.com

✚ Profound Medical CORP | Mississauga, Ontario, Canada, profoundmedical.com

✚ Manufacturers with regulatory approvals. To see a detailed breakdown of regional and country approvals, see charts starting on p. IX.5.

1 Manufacturer was formerly known as TheraWave Bio INC.

2 Manufacturer was formerly known as Harmonic Medical INC.

North America—Companies continued

North America continued

CLINICAL DEVICE MANUFACTURERS continued

✚ Sonablate CORP | Charlotte, North Carolina, United States, sonablate.com

SonoVascular INC | Chapel Hill, North Carolina, United States, sonovascular.com

SonoVol INC | Durham, North Carolina, United States, sonovol.com

Sonus Microsystems | Vancouver, British Columbia, Canada, sonusmicrosystems.com

UltraNeuro | Cambridge, Massachusetts, United States, www.pivottheworld.com

Zeta Surgical INC | Boston, Massachusetts, United States, zetasurgical.com

MICROBUBBLE

Advanced Microbubbles INC | Newark, California, United States, advancedmicrobubbles.com

Applaud Medical INC | San Francisco, California, United States, applaudmedical.com

Artenga INC | Ottawa, Ontario, Canada, artenga.com

Dynaflow INC | Jessup, Maryland, United States, dynaflow-inc.com

Lantheus Medical Imaging INC | North Billerica, Massachusetts, United States, lantheus.com

Microvascular Therapeutics LLC | Tucson, Arizona, United States, mvtpharma.com

SonoThera INC | San Francisco, California, United States, sonothera.com

OEM

Cephasonics Ultrasound | San Jose, California, United States, www.cephasonics.com

Daxsonics Ultrasound INC | Halifax, Nova Scotia, Canada, daxsonics.com

Electronics and Innovation LTD | Rochester, New York, United States, eandiltd.com

JJ & A Instruments LLC | Rathdrum, Idaho, United States, jja-instruments.com

Onda CORP | Sunnyvale, California, United States, ondacorp.com

Piezo Technologies | Indianapolis, Indiana, United States, piezotechnologies.com

Sonele INC | Markham, Ontario, Canada, sonele.com

Sonic Concepts INC | Bothell, Washington, United States, sonicconcepts.com

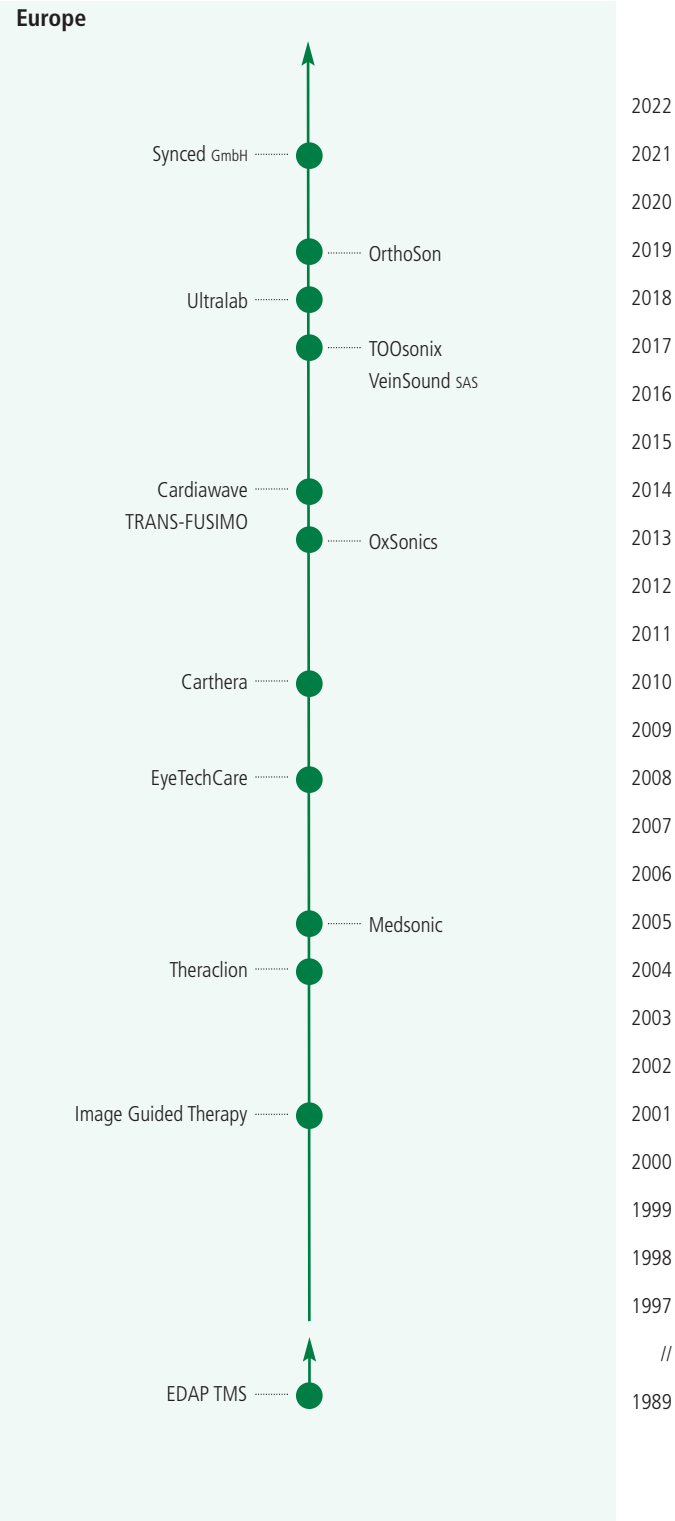
Ultrasonic S-Lab LLC | Concord, California, United States, ultrasonic-s-lab.com

Verasonics INC | Kirkland, Washington, United States, verasonics.com

✚ Manufacturers with regulatory approvals. To see a detailed breakdown of regional and country approvals, see charts starting on p. IX.5.

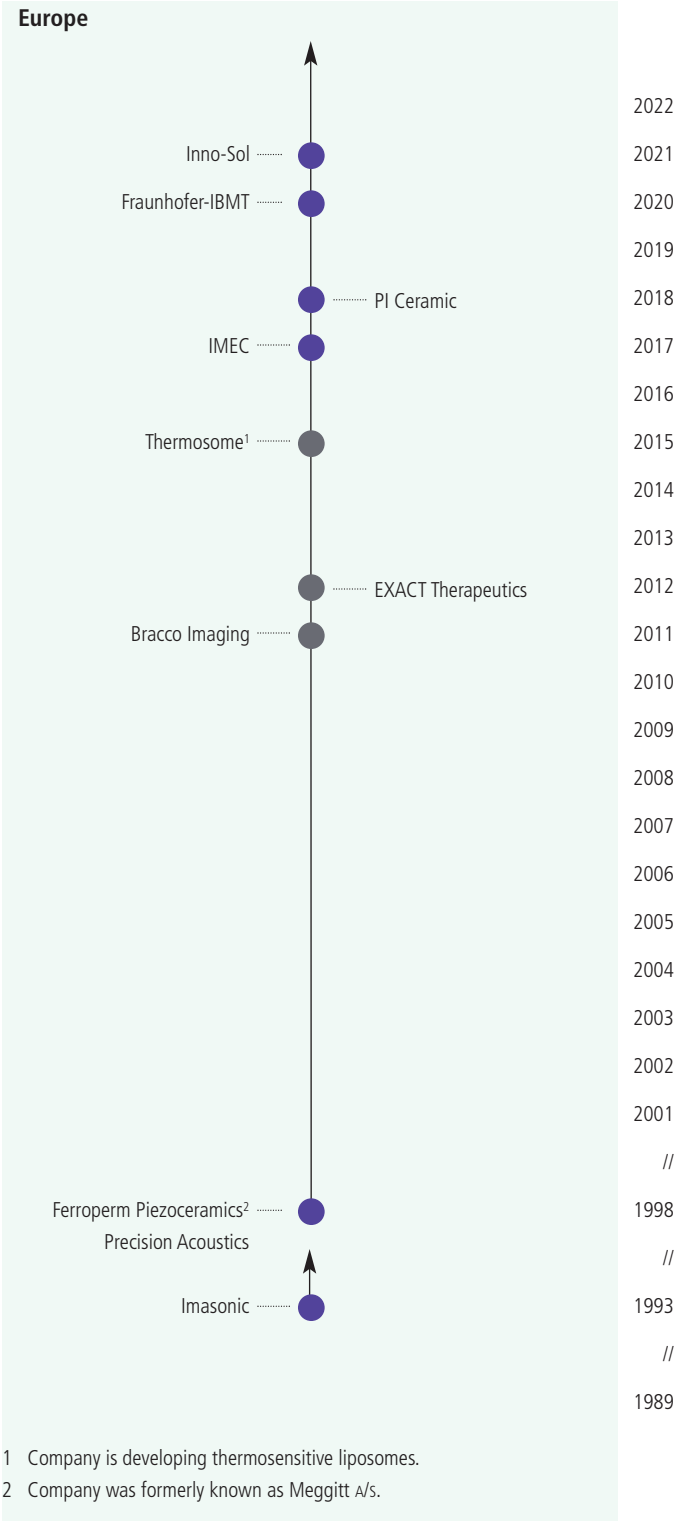
Europe—Timelines of Companies

Clinical Device Manufacturers



Other FUS Companies

Microbubble OEM



1 Company is developing thermosensitive liposomes.
2 Company was formerly known as Meggitt A/S.

Europe—Companies

Europe

25

CLINICAL DEVICE MANUFACTURERS

Cardiawave SA | Paris, France, cardiawave.com

Carthera SA | Paris, France, carthera.eu

✚ EDAP TMS SA | Vaulx-en-Velin, France, edap-tms.com

✚ EyeTechCare SA | Lyon, France, eyetechcare.com

Image Guided Therapy SA | Pessac, France, imageguidedtherapy.com

Medsonic LTD | Limassol, Cyprus, medsonic.com.cy

OrthoSon LTD | Oxford, England, United Kingdom, orthoson.com

OxSonics LTD | Oxford, England, United Kingdom, oxsonics.com

Qwanteus | France, qwanteus.com

Synced GmbH | Hamburg, Germany

✚ Theraclion SA | Malakoff, France, theraclion.fr

Therason | France

✚ TOOsonix A/S | Hørsholm, Denmark, toosonix.com

TRANS-FUSIMO | Bremen, Germany, trans-fusimo.eu

Ultralab LTD | Çankaya/Ankara, Turkey, ultralabltd.com

VeinSound SAS | Lyon, France, veinsound.com

✚ Manufacturers with regulatory approvals. To see a detailed breakdown of regional and country approvals, see charts starting on p. IX.5.

Europe—Companies continued

Europe continued

MICROBUBBLE*

Bracco Imaging SPA | Milano, Italy, braccoimaging.com

EXACT Therapeutics AS | Oslo, Norway, exact-tx.com

Thermosome GMBH[1] | Planegg/Martinsried, Germany, thermosome.com

OEM

Ferroperm Piezoceramics[2] | Kvistgaard, Denmark, meggittferroperm.com

Fraunhofer-Institut für Biomedizinische Technik | Sulzbach, Germany, ibmt.fraunhofer.de

Imasonic SA | Voray-sur-l'Ognon, France, imasonic.com

imec | Leuven, Belgium, imec-int.com

PI Ceramic GmbH | Lederhose, Germany, piceramic.com

Precision Acoustics LTD | Dorchester, England, United Kingdom, acoustics.co.uk

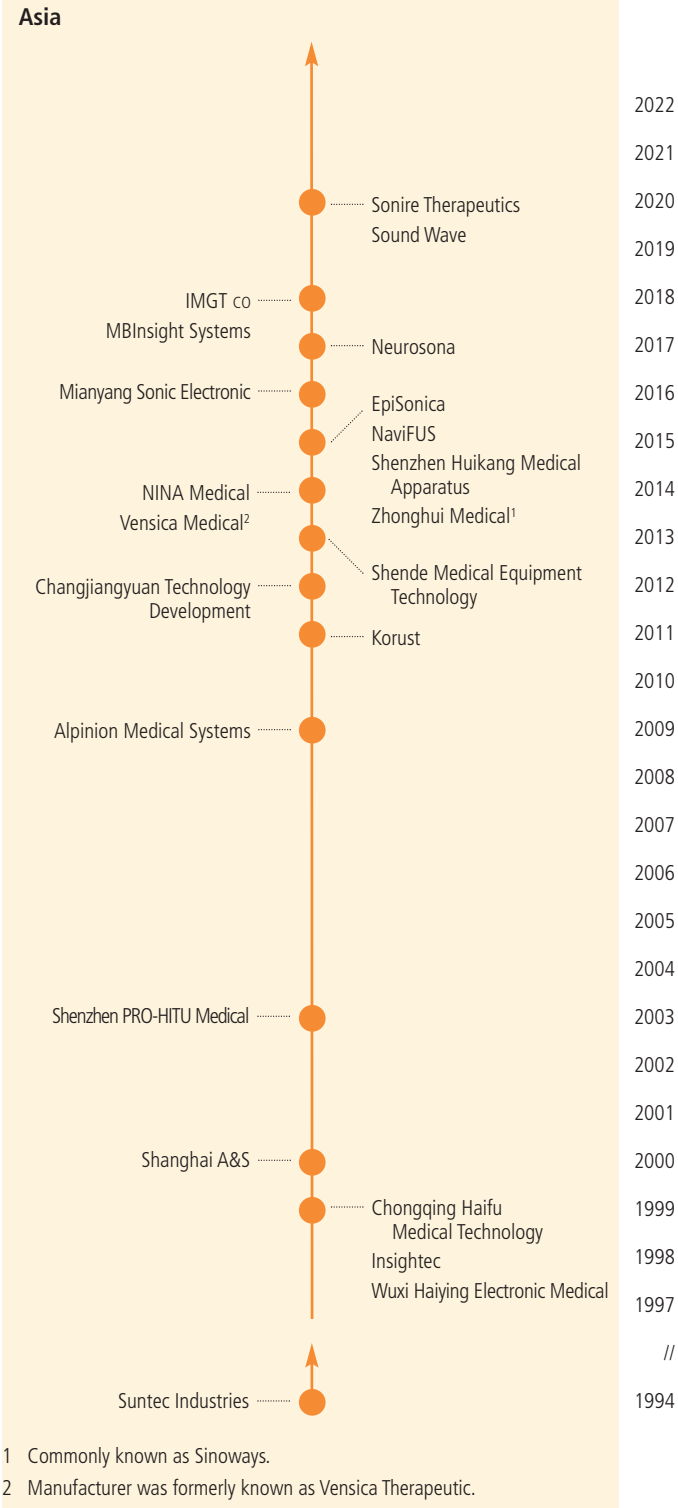
* Also includes thermosensitive liposomes.

1 Company is developing thermosensitive liposomes

2 Company was formerly known as Meggitt A/S.

Asia—Timelines of Companies

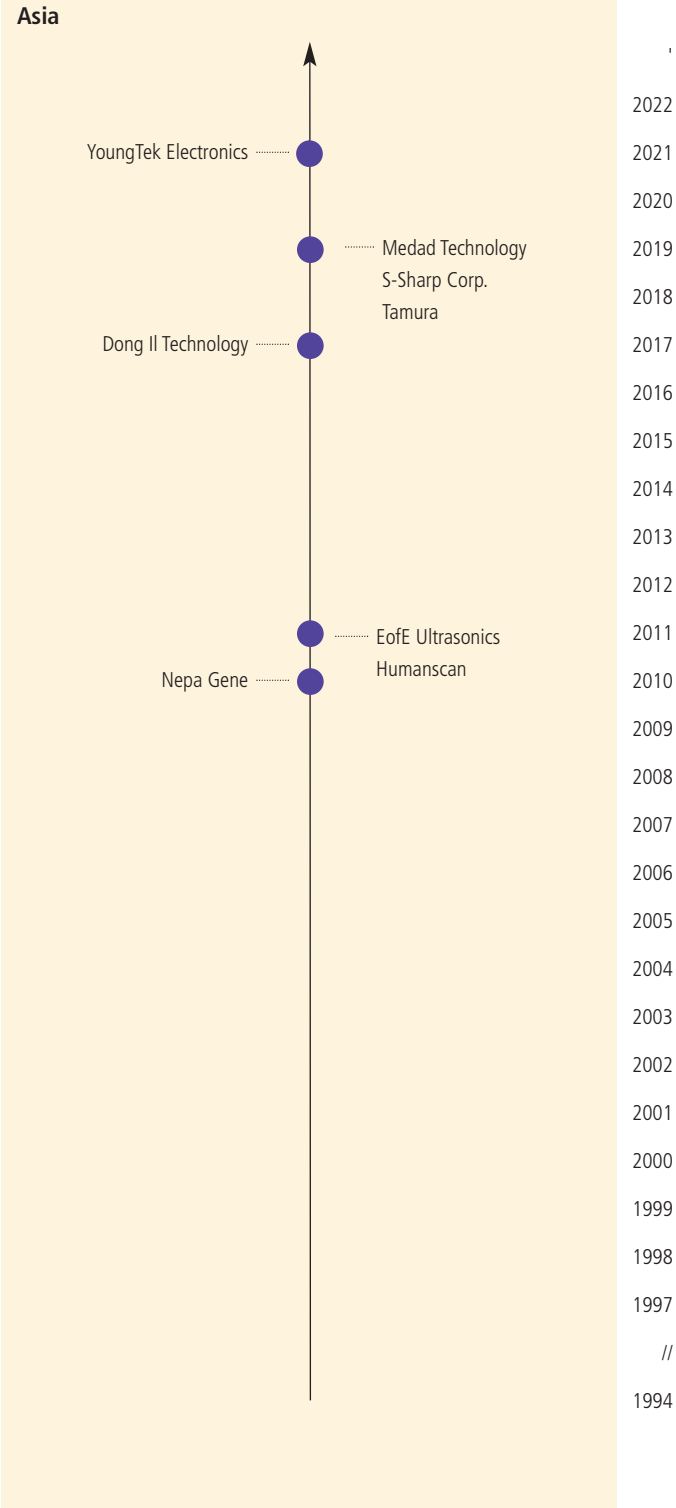
Clinical Device Manufacturers



1 Commonly known as Sinoways.
2 Manufacturer was formerly known as Vensica Therapeutic.

Other FUS Companies

Microbubble OEM



Asia—Companies

Asia

30

CLINICAL DEVICE MANUFACTURERS

- ✚ Alpinion Medical Systems CO LTD | Seoul, South Korea, alpinion.com
- ✚ Changjiangyuan Technology Development CO LTD | Beijing, China, cjykj.com
- ✚ Chongqing Haifu Medical Technology CO LTD | Chongqing, China, haifumedical.com
- ✚ EpiSonica CORP | Hsinchu, Taiwan, episonica.com
- IMGT CO LTD | Seongnam, South Korea, nanoimgt.com
- ✚ Insightec LTD | Tirat Carmel, Israel, insightec.com
- Korust CO LTD | Anyang, South Korea, korust.com
- MBInsight Systems INC | Taiwan
- Mianyang Sonic Electronic LTD | Mianyang City, China, ultrasound.cn
- NaviFUS CORP | New Taipei City, Taiwan, navi-fus.com
- Neurosona CO LTD | Seoul, South Korea, neurosona.com
- NINA Medical LTD | Nazareth, Israel, ninamed.com
- ✚ Shanghai A&S Science Technology Development CO LTD | Shanghai, China, aishen.com.cn
- ✚ Shende Medical Equipment Technology CO LTD | Shanghai, China, shendehc.com
- Shenzhen Huikang Medical Apparatus CO LTD | Shenzhen, China, eswl.cn
- ✚ Shenzhen PRO-HITU Medical Technology CO LTD | Shenzhen, China, pro-hifu.com
- SONIRE Therapeutics INC | Tokyo, Japan,sonire-therapeutics.com
- Sound Wave Innovation CO LTD | Tokyo, Japan, sw-innovation.com
- Suntec Industries CO LTD | Shanghai, China
- Vensica Therapeutics[2] | Misgav, Israel, vensica.com
- ✚ Wuxi Haiying Electronic Medical Systems CO LTD | Wuxi, China, haiyingmedical.com.cn
- Zhonghui Medical Technology CO LTD[1] | Shanghai, China, zhonghuimt.com

✚ Manufacturers with regulatory approvals. To see a detailed breakdown of regional and country approvals, see charts starting on p. IX.5.

1 Commonly known as Sinoways.

2 Manufacturer was formerly known as Vensica Therapeutic.

Asia—Companies continued

Asia continued

- OEM

Dong Il Technology LTD | Hwaseong, South Korea, dongiltech.co.kr

EofE Ultrasonics CO LTD | Seoul, South Korea, ultrasonics.co.kr

Humanscan CO LTD | Ansan, South Korea, humanscan.co.kr

Medad Technology | Dubai, United Arab Emirates, medadtechnology.com

Nepa Gene CO | Chiba, Japan, nepagene.jp

S-Sharp CORP | New Taipei City, Taiwan, s-sharp.com

Tamura CORP | Tokyo, Japan, tamuracorp.com

YoungTek Electronics | Hsinchu City, Taiwan, ytec.com.tw

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FUS Devices in Use

Number and Growth

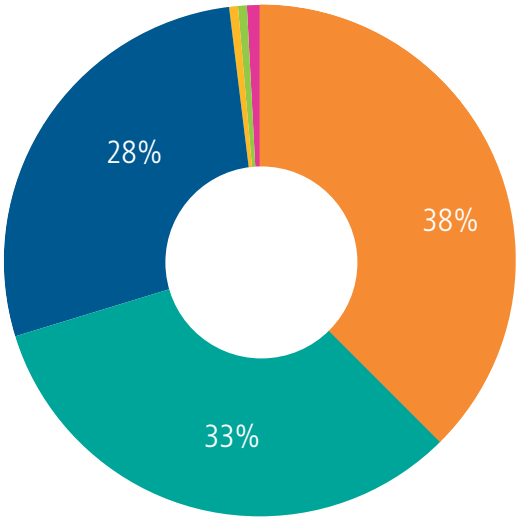
2022

1,265
FUS Devices

11%
Growth
2021 over 2020

Worldwide Distribution

2022



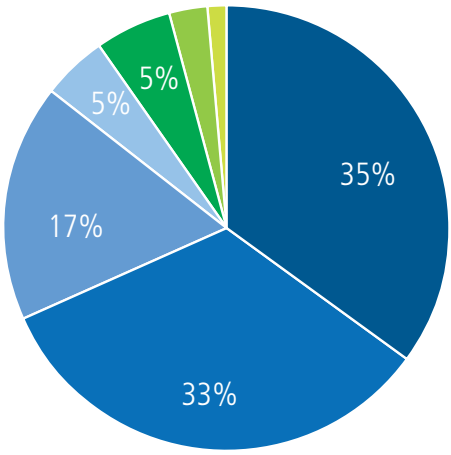
North America	28%
Europe	33%
Asia	38%
South America	>1%
Oceania	>1%
Africa	>1%

FUS Device Use by Region

North America

314

Devices



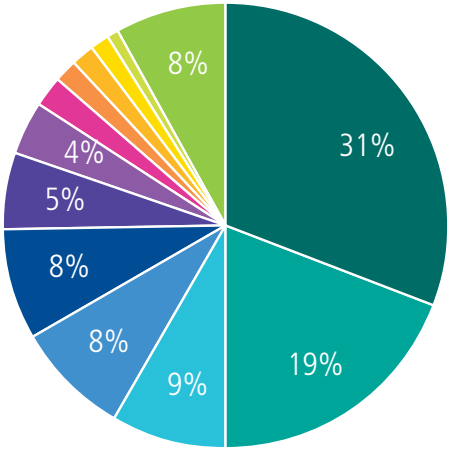
US, Central	35%
Eastern	33%
Pacific	17%
Mountain	5%
Canada	5%
Mexico	3%
Other*	1%

*Cayman Islands, Cuba, Dominica, and Dominican Republic

Europe

372

Devices



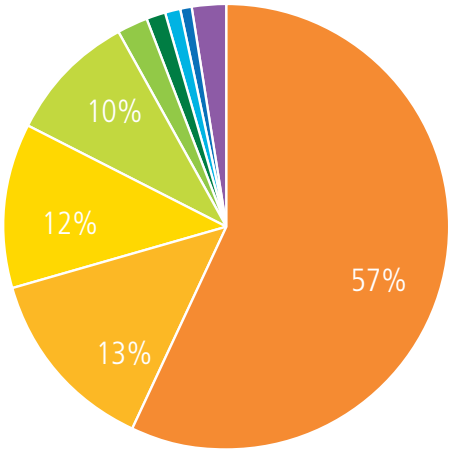
France	31%
Germany	19%
Italy	9%
Russian Federation	8%
United Kingdom	8%
Spain	6%
Switzerland	4%
The Netherlands	2%
Armenia	2%
Poland	2%
Norway	1%
Denmark	1%
Other*	8%

*Austria, Belgium, Bulgaria, Czech Republic, Finland, Georgia, Greece, Latvia, Monaco, Portugal, Romania, Serbia, Sweden, Turkey, and Ukraine

Asia

430

Devices



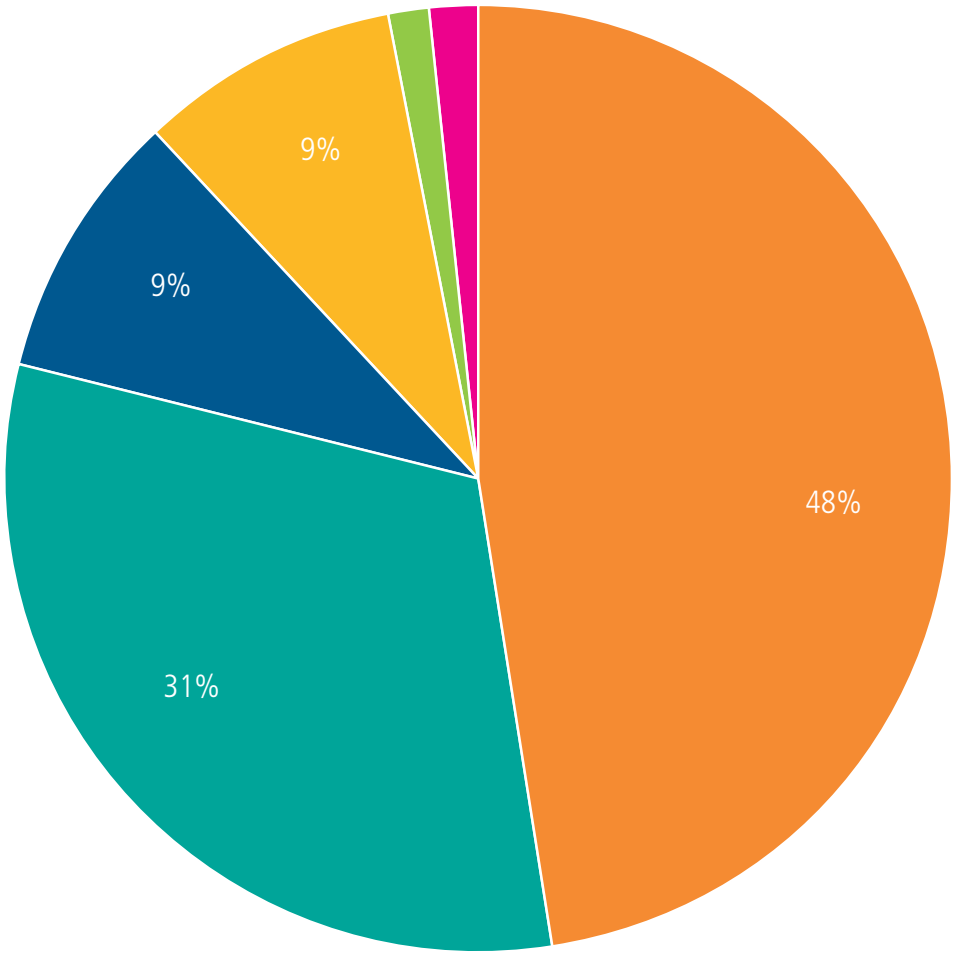
China	57%
South Korea	13%
Japan	12%
Taiwan	10%
India	2%
Israel	2%
Singapore	>1%
Thailand	>1%
Other*	3%

*Iran, Kazakhstan, Lebanon, Malaysia, Myanmar, Philippines, Uzbekistan, and Vietnam

Distributors by Region

67 distributors

North America	6	9%
Europe	21	31%
Asia	32	48%
South America	6	9%
Oceania	1	1.5%
Africa	1	1.5%



Distributors by Region continued

North America

- Agiliti Health INC
- American HIFU LLC
- Cyber Robotic Solutions SA de CV
- HIFU Prostate Services LLC
- Soluciones Medicas Avanzadas SAS
- Vituro Health LLC

Europe

- ab medica SPA
- ADS Elektronik Tıbbi Cihazlar AS
- Andromed Tıbbi Cihazlar ve Sağlık Hizmetleri
- Brainbox LTD
- Consultronix SA
- InnoMedicus AG
- Kungshusen Medicinska AB
- Levi Danismanlik ve Ticaret AS
- Medicina Analítica Consumibles SA
- Medistim Danmark APS
- Medkonsult SRO
- Palex Medical SA
- Promedica Bioelectronics SRL
- ProMedical OY
- Sigmacon UK LTD
- SofMedica
- Synektik Group
- Tema Sinergie SPA
- Timko SP ZOO
- Vingmed AS
- VIVAX Pharmaceuticals SRO

Distributors by Region continued

Asia

Allmed Solutions
Amed CO LTD
AMI Technologies LTD
Amos Gazit LTD
Beijing Beike Digital Medical Technology CO LTD
Beijing Ren De Sheng Technology
Best Digital CO LTD
Bravotac CORP LTD
CanAm Scientific
Century Scientific and Equipment CO WLL
Demakai CO LTD
Demed Solutions SDN BHD
Double Success CO LTD
DSS Imagetech PVT LTD
ECHO Healthcare INC
Ekpac China LTD
Hanyoung Trading CO LTD
Huons Medical
imedtac CO LTD
Medfocus CO LTD
Medical Imaging System PTE LTD
Nanomedix PVT LTD
Pro Chime Enterprise CORP
Rad Medical CORP
Sumo Corporations LTD
Takai Hospital Supply CO LTD
Tasly SonaCare Medical Engineering Technology CO LTD
Theraclion China LTD
Transmedic PTE LTD
Valor Health CO LTD
Varitron
Yangde Instrument CO LTD

South America

Cencomex SA
Imemed Bolivia
Medicinelaser SA
Protrauma SA
Sirex Médica SA
Strattner & Cia LTDA

Oceania

Getz Healthcare Australia

Africa

SARL Medimatec

Currently, 16 focused ultrasound device manufacturers have commercial products available. Please see Chapter 10 for further details on these companies and their products.

However, with an ecosystem of 70 manufacturers, that means 83 percent are in the R&D stage. The field is still very early stage.

What follows is a table with high-level information about the various devices around the world and what type of imaging is utilized for treatment and planning guidance.

FUS Devices with Treatment and Planning Guidance

Manufacturer	Device	Treatment guidance	Planning guidance	Approval
North America				
Research & Development				
Acoustic MedSystems	ACOUSTx	Ultrasound, CT-fluoroscopy, MRI, and 3D targeting	–	
	TheraVision	–	–	✚
Acoustiic	AgilitUS	MR guidance	MR guidance	
Alpheus Medical	CV01	–	–	
Arrayus[2]	Symphony	US & MR guidance	–	
AthenaCare	Muse MRgFUS System	MR guidance	MR guidance	
BrainSonix	BXPulsar 1001 LIFUP	MR guidance	MR guidance	
	BXPulsar 1002 LIFUP	MR guidance	MR guidance	
Cerevast Medical	Aureva Pulse	US guidance	–	
	Reflow RVO	US guidance	–	
Delsona Therapeutics[1]	Ultranav (prototype)	Image fusion	Neuronavigation	
Exo Imaging	Performance Ultrasound Platform	–	–	
EyeSonix	TUG - Therapeutic Ultrasound for Glaucoma	Unguided	Visual guidance	
FUS Instruments	DS-50	–	–	
	LP-100	MR guidance	–	
	RK-100	–	–	
	RK-20	Other guidance	–	
	RK-300	MR guidance	–	
	RK-50	Other guidance	–	
FUSMobile	Neurolyser	Other guidance	Not used	
HistoSonics	Edison	US guidance	US guidance	
International Cardio	HIFU Synthesizer	US guidance	US guidance	
MR Instruments	DuoFLEX ACCESS Coil	MR guidance	MR guidance	
	MR-guided TRUST (Transcranial Ultrasound Stimulation)	MR guidance	MR guidance	
NeuroSonics Medical	NeuroSonics (prototype)	US guidance	MR guidance	
Sonosa Medical	Sonosa Therapeutic	US guidance	Not used	

1 Manufacturer was formerly known as TheraWave.

2 Manufacturer was formerly known as Harmonic Medical INC.

FUS Devices with Treatment and Planning Guidance continued

Manufacturer	Device	Treatment guidance	Planning guidance	Approval
North America				
Commercial				
Profound Medical	Sonalleve	MR guidance	MR guidance	✚
	TULSA-PRO	MR guidance	MR guidance	✚
Sonablate Corp.	Sonablate	US guidance	MR/US fusion	✚
	Sonatherm	US guidance	US guidance	✚

FUS Devices with Treatment and Planning Guidance continued

Manufacturer	Device	Treatment guidance	Planning guidance	Approval
Europe				
Research & Development				
Cardiawave	Valvosoft	US guidance	US guidance	
CarThera	SonoCloud 1	Unguided	Not used	
	SonoCloud 9	Unguided	Not used	
EDAP TMS	EDAP (prototype)	US guidance	US guidance	
Image Guided Therapy	3Bop	Stereotactic frame	–	
	LabFUS	MR guidance	MR guidance	
	Rodent FUS System	MR guidance	MR guidance	
	TargetedFUS	MR guidance	MR guidance	
	UFOGUIDE	MR guidance	MR guidance	
Medsonic	Bone phantoms - Medsonic	MR guidance	–	
	MR-Compatible Transducers	MR guidance	–	
	Robotic Systems	MR guidance	–	
	Shinsei motor electronic system	MR guidance	–	
	Skull phantoms - Medsonic	MR guidance	–	
OxSonics	SonoTran System	US guidance	US guidance	
TOOsonix	System ONE-R	Image fusion	Visual guidance	
TRANS-FUSIMO	TransFUSIMO Treatment System	MR guidance	MR guidance	
VeinSound, SAS	PHEA1	US guidance	US guidance	

FUS Devices with Treatment and Planning Guidance continued

Manufacturer	Device	Treatment guidance	Planning guidance	Approval
Europe				
Commercial				
EDAP TMS	Ablatherm	Image fusion	US guidance	✚
	Focal One	Image fusion	MR & US guidance, Biopsies	✚
EyeTechCare	EyeOP1	Unguided	–	✚
Theraclion	Echopulse	US guidance	US guidance	✚
	SONOVEIN	US guidance	Not used	✚
TOOsonix	System ONE-M	Image fusion	Visual guidance	✚

FUS Devices with Treatment and Planning Guidance continued

Manufacturer	Device	Treatment guidance	Planning guidance	Approval
Asia				
Research & Development				
Alpinion Medical Systems	VIFU2000	US guidance	–	
Chongqing Haifu Medical Technology	CZG300	US guidance	–	
	JC200D	US guidance	–	
	JC300	US guidance	–	
	LCA200	Unguided	Not used	
IMGT	IMD10	US guidance	US guidance	
Korust CO LTD	Le Mette	Unguided	Not used	
	RHINOS	Other guidance	Other	
	UTIMS	Unguided	Not used	
Mianyang Sonic Electronic	CZ901	US guidance	–	
NaviFUS	NaviFUS System (Model 001)	Neuronavigation	MR/CT fusion	
	NaviFUS System (Model 101)	Other guidance	MR/CT fusion	
	NaviFUS System (Model 101-K)	Other guidance	MR/CT fusion	
Neurosona	NS-US100	Other guidance	MR/CT fusion	
	NS-US200	Other guidance	MR/CT fusion	
NINA Medical	LOTUS-1	US guidance	US guidance	
Shenzhen Huikang Medical Apparatus	HIFU 2001	US guidance	–	
Shenzhen PRO-HITU Medical	PRO3008	US guidance	US guidance	
	UT1000	Unguided	Not used	
Sonire Therapeutics	Suizenji	US guidance	CT guidance	
Suntec Industries	Suntec System	US guidance	–	
Vensica Medical[1]	The Vibe	–	–	
	Vensica (prototype)	US guidance	–	
Zhonghui Medical	SUA-I	US guidance	US guidance	
	SUV-I	US guidance	US guidance	

1 Manufacturer was formerly known as Vensica Therapeutics.

FUS Devices with Treatment and Planning Guidance continued

Manufacturer	Device	Treatment guidance	Planning guidance	Approval
Asia				
Commercial				
Alpinion Medical Systems	Alpius 900	US guidance	–	✚
Changjiangyuan Technology Development	NUTAS – Non-invasive Ultrasound Tumor Ablation System	US guidance	US guidance	✚
	SUPER Knife-Focused Beam Therapy System	MR & US guidance	–	✚
Chongqing Haifu Medical Technology	CZB	US guidance	–	✚
	CZF	US guidance	–	✚
	JC	US guidance	–	✚
	JC200	US guidance	–	✚
EpiSonica	ArcBLATE (ARC-100M)	MR guidance	MR guidance	✚
Insightec	Exablate Body[1]	MR guidance	MR guidance	✚
	Exablate Neuro	MR guidance	MR/CT fusion	✚
	Exablate Prostate	MR guidance	MR guidance	✚
Shanghai A&S	HIFUNIT9000	US guidance	MR guidance	✚
Shende Medical Equipment Technology	Aceso	MR guidance	–	✚
Shenzhen PRO-HITU Medical	PRO2008	US guidance	US guidance	✚
	PRO300	US guidance	US guidance	✚
	PRO5G	Other guidance	Visual guidance	✚
Wuxi Haiying Electronic Medical	HY2900	US guidance	–	✚

1 Device was formerly known as Exablate MrgFUS.