

INFORMATION FOR GROWTH

www.avicenne.com

Strategic Market Research & Transaction Services for the orthopedic industry

Avicenne Medical company profile



May 2025









CONTACT



Table of contents

Table of contents

- Our scope
- Our history
- Our team
- Our services & examples of missions
- Our methodology & our contact network
- Why partner with AVICENNE?
- Appendices

CONTACT

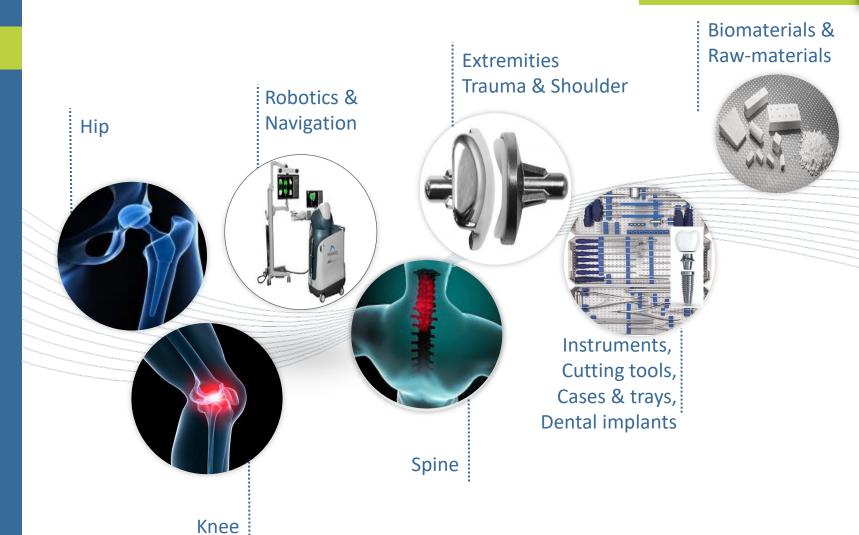


Our scope

Scope

Coverage of key end-user segments

A US\$50B Market



CONTACT



Our scope

Scope

Covering of the main contract manufacturing services

A US\$10B Market



CONTACT



AVICENNE track record

Our history: Avicenne has been involved in most of the major deals in the orthopedic Industry

Strategic expertise in due diligence and build-up, with a long track record of successful transactions for our clients.

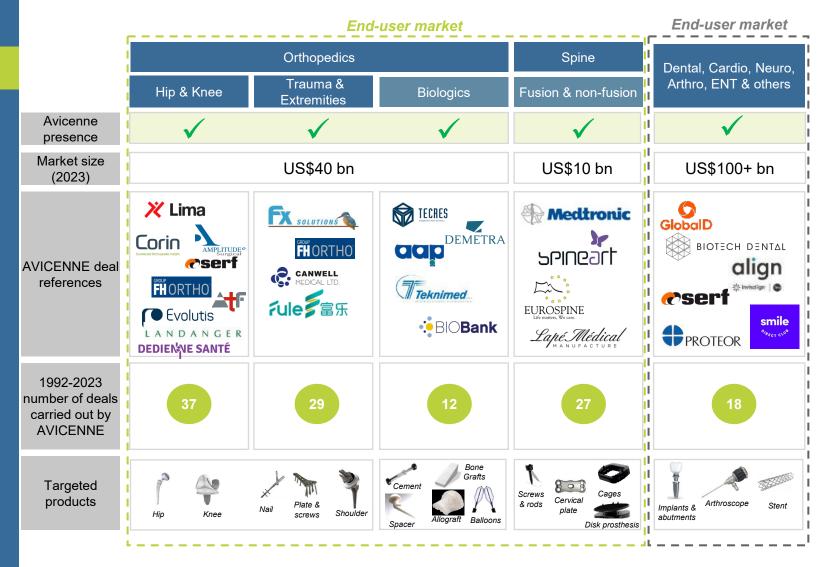


CONTACT



AVICENNE track record

Medical device end-user market: Avicenne's long experience in due diligence and acquisitions in major European and US transactions

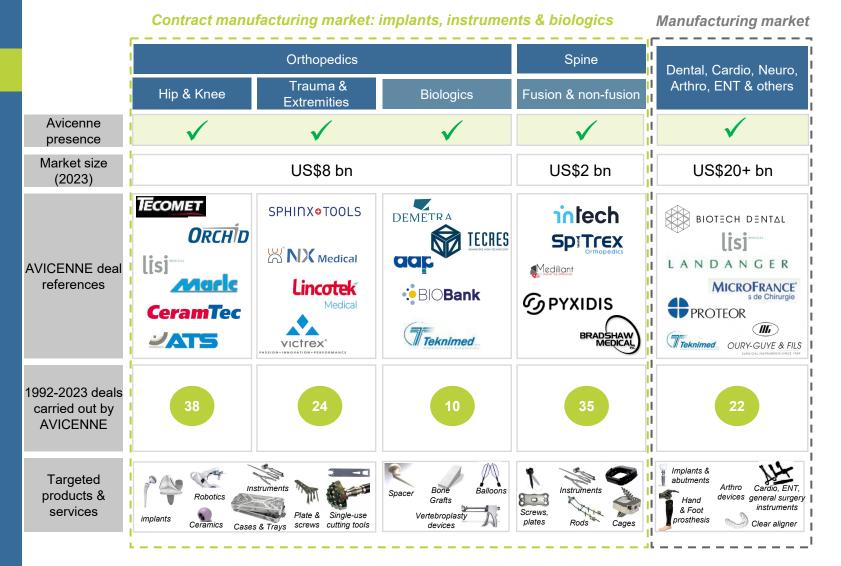


CONTACT



AVICENNE track record

Medical devices contract manufacturing market: Avicenne's long experience in due diligence and acquisitions in major European and US transactions



CONTACT



AVICENNE Track record Avicenne has a long track record of successful acquisitions on behalf of its clients



FH ORTHO GROUP

was acquired by

OLYMPUS

Avicenne advised the Buyer

November 2020





TECOMET

was sold by

CHARLES BANK

Avicenne advised the Vendor

April 2013



DEMETRA TECRES-OSARTIS was acquired by

ASTORG

Avicenne advised the Buyer

July 2021









avicenne

INTECH Medical

was acquired by

EURAZEO

Avicenne advised







LIMA

was acquired by

ARDIAN

Avicenne advised the Buyer

September 2012





Amplitude

was acquired by

APAX

Avicenne advised the Buyer

April 2011





MARLE

was acquired by

CARLYLE

Avicenne advised the Buyer for build-up

April 2009





June 2017

MENIX GROUP

was acquired by

KEENSIGHT Capital

Avicenne advised the Buyer

April 2014



CONTACT



Our services

A diversified range of services

Based on over 30 years of medical device experience



Transaction Services

Strategic Market Research

Key Issues Review	Strategic & Commercial Due Diligence	Management team assessment	Target research & Build up	Customized Strategic research	Key Opinion Leaders surveys
Sizing and market dynamics Detailed market analysis and company positioning Company's R&D capabilities Company differentiation & keys to market share growth Review of the Business Plan	In-depth due diligence based on: Interviews with industry experts Product portfolio assessment Manufacturing organization assessment Routes to create value Opportunities & risks	Strengths & weaknesses of the management team Identification of suitable candidates to strengthen management capabilities	Screening & identification of potential targets Target evaluation Analysis of the risks, complications and barriers Final selection of the appropriate targets Introduction & initial discussions	identifying diversification routes Distributor search Geographical expansion New Product evaluation & launch Global market share tracking for new products	Key Opinion Leader interviews for products and unmet needs Survey on opportunities & risks of new product launches Company reputation among surgeons and satisfaction survey

CONTACT



AVICENNE Team

Our team

Foundation of the company 1992

Orthopedics Main activity

Headquarters Paris





Ali MADANI

Linkedin profile:

32 years with Avicenne Dauphine University: MBA Technology & Innovation, Masters in Electrical & Electronics Engineering



Christophe PILLOT

31 years with Avicenne Dauphine University: MBA Technology & Innovation



Jean-Philippe SALVAT
29 years with Avicenne

Masters in New materials & technology



Mike SANDERS

12 years with Avicenne Delaware University: BS in Chemistry

CONTACT



CONTACT

Ali MADANI Phone: + 33(0) 144 551 990 a.madani@avicenne.com

Strategic & Commercial Due Diligence (SDD & CDD) examples

Otrato g	,,, , ,		TTOT OIGI	Due biligence (ODD & ODD) examples
Deal	Date	Area	Mission	Details
Worldwide Biologics leader	TECRE Advancing High 2021	Europe USA Asia	SDD for the buyer ASTORG	 Product portfolio assessment for combined AAP biomaterials & TECRES Size and forecasts in the global orthopedics cement & spacer market Dynamics & trends of 1-step Vs. 2-step surgeries, plus forecasts Spacers used: molded vs. preformed & Antibiotic usage for preformed spacers Segmentation, sizing and dynamics of vertebroplasty cements & instruments Strengths and weaknesses of each company Cement & Spacer growth drivers & limiters in the USA & Europe: infections, usage of preformed vs handmade-molded and 2-stage procedures, drivers of cement usage: revision, cemented and hybrid Value creation: new products to launch, new sales area, M&A targets Business Plan and forecasts
SPHINX TOOLS	SPHIR	1X º TO	OLS	Orthopedic instrument segmentation & assessment: usage, number of pieces, price, weight, life cycle
Main European Cutting Tools player	2022	Europe	CDD for the buyer SANDVIK	 Cutting tools & consumables for hip, knee, spine, trauma, characteristics Cutting tools & consumables supply chain & distribution channels Regulatory aspects and certification analysis: legacy & new products Single-use trend Cutting tool player strategic position analysis and business drivers & limiters Risks of sourcing products in Low Labor Cost countries Market by product and by player and forecasts by 2026 Value creation: New products to launch, new sales areas, M&A targets SWOT analysis, Strategic and technological risks, business Plan and forecasts
Large European challenger	2012	Europe USA, Australia	SDD for the buyer Ardian	 Product portfolio assessment Competitive advantages of the company in Italy, Germany, Spain, USA Australia, South Korea and Japan in terms of products, market share, image Analysis of the company's distribution channels Manufacturing organization assessment New products, Business Plan and forecasts Analysis of the company's management capabilities to sustain growth Support in finding the new company CEO R&D projects pipeline for the next 5 years Working Capital benchmarking Management case discussions & restatements by segment Profitability assumptions and analysis Report and Q&A for debt suppliers



CONTACT

Ali MADANI Phone: + 33(0) 144 551 990 a.madani@avicenne.com

Strategic & Commercial Due Diligence (SDD & CDD) examples

Deal	Date	Area	Mission	Details
Worldwide leader in spine instruments, 66% of its sales generated in the US	2017 2021	USA Europe Asia	SDD for the buyer EURAZEO	 Market sizing and dynamics of customized instruments Instruments life cycle demand, drivers & limiters Customized & adapted product portfolio analysis OEMs' manufacturing strategies & Contract manufacturing price pressure OEMs' relationships with their suppliers - Criteria for choosing a CMO Manufacturing organization analysis, Capex analysis, Regulatory & Quality department assessment Routes to diversification, potential M&A targets & upsides Technological & strategic risks, competitive risks and Business Plan analysis Investment rationale, opportunities & risks
AMPLITUDE Top Challenger with strong export Knee, hip, extremities	2011	Europe USA	SDD for the buyer APAX Partners	 Product portfolio assessment Positioning on existing markets: France, Germany, Italy, Spain, Austria, Geographic expansion opportunity analysis: USA & Japan Other countries upside analysis: Brazil, Middle East, India Distribution channel capabilities & risks: external agents Vs internal sales force Company-surgeon relationships analysis New products pipeline & IP assessment Business Plan forecasts: current products, new opportunities and build-up scenarios Opportunities & risks of acquisition
Creation of the worldwide leader in Orthopedic Contract Manufacturing	TECO 2013	USA	Advised the owner Charles Bank Capital	 Size and Forecast of the global orthopedic markets by country and by product with competitors' market shares Reimbursement procedures, trends and impact on the target business Outsourcing strategies and trends of orthopedic companies Segmentation, sizing and dynamics of contract manufacturing by capabilities + the market share details of the top 20 contract manufacturers Risks and opportunities of relocating implant manufacturing to BRIC countries Rating OEMs' criteria in choosing their Contract Manufacturers Understanding company differentiation & keys to growing market share Strategic & operational recommendations: ways to maximize value



CONTACT

Ali MADANI Phone: + 33(0) 144 551 990 a.madani@avicenne.com

Examples of Strategic market research, diversification, market share tracking and acquisition target assessment

Deal	Date	Area	Mission	Details
Strategic advice for entering orthopedics	2011	MEDICAL	Strategic advice for diversifying in orthopedics. Goal: reach US\$100 M in revenues in 5 years	 Analysis of Orthopedics contract manufacturing by segment: forging, casting, machining, coating, etc Drivers and limiters for each segment and focus on several opportunities Analysis of the dental implants market worldwide Acquisition opportunities analysis in Europe and the USA Business Plan scenarios: analysis & restatements Road map for the next 5 years
Several projects (Confidential) Identification acquisition targets	2014 - 2024		Find & assess appropriate targets for acquisition, strategic analysis of risks and opportunities	 Selection of 10 to 20 acquisition targets with defined criteria: Serving the Orthopedics OEMs & CMOs in various areas Capabilities in innovation with strong R&D and quality departments Prototype, metrology, testing, machining, cleanroom class III, packaging, competencies Financial perimeter: US\$10 M – US\$150 M revenues, level of profitability, etc. Analysis of the risks, complications and obstacles Final selection of the appropriate targets Opening channels of communication with the targets
Market shares tracking for 50 spine products	Over a 4 years period	edtro	Market share tracking for 50 emerging products launched by competitors	 Quarterly market shares tracking in 14 European countries for different spine products Perimeter: Stabilization, Dynamics, Orthobiologics & Vertebroplasty with 13 sub-segments in detail Tracking of devices sold, by unit & value Assessment of players' product portfolio Forecasts and trends to identify the future high growth products



CONTACT

Ali MADANI
Phone: + 33(0) 144 551 990
a.madani@avicenne.com

Examples of customized client projects

Strategic market research & build-up

- Building a diversification strategy for an aerospace group entering the orthopedics contract manufacturing market: target US\$100 M in 5 years
- 3 Search for distributors for a variety of orthopaedic products: Europe, USA, China, Japan, Australia
- 3 Several **build-up & acquisition target researches** for orthopedic challengers and contract manufacturers
- 3 Strategy for market share growth and build-up for the leading European Orthopedics contract manufacturers
- Market shares tracking for the sub-segments of the Spine market (tracking > 50 products) for a major orthopedic leader
- Routes to growth for a European coating supplier
- Identifying growth opportunities for a bone graft market leader
- 7 Research on Navigation, Robotics & Devices, worldwide market for knee, hip and spine
- 3 Study of the raw material needs of OEMs and CMOs in Orthopedics for a leading raw material distributor
- **Dual mobility hip cups** growth and penetration in Europe, USA, and Japan for a Major orthopedic company
- Advice on partner identification and technology transfer to a Middle East orthopedic OEM
- Geographic expansion opportunities on the cases & trays segment for a leading European company

Key Opinion Leader surveys

- **Key Opinion Leaders'** usage and preferences for certain orthopedic product designs in Germany, Spain, France and UK
- **Surgeon survey** in USA & Europe concerning the hip dual mobility cups usage and trends
- Opportunities & risks of launching a new knee system for a European challenger
- Cutting tool market analysis for a leading worldwide supplier of cutting tools

Competitive & Technology monitoring

- Value of patient specific cutting guides for knee joint replacements
- **d** Additive Manufacturing: the new challenge to manufacture orthopedics implants and instruments
- Is Robotics a game changer for orthopedics?
- Worldwide Orthopedic patents watch focused on hip, knee, trauma & orthobiologics for several companies



Our methodology

CONTACT

Ali MADANI
Phone: + 33(0) 144 551 990
a.madani@avicenne.com

Our methodology

The Commercial & Strategic Due Diligence Framework

Executive Summary

- Describe major findings of Due Diligence focus on "Red Flag issues"
- Provide overview of findings for other components
- **7** Description of analysis scope, what has been investigated, and Due Diligence focus areas
- Includes info on the sources used and interviews conducted

6 areas of assessment covered

	o areas or assessment covered							
Market Analysis	Competitive Environment	Analysis of Business Model	Analysis of Investment Case	Upside & Build-up Opportunities	Exit Options			
 Market analysis to form a perspective on the risks and opportunities of the acquisition Definition of the immediate and broader market + assessment of its attractiveness 	 Understanding and assessing the competitive landscape to determine the relative strength of the target company, its unique Selling Points and sustainability Assessment of Product portfolio and pricing strategy, customer satisfaction, Regulatory issues & likelihood of overcoming competitive threats 	 Perspective on attractiveness and robustness of the business model Analysis of past and projected performance as well as capabilities of target company 	 Perspective on management's assumptions and further improvement potentials Assessment of management's base case, + identification and assessment of reasonable further improvements - as well as downside risks 	 Perspective on value creation potential beyond investment case assumptions – "investment case at time of exit" Identifying and quantifying further value creation levers that could be achieved during holding period 	 Perspective on exit opportunities after holding period Assessment of industry consolidation opportunities and evaluation of potential strategic and financial buyers 			

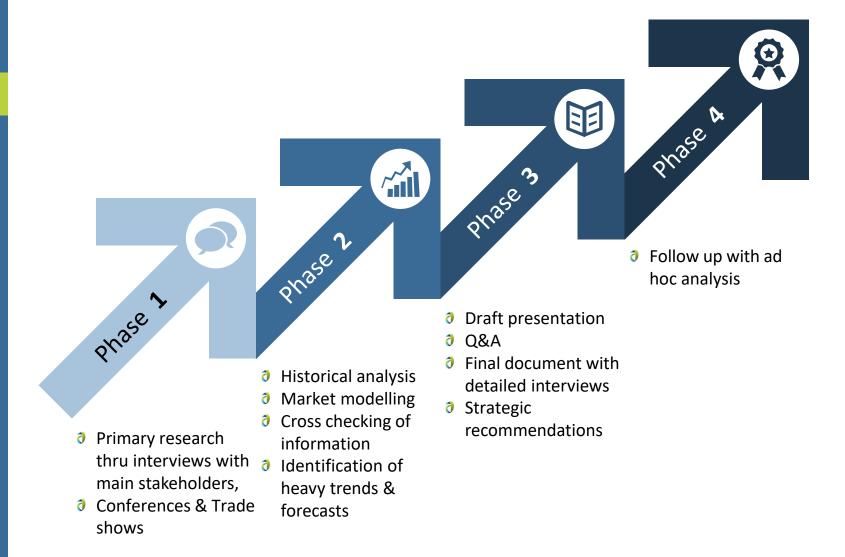


Our methodology

CONTACT

Ali MADANI Phone: + 33(0) 144 551 990 a.madani@avicenne.com

Our methodology





www.avicenne.com

Our methodology

CONTACT

Ali MADANI Phone: + 33(0) 144 551 990 a.madani@avicenne.com Leverage high-level contacts and market tracking and

modeling from 30 years of experience

Operating Models &Crosschecking of information



Full value chain coverage

- Entire supply chain : OEMs, Contract Manufacturers, etc.
- All product types: implants, instruments, cases & trays, biologics, cements, ceramics,...
- All manufacturing services: forging, casting, machining, 3D printing, coating, packaging, etc.
- All players: Top 200 orthopedic companies and Top 300 contract manufacturers, etc.

Implants

Hip

Knee

Spine

Extremities

Trauma

Cases travs

Biologics

Contract Manufacturing

Instruments

Implants

Primary research

- OEM & Contract Manufacturer direct interviews with decision makers thanks to strong links with CEOs, R&D, Marketing, Sales, etc.
- Cross-checking of information thanks to our tried & tested operating models

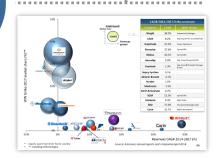
A 360° view of Orthopedics

COLM NO TO AND TO NO TO

Secondary research

- 30+ years of historical data on the Orthopedics & Contract Manufacturing markets
- Companies & markets; continuous tracking + detailed market and financial modelling
- Highly detailed segmentation





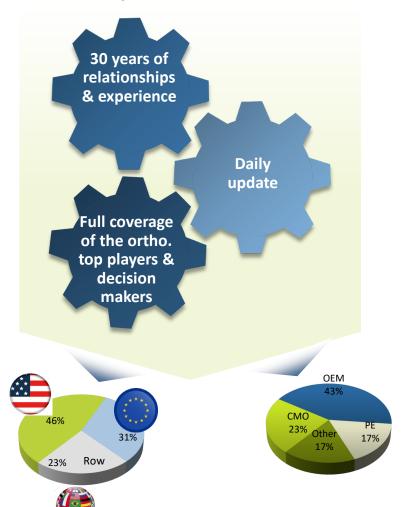


Our methodology

Our methodology

A dense network built over 30 years

Our Orthopedic database: 40,000+ qualified contacts



Our Orthopedic database: full coverage of the orthopedic top players & their decision makers



CONTACT



Our

Our methodology

Direct interviews & company visits



Conferences & exhibitions



39,000+ decision makers in 10,000+ companies





100s of interviews and visits each year





















Marie

Paragon Medical



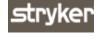




















💥 Lima









CONTACT



Ali Madani, world-renowned medical device expert and speaker at international conference

Ali Madani is speaker, chairman and workshop moderator of 15+ international conferences worldwide each year.



CONTACT



Our methodology

IMPLANTS conference

The international meeting on innovations & solutions for orthopedic implants & orthobiologics, chaired by Avicenne, attracts 300+ decision makers. It is both a place to take the pulse of the industry and a key networking event.

Founded and chaired by AVICENNE since **2005**

http://www.implants-event.com





CONTACT



Our customers

CONTACT

Ali MADANI Phone: + 33(0) 144 551 990 a.madani@avicenne.com

Our customers

Aesculap-B Braun, Amplitude, Aston Medical, Bioland, Biomet, Biomicron, Carl Zeiss, Ceraver, Cousin-Biotech, Dedienne, Depuy Synthes, Eurospine, Evolutis, Exactech, FH, FX Solutions, Geistlich, Help Ortho, Implanet, Implant Industries, Integra Life Sciences, Kisco International, Lepine, Lima Corporate, Mathys, Medtronic, MBA Surgical, Medacta, Meril Life Sciences, Nexis, Olympus Corporation, OST, Ortho Baltic, Orthosoft, Ossacur, Osteotech, Plus Ortho, Progenor, SEM, Seremm, Scient'x, Smith & Nephew, SME, SMI, Stryker Corp, Stryker Limerick, Stryker Spine, Spineway, SGM-Codim, Stanmore Implants, Stryker, Summit Medical, Surgical Devices Pty, Symbios, Tornier now Wright Medical, Transtructure, Transysteme, Zimmer Biomet, Wright Tornier, X'Nov...

All invest, Apax Partners, Altor Equity Partners, Alpha Associés Conseil, Astorg Partners, Apollo Global Management, Ardian, Argos Soditic, Astorg, Banque Lazard, BC Partners, BIP Investment Partners, Capza, Carlyle Group, Charterhouse, Chequers Capital, Charlesbank Capital, Clayton Dubilier & Rice, CM-CIC Investissement, CVC Capital Partners, EKKIO Capital, EMZ Partners, Essling Capital, Eurazeo PME, European Capital, Goldman Sachs, HSBC, Keensight Capital, Kinsella Group, LBO France, LGT Capital Partners, NATIXIS Partners, Novalpina Capital, Oaktree Capital, PAI Partners, Permira, Piper Jaffray, Piper Sandler, Pragma Capital (now Sparring Capital), Rothschild Five Arrows, Simuval, TechLife Capital, Tikehau, Tinicum, UI Gestion, Warburg Pincus, Zurmont Madison...



Alltec Gmbh, Autocam Medical, Acnis international, Addup Solutions, Avalign Technologies, Caplugs, Ceramtec, Cetim, EOS, Element Materials, Eurocoating (now Lincotek Medical), Finetubes, Forginal, GF Machining, Geoffroy, Integer-Greatbatch now Viant, HWG, Intech, Inomed Technology, Invibio Victrex, Ionbond, Jabil Medical, Jenoptik, Heptal, Komet, LISI Medical, Manoir Industries, Marle, Medical Group, Mediliant, Medin Technologies, Metal Craft & Riverside, Mitsui Chemicals, MW industries, Nowak, Nypro, Oerlikon, One Ortho, Orchid Orthopedic Solutions, Osartis, Paragon Medical, PolymerExpert, Projection Plasma System, RTI Surgical, Sandvik, Seabrook Medical, Seco Tools, Stainless, Straits Orthopedics, Somepic, Surgical Devices Pty, Symmetry Medical, Tecomet, TE Connectivity, Teknimed, Terolab Surface Medical, Vaccucast, VSMPO Tirus, Wichard, Willemin Macodel, Zollern,...

Arthur D. Little, AT Kearney, Alvarez et Marsal, Bain & Company, Boston Consulting Group, BC Partners, Health Advances, KPMG Strategy, LEK Consulting, McKinsey & Company, OC&C Strategy, Oliver Wyman, PWC, Roland Berger...



Benefits

Benefits of collaborating with AVICENNE

Strategic & operational consulting in the orthopedic industry since 1992 and strong relationships with key decision makers

Guaranteed Confidentiality & Strong Ethical Standards: A Core Value

Global coverage of the entire industry value chain:

- OEMs, contract manufacturers as well as surgeons, research labs, experts, etc.
- Areas:

avicenne

MEDICAL

INFORMATION FOR GROWTH

- North America: USA, Canada
- Europe: France, Germany, UK, Italy, Spain, Switzerland, Belgium, Austria, The Netherlands, Portugal, Nordic Countries, Eastern Europe
- 3 Asia Pacific: Japan, Australia, South Korea
- Emerging Markets: Brazil , Russia, India, China, Latin America, Middle East, Africa

Clear methodology, results and recommendations

CONTACT



INFORMATION FOR GROWTH

www.avicenne.com

Available reports

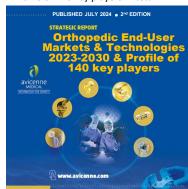
CONTACT

Ali MADANI Phone: + 33(0) 144 551 990 a.madani@avicenne.com

AVICENNE's off the shelf market reports

Orthopedic End-User Markets & Technologies 2023-2030: Hip, Knee, Spine, Trauma, Shoulder, Extremities and Orthobiologics & Profile of 140 key players July 2024 - 2ndedition

- Orthopedic macro environment, drivers & limiters
- 3 250 pages & 400+ graphs & exhibits
- Orthopedic market by region: orthopedic players' ranking & dispersion for hip, knee, spine, trauma, shoulder, extremities & orthobiologics
- Player strategies & dynamics: split by product for each player, main facilities for the Major with their core business
- 6 Majors analysis: Zimmer Biomet, Depuy Synthes, Stryker, Smith & Nephew, Medtronic, Globus-Nuvasive
- 48 US Challenger analysis: Exactech, Enovis, Arthrex, etc...
- 55 European Challenger: Aesculap, Link, Medacta, Corin, Amplitude, etc.
- 31 Asian & Latin America Challengers: Microport, United, AK Medical, Teijin Nakashima, etc..
- Profile of 140 key players in total



Available

"Worldwide Orthopedic & Spine Contract Manufacturing market report 2024-2030 & Top 100 supplier profiles"

May 2025 -14th edition

- First published in 2014
- 3 400 pages & 1,000+ graphs & exhibits
- OEMs' strategy for outsourcing & inhouse manufacturing
- Detailed markets & sizing for:
 - Forging: hip stem, hip cup, femoral knee...
 - Casting: femoral knee, tibial knee, hip cup...
- Hip, knee machining & finishing
- Spine, trauma & shoulder machining & finishing
- Instrument manufacturing
- Cases & trays manufacturing
- 3D printing: spine cages, hip cups,.
- o Coating: stem, cup, femoral, tibial
- Oceramics: hip heads, hip liner
- Oleaning & packaging...
- Special focus on Robotics usage for orthopedics, Co-Cr alternative solutions, inflation & FX impact
- Ambulatory Surgery Center: recent data and market impact
- Top 100 Contract manufacturers detailed profiles



<u>Available</u>

"European Orthopedic Market 2021-2026" Hip, Knee & Shoulder

September 2022 - 19th edition

- First published in 1993
- 860 pages & 1,550+ graphs & exhibits detailing the European Market in Germany, France, Italy, Spain, UK, and other countries
- Up-dated yearly
- Hip, Knee and Shoulder
- Based on 100+ interviews
- Special focus on the worldwide orthopedic market, player dynamics and global market shares
- Analysis of the drivers & limiters of the market, price pressure and regulatory trends, MDR impact in Europe. Comprehensive analysis of the key companies
- Impact of COVID in orthopedic markets: 2020, 2021 and beyond

"Worldwide 3D printing for orthopedics 2021-2026 & player profiles"

January 2023 - 2nd edition

- First published in 2018 January 2023. 2nd edition
- Market for 3D Printing for Orthopedics and forecasts in 2026
- Market for hip cups, tibial knees, glenoid shoulders, spine cages and other products made by 3D printing
- Based on 50+ interviews of:
- 3D printing machine suppliers
- Contract Manufacturer leaders in 3D printing
- Orthopedic companies operating in 3D printing
- Other Contract Manufacturers operating in 3D printing
- Top 80 detailed players



Available





Available