

Vacuum Market Segmentation

Rough Vacuum	Process Vacuum	Industrial Vacuum	Semiconductor Process Vacuum	Thin Film Deposition (non-Semiconductor)	FPD	Solar	Instrumentation Manufacturers	R&D
<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>
<ul style="list-style-type: none"> - Packaging (except food) - Central Vacuum - Printing and Paper Handling - Pick and Place - Conveying - Moulding - Air sampling - Medical 	<ul style="list-style-type: none"> - Chemical (Bulk, Fine,...) - Petrochemical - Pharmaceutical - Plastics (Extrusion,...) - Food - Beverage - Textile - Paper - Ceramics - Freeze drying - Energy (Wind, Nuclear, Steam Turbines,...) - Central Vacuum (Batteries,...) 	<ul style="list-style-type: none"> - Vacuum Metallurgy (Metal Degassing, Melting, Re-melting, E-beam welding, Casting,...) - Vacuum Heat Treatment (Brazing, Carburising, Nitriding, Quenching,...) - Laser Technology - Electron Tubes - TV Tubes - Lamps and Bulbs - Industrial leak detection - Refrigeration and Air Conditioning - Automotive (Dehydration, Charging and Test) - Electrical (Encapsulation,...) - Medical sterilisation 	<ul style="list-style-type: none"> - Silicon Semiconductor (Memory, Logic, MEMS...) - Compound Semiconductor (LEDs,...) - Semicon Crystal Pulling <p><i>Please note: Above includes both Process Equipment Manufacturers and End Users for PVD, CVD, Etching, Ion Implantation, MBE</i></p>	<ul style="list-style-type: none"> - Glass/Web/Optical Coating - Optical Data Storage (CD, DVD, Hi Def Disk,..) - Magnetic Data Storage (HDD) - Thin Film Heads - Surface Coating (wear protection, decorative, ..) - Thin Film batteries 	<ul style="list-style-type: none"> - TFT-LCD Displays - Display Coatings (OLED, FED, PDP, SED,...) 	<ul style="list-style-type: none"> - Photovoltaic Solar (c-Si & Thin-Film Deposition, Laminating,...) - Thermal Solar (Water Heaters,...) - Solar Crystal Growth (Pulling, Re-melt, ...) 	<ul style="list-style-type: none"> - Mass Spectrometers - Electron Microscopes - Metrology/ Inspection/ Defect Review systems for Semiconductor including Focused Ion Beam systems and Electron Beam systems - Surface Analysis - Gas Analysis - X-Ray Analysis - MRI and NMR - Sample reparation (Driers, Centrifuges, Concentrators,...) - Leak Detectors - Medical accelerators (Linac, Synchrotron, Cyclotron...) 	<ul style="list-style-type: none"> - Universities - Government Labs - Scientific Research Laboratories - Space Simulation
Typical operating pressure (mbar)								
> 1	> 10⁻²	10⁻² – 10⁻⁶	1 – 10⁻⁸	10⁻³ – 10⁻⁸	1 – 10⁻⁸	10⁻⁶ – 10⁻¹⁰	10⁻² – 10⁻¹¹	

PVD:	Physical Vapour Deposition	CD:	Compact Disk
CVD:	Chemical Vapour Deposition	DVD:	Digital Video Disk
MBE:	Molecular Beam Epitaxy	OLED:	Organic Light Emitting Diode (or OLED: Organic Electro Luminescent Display)
MEMS:	Micro Electro Mechanical Systems	FED:	Field Emission Display
TFT-LCD:	Thin-Film Transistor Liquid Crystal Display	PDP:	Plasma Display Panel
SED:	Surface Emission Display	MRI:	Magnetic Resonance Imaging
HDD:	Hard Disk Drive	NMR:	Nuclear Magnetic Resonance
FPD	Flat Panel Display		

This Vacuum Market Segmentation Chart was developed by the Working Group of the International Statistics on Vacuum Technology Program (ISVT), and is published with their permission. Organisations that participate in the program are the Association of Vacuum Equipment Manufacturers International (AVEM), the Japan Vacuum Industry Association (JVIA), the European Vacuum Technology Association (EVTA), and the Semiconductor Equipment and Materials International (SEMI).