



**Polska Platforma
Technologiczna Fotoniki**

Polish Photonics and Semiconductor Sector

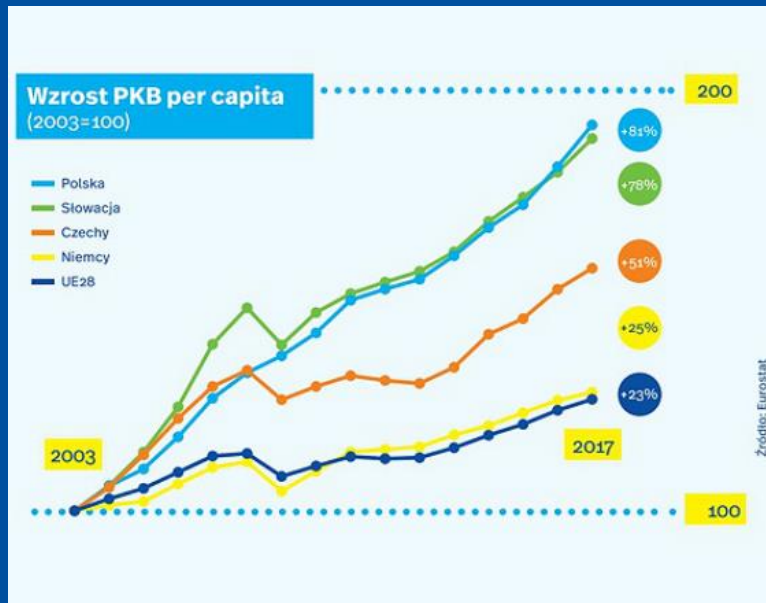
Adam Piotrowski | President of PPTF

Maciej J. Nowakowski | PPTF Director of Operations

mnowakowski@ptf.pl

Three driving factors

Poland as a manufacturing hub for Europe



Full scale war in Ukraine



Global economic war (Europe + US) vs China



Historical background (1970-1990)

- Electronic production for local and Soviet-block markets
- Complete local production chain - over 20 state-owned plants manufacturing electronic parts and components
- CMOS components production in Warsaw
- Plants sold or bankrupted during 1990', former personel active in private industry and R&D institutions



Current status

- 3 major academic centres for microelectronics
- 3 major academic centers for photonics
- 1 industry R&D centre
- Microchip design industry (500+ employees)
- Limited semiconductor production
- A lot of electronic and photonic SMEs
- A lot OEM factories...

Key challenges in Poland

- Not enough skilled engineers
- Lack of technological hubs
- Ongoing transformation to innovative economy!
- No major semiconductor plant



Examples of recent investments in Electronics, Photonics and Microelectronics



Examples of recent investments in Electronics, Photonics and Microelectronics



Education and academic research

MICROELECTRONICS

- **Cracow** – microchip design, approx. 100 students/year
- **Warsaw** – microchip design, manufacturing and applications, photonic-integrated-circuits (PICs)
- **Gdańsk** – microchip design, production and characterization of materials
- ...

PHOTONICS

- **Warsaw** – materials, components, systems, applications
- **Lublin** – fiber optics fabrication
- **Wrocław** – materials, Laser design, optical fiber applications, material growth
- ...

New educational initiatives

Politechnika Warszawska - MOEMS Academy

The MOEMS Academy is the Academy of Microelectronics, Photonics and Microsystems, addressed to all interested students of the last years of studies of the Warsaw University of Technology, in particular students of the Faculties of: Electronics and Information Technology, Physics, Mechatronics, Materials, Electrical, Chemical or Chemical Engineering

WAT - Breakthrough technologies

Breakthrough technologies, including optoelectronic, photonic, quantum, cosmic and machine decision support - this is one of the new fields of study at the Military University of Technology.

Łukasiewicz-IMIF - industrial R&D institution

Łukasiewicz - Institute of Microelectronics and Photonics, Warsaw, member of national R&D Łukasiewicz – network

- Research: materials, structures and devices, design and manufacturing technologies
- Design & manufacturing: semiconductor materials, structures and devices, semiconductors and microchips

Łukasiewicz Campus - Macierzysz

- We need technology hub!
- Physical place to meet:
Universities – Research –
Companies
- Project on hold due to
issues with recovery funds
(KPO)!



Microchip design industry

OmniChip, Warsaw – complex IC design services

ChipCraft, Warsaw/Lublin – Application-Specific Integrated Circuit design, wearable technologies

Silicon Creations Poland, Cracow – IC design services

Mentor Graphics Polska, Katowice – IC design software

Cadence Design Systems Poland, Katowice/Warsaw – IC design software

Synopsys Poland, Gdansk – IC design software and services

+ undisclosed IC-design activities by Amazon (Gdansk), Intel (Gdansk) and Samsung (Warsaw)

Semiconductors manufacturing

Łukasiewicz – IMIF, Warsaw – photonic materials, functional materials, integrated circuits, GaN devices and structures, LTTC and printed electronics; large greenfield investment planned

VIGO Photonics, Warsaw – III-V epitaxial wafers, IR detectors; ongoing development: photonic-integrated-circuits (PICs)

UNIPRESS and TopGan, Warsaw – GaN laser diodes, GaN epi wafers

Photonics companies

Łukasiewicz – IMIF, Warsaw – photonic materials, functional materials, integrated circuits, GaN devices and structures, LTTC and printed electronics; large greenfield investment planned

VIGO Photonics, Warsaw – III-V epitaxial wafers, IR detectors; ongoing development: photonic-integrated-circuits (PICs)

TopGan, Warsaw – GaN laser diodes, GaN epi wafers

Electronic OEM industry in Poland

2021	2020	tys PLN	Przychody 2018	Przychody 2019	Przychody 2020	Przychody 2021
1	1	Apator S.A.	827 802	877 593	934 850	940 023
2	4	Wilk Elektronik*	752 378	436 592	534 758	709 098
3	3	Bury Sp. z o. o.	705 183	805 722	621 602	699 516
4	2	PIT-RADWAR S.A.	368 149	511 826	631 130	632 455
5	5	MEDCOM sp. z o.o.	228 020	320 671	336 872	436 862
6	6	WB Electronics S.A	318 241	388 417	328 090	343 205
7	9	Posnet Polska S.A.	133 854	190 634	193 591	227 205
8	7	PCO S.A	246 091	254 790	270 125	213 738
9	8	Zakłady Mechaniczne 'Tarnów' S.A.	180 534	212 176	215 118	213 668
10	10	AC S.A.	237 426	222 682	185 222	206 296

<https://tek.info.pl/>

2021	2020	Firma	Przychody 2018	Przychody 2019	Przychody 2020	Przychody 2021
11	11	LUG SA	170 792	168 501	182 735	203 919
12	12	SATEL Sp. z o.o.	149 815	157 971	175 932	199 246
13	24	ML System SA	123 287	93 378	113 770	188 805
14	21	Mikronika Sp. z o.o.	110 231	111 862	118 736	176 076
15	23	Ekoenergetyka-Polska SA	37 546	69 034	113 917	165 001
16	19	Elzab S.A.	104 021	125 183	119 653	163 904
17	22	Sonel SA	91 671	109 040	116 144	158 135
18	16	Lena Lighting SA	130 289	118 387	132 728	148 426
19	14	Polon-Alfa Sp. z o.o.	82 602	89 952	151 599	136 579
20	18	Relpol SA	135 759	117 552	120 989	133 594
21	17	ELEKTROMETAL SA	152 544	151 620	130 555	131 998
22	13	Teldat Sp. z o.o. Sp.k.	73 645	89 669	162 177	126 249
23	27	Aplisens S.A	105 713	118 512	107 993	121 404
24	25	Medicalgorithmics S.A.	199 404	173 870	111 734	120 563
25	37	Zurad Sp. z o.o.	15 270	19 498	57 915	117 720
26	30	APS Energia S.A.	123 932	134 758	85 404	113 257
27	33	Wojskowe Zakłady Elektroniczne SA	71 159	75 590	70 831	111 954
28	53	CRW Telesystem-Mesko Sp. z o.o.	35 097	32 611	33 761	107 461
29	31	OBR Centrum Techniki Morskiej SA	42 767	56 559	80 574	99 474
30	34	Plum Sp. z o.o.	70 075	60 307	69 285	99 385
31	29	Elester PKP Sp. z o.o.	71 244	87 470	91 033	98 768
32	32	TM Technologie Sp. z o.o.	71 243	82 098	78 097	91 111
33	50	Grupa Vector	92 805	77 404	74 710	89 696
34	35	Elgór Hansen SA	115 254	166 331	64 221	84 834
35	36	PPHU Geco Sp. z o.o.	49 483	48 140	59 543	72 170
36	40	VIGO System SA	37 417	42 889	53 451	71 497
37	28	R&G Plus Sp. z o.o.	134 921	134 078	96 529	71 092
38	26	Wojskowe Zakłady Łączności Nr.1 SA	103 854	116 892	109 422	64 797
39	48	Elektrometal Energetyka SA	28 077	39 147	36 004	57 925
40	20	DGT Sp. z o. o.	109 772	86 970	119 648	57 045

Foreign Electronics companies in Poland

	Przychody 2018	Przychody 2019	Przychody 2020	Przychody 2021	Wzrost 2021/2020
1 LG Electronics Mława Sp. z o.o.	8 090 097	9 215 048	10 615 869	15 836 747	49,2%
2 TPV Displays Polska Sp. z o.o.	3 775 890	3 740 363	3 590 263	5 176 225	44,2%
3 Heesung Electronics Poland Sp. z o.o.	1 538 789	1 877 792	2 046 635	3 251 101	58,9%
4 TCL Operations Polska Sp. z o.o.	1 174 330	1 187 880	2 026 581	2 898 531	43,0%
5 Aptiv Services Poland SA	1 993 744	2 176 681	1 983 648	2 265 139	14,2%
6 Jabil Poland Sp. z o.o.	1 753 087	2 239 125	1 725 806	1 636 972	-5,1%
7 Bitron Poland Sp. z o.o.	1 147 319	1 275 294	1 289 609	1 548 439	20,1%
8 UMC Poland Sp. z o.o.	1 323 152	2 048 900	1 115 089	1 304 937	17,0%
9 Kimball Electronics Poland Sp. z o.o.	1 016 810	959 581	957 629	1 038 592	8,5%
10 Joynext Sp. z o.o.	781 525	957 376	930 755	1 026 039	10,2%

<https://tek.info.pl/>

13 Scanfil Poland Sp. z o.o.	623 620	670 425	719 803	994 982	38,2%
14 Diehl Controls Polska Sp. z o.o.	684 232	659 660	681 886	812 267	19,1%
15 Trumpf Huettinger Sp. z o.o.	341 842	377 509	558 033	789 434	41,5%
16 Technisat Digital Sp. z o.o.	716 863	721 254	635 874	653 664	2,8%
17 LG Innotek Poland Sp. z o.o.	73 673	124 700	304 119	408 153	34,2%
18 Ifm Ecolink Sp. z o.o.	143 943	166 824	181 337	255 006	40,6%
19 Diehl Metering Sp. z o.o.	149 558	180 882	183 366	227 707	24,2%
20 Woodward Poland Sp. z o.o.	221 565	320 761	329 583	178 444	-45,9%
21 E.G.O. Polska Sp. z o.o.	109 734	132 316	140 661	165 585	17,7%
22 Kitron Sp. z o.o.	0	9 746	94 725	131 441	38,8%
23 Universal Scientific Industrial Poland Sp. z o. o	24 544	32 727	62 244	130 876	110,3%
24 Fibar Group S.A.	100 023	86 158	92 868	101 688	9,5%
25 Hanza Poland Sp. z o.o.	62 704	64 549	71 274	97 441	36,7%
26 OrbitOne Sp. z o.o.	63 706	65 032	66 338	92 832	39,9%
27 Voestalpine Signaling Poland Sp. z o.o.	54 107	61 795	65 342	68 905	5,5%
28 Darekon Sp. z o.o.	45 855	43 381	43 313	62 471	44,2%
29 KET Poland Sp. z o.o.	0	1	21 584	61 728	186,0%
30 Lumel SA	39 446	39 382	36 701	51 941	41,5%
31 Noratron Electronics Sp. z o.o.	16 013	39 635	33 918	49 694	46,5%
Razem	27 383 192	30 948 570	32 154 603	41 316 981	28,5%

Polish Technological Platform on Photonics

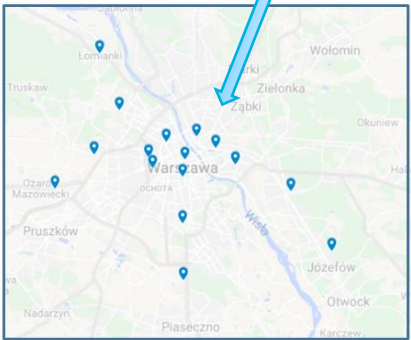
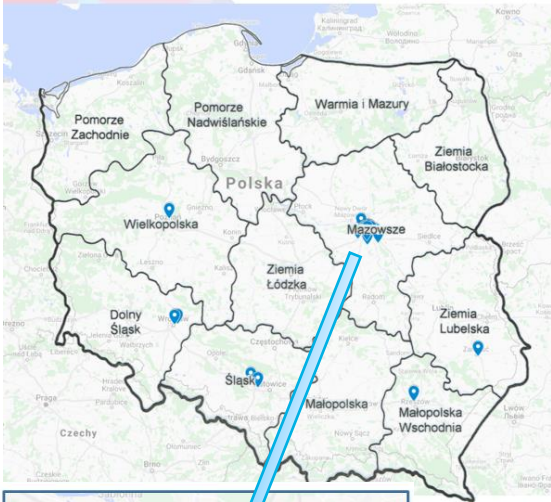
- Building cluster on photonic and microelectronic technologies
- Integrating industry, R&D and academia
- Supporting business development, R&D, education & training
- Recognised partner for regional, national and EU agencies (member of regional and national permanent consulting bodies, member of Photonic21 Association)
- Active in European industry and R&D networks (member of Board of Stakeholders Photonic21, partner of PhotonHub Europe)

I3R - services for ecosystem

- **Integration**
of industry, research and academic actors

access to valuable
- **Information**
- **Inspiration**
for business and research cooperation
- **Representation**
before national and European public agencies

PPTF



PPTF

Polska Platforma Technologiczna Fotoniki

Companies

VIGO PHOTONICS, **TELESYSTEM**, **SHM SYSTEM**, **ORCA Computing**, **VIGO VENTURES**, **Fluence**, **FIBRAIN**

Lasertex (LASER METROLOGY FROM POLAND), **SEMICON**, **INFRAMET**, **INSOPTICS**, **SOLARIS OPTICS**

ATEST GAZ (Niezawodne i Innowacyjne Systemy Detekcji Gazów), **POLCAM WB GROUP**, **EEC magenta**, **noctiluca**

SOLARIS LASER (www.solarislaser.com.pl), **GL OPTIC** (Light quality control), **QNA**, **ESLT medical**, **SDS OPTIC** (Lifesaving Innovations)

ENSEMBLE³ Centre of Excellence, **ELPROMA**, **EAGLE**, **SYGNIS SPÓŁKA AKCYJNA**, **AIROPTIC** (REAL TIME GAS ANALYZERS)

FIBERTEAM PHOTONIC SOLUTIONS, **PHOTO4CHEM PHOTO4CHEM**, **SMARTTECH 3D** (Optical measurement systems)

Perspectiva SOLUTIONS, **X T P L**, **XPANSE**, **TopGaLasers** (blue laser technology)

Research institutes

Łukasiewicz Krakowski Instytut Technologiczny

Łukasiewicz IEL, **Łukasiewicz ITR**

unipress

Łukasiewicz Instytut Mikroelektroniki i Fotoniki

ICTER International Centre for Translational Eye Research

Universities

Warsaw University of Technology

Wrocław University of Science and Technology

Łódź University of Technology

NICOLAUS COPERNICUS UNIVERSITY IN TORUŃ

AGH

UMCS

UNIVERSITY OF WARSAW

Associations



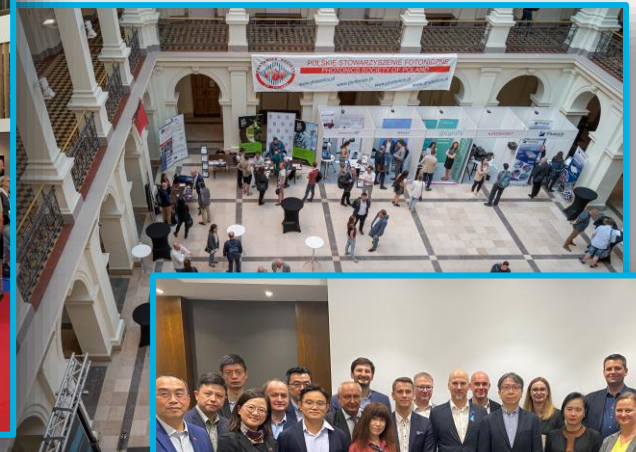
PPTF

Polska Platforma Technologiczna Fotoniki

Activities

selected

- International Defence Industry Exhibition MSPO 2022, Kielce
- Laser World of Photonics 2022, Munich
- Photonics21 's Photonics 4 Defence workshop, Kielce
- Meeting with Taiwanese delegation on semiconductor supply chain, Wrocław
- International Photonics Job Fair, Warsaw University of Technology
- Czech-Polish Photonics 2023, Ostrava
- Smart City Summit & Expo 2023, Taipei



Teamwork

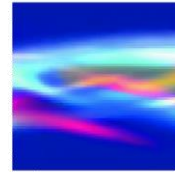
Some PPTF partners
across Poland and
Europe

• **candela.**


PHOTONICS²¹



OpTecBB



CZECH
OPTICAL
CLUSTER



intel



Cluster of Microelectronics, Electronics and Photonics



- Established 4 April 2023
 - coordinator: PPTF
 - leader of R&D collaboration: CEZAMAT
- Built around photonics and microelectronics value chains
 - broader scope of partners invited
- Expanding scope of PPTF activities
 - opening new opportunities, lifting formal obstacles
- Over 30 Founding Members up to date:



Joins us in building Polish deep tech industry!



Polska Platforma Technologiczna Fotoniki
05-850 Ożarów Mazowiecki | ul. Poznańska 129/133
tel: +48 787 863 888 | e-mail: info@pptf.pl

www.pptf.pl