Łódź

In semicon triangle

INTRODUCTION

Łódź, together with Katowice and Wrocław, forms the "Semiconductor Triangle" – a complementary network of locations for investments in IT, ICT, and the semiconductor value chain. The advantages of Łódź – the heart of the Triangle – include its strategic logistics location, strong academic base, and a ready industrial ecosystem. Importantly, our community is made up not only of large corporations, but also SMEs and startups open to collaboration, supported by a strong network of local government, academic, and industry partners.

Łódź contributes to the "Semiconductor Triangle" resources that are key to the success of projects based on advanced process organisation and technological logistics. The city can serve as an operational base for joint activities, supporting the integration of supply chains, the development of support functions, and the implementation of research and development components. This potential is also reinforced by a mature modern business services sector, which in Łódź has reached a high level of process specialisation, including through the development of specialised competence centres, as well as a dynamically developing industrial and technology sector.

Combined with its logistics infrastructure, talent availability, academic base, and the Lodz Special Economic Zone, Łódź offers a profile complementary to the other centres of the Triangle. It is precisely this ability to complement resources and competencies that will ensure Łódź plays an integral role in building a shared ecosystem for the semiconductor sector and its related industries.

WHY ŁÓDŹ?

Łódź is the fourth largest metropolitan area and one of the biggest labour markets in Poland, with 650,000 residents in the city and 850,000 in the metropolitan area. The city's economy is driven by four dynamically developing sectors: advanced manufacturing, IT, life sciences, and business services.

Łódź is also a major academic centre, home to 20 higher education institutions with more than 74,000 students. Local universities maintain close cooperation with employers, designing degree programmes and specialisations in line with industry needs to ensure a pipeline of talent perfectly matched to the labour market.

Strategically located at the intersection of the main east–west and north–south transport corridors, Lodz offers fast road, rail, and air connections to Polish and European metropolitan areas. Its proximity to Warsaw and the planned Central Communication Port (CPK) ensures exceptional accessibility and access to a large pool of skilled workers from both metropolitan areas. Lodz Airport, located just 15 minutes from the city centre, offers regular flights to destinations including Dublin, Birmingham, Brussels, and London.

The city's central location and excellent connectivity are also highly relevant for the semiconductor sector. Proximity to the A1 and A2 motorways, logistics terminals, and the air cargo terminal at Łódź Airport enables rapid transport of components. Łódź is also one of the nodes of the New Silk Road, which plays a strategic role in the supply chains of electronic components from Asia.

Another advantage is the high availability of investment-ready land – both for redevelopment (brownfield) and new construction (greenfield) – within the city and metropolitan area, including numerous sites in the Łódź Special Economic Zone.

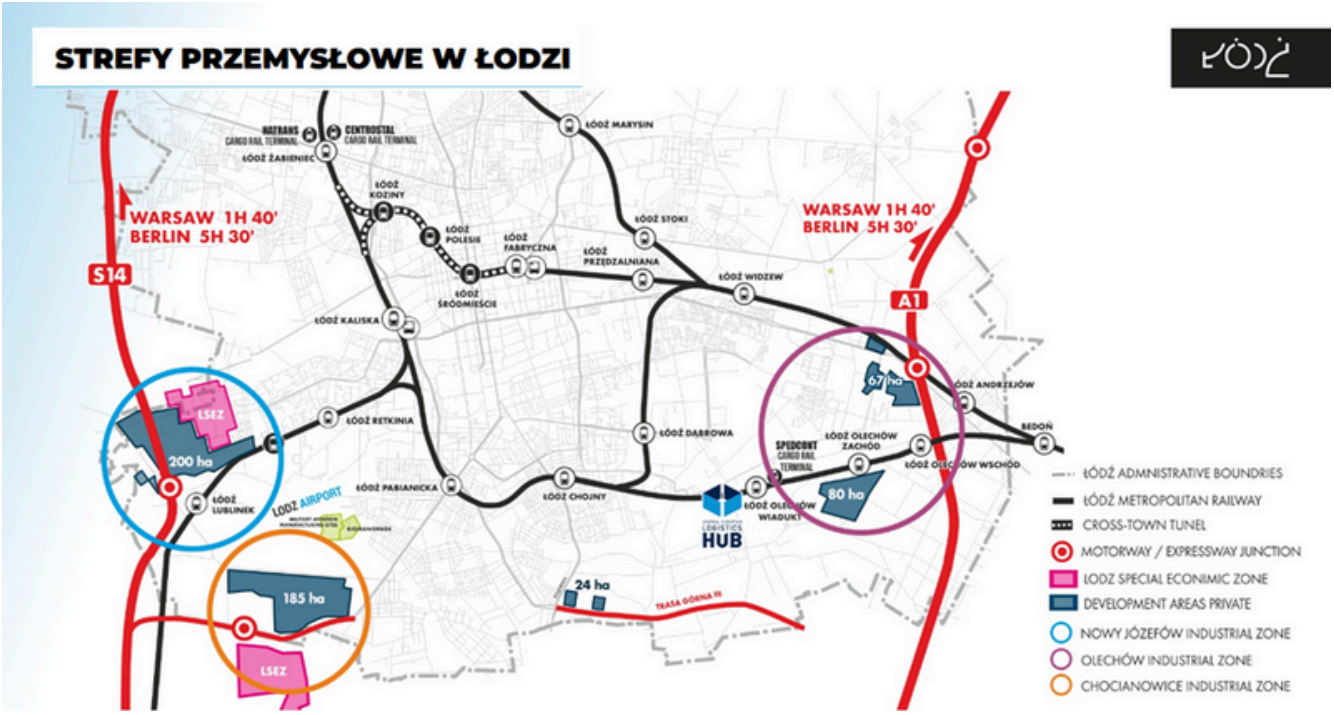
INDUSTRIAL SECTOR IN **ŁÓDŹ** AND OPPORTUNITIES FOR THE **SEMICONDUCTOR SECTOR**

Traditionally known as an industrial city – primarily in textiles – Lodz has in recent years undergone a significant economic transformation, aligning with the wider European trend of reindustrialisation.

The city already hosts global leaders in technology and engineering such as ABB, Airbus, BSH, Corning, Daikin, Dell, Hitachi Energy, Miele, Procter & Gamble, and Siemens Energy.

Łódź University of Technology and the University of Łódź educate engineers, physicists, IT specialists, and chemists – forming a strong foundation for expanding R&D capabilities. Existing laboratories and research centres can be adapted to meet the needs of the microelectronics and semiconductor sector.

Łódź has the potential to become a key link in the European semiconductor ecosystem – particularly in assembly, testing, logistics, and R&D support. The city can leverage its industrial heritage and central location to join the advanced technology industry.



SEK INDUSTRIAL SECTOR **IN LODZ** AND OPPORTUNITIES FOR **THE SEMICONDUCTOR SECTOR**

Examples of companies from the industrial (electronics) sector operating in Łódź and the Łódź region

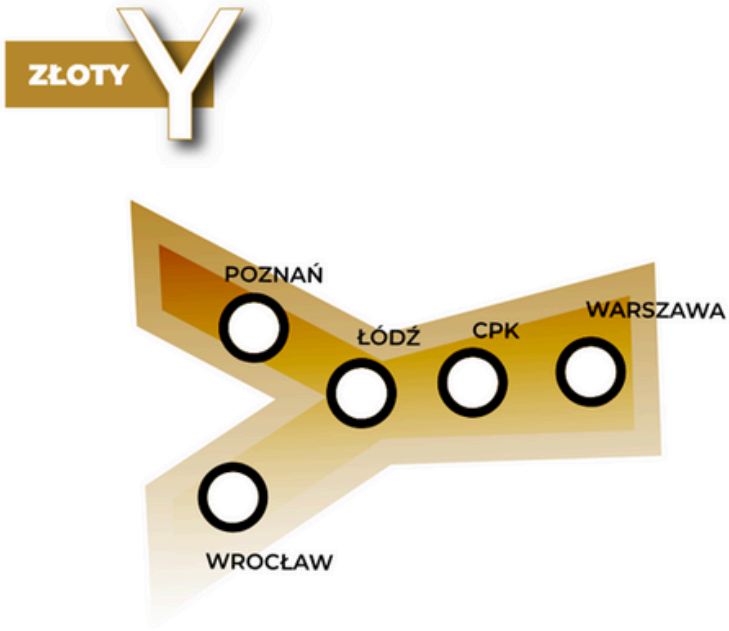
- **ABB** – provider of technological solutions for various industrial sectors (Łódź / Aleksandrów Łódzki)
- **AQ WIRING** – manufacturer of cable harnesses and electromechanical modules (Łódź)
- **BILBERRY** – manufacturer of LED lighting (Łódź)
- **BORN ELECTRIC** – solutions in the fields of e-mobility, autonomy, and energy storage systems (Łódź)
- **BREVE** – manufacturer of transformers (Łódź)
- **CORNING** – manufacturer of optical solutions for industry (Stryków)
- **DELL** – manufacturer of computers and servers (Łódź)
- **EL-PUK** – manufacturer of cable tray systems, underfloor duct systems, and solutions for mounting photovoltaic panels (Konstantynów Łódzki)
- **ENIKA** – manufacturer of industrial electronics (Łódź)
- **FASTLOGIC** – R&D company specializing in designing and delivering customized electronic solutions for business (Łódź)
- **HARMAN** – manufacturer of software, consumer electronics, and audio solutions for industry (Łódź)
- **HITACHI ENERGY** – manufacturer of transformers (Łódź)
- **MAN AND MACHINE** – provider of CAD, CAM, and BIM solutions for the manufacturing, architectural, construction, and engineering industries (Łódź)
- **MAWOS** – provider of industrial automation and drive technology solutions (Łódź)
- **NEONICA** – manufacturer of LED strips (Łódź)
- **OPTOMER** – manufacturer of fiber optic equipment (Łódź)
- **PANASONIC INDUSTRY POLAND** – manufacturer of electronic components and industrial automation solutions (Łódź)
- **PRINTOR** – manufacturer of electronics (Łódź)
- **PRODEL** – manufacturer of electronics (Zgierz)
- **RATEART** – supplier of devices and solutions for the telecommunications sector (Łódź)
- **SCANFIL** – provider of systems for the electronics industry (Sieradz)
- **TECHNITEL** – company specializing in the design, construction, and maintenance of telecommunications infrastructure (Zgierz)
- **TME** – distributor of electronic components (Łódź)
- **ZEMAT** – manufacturer of industrial machines (Łódź)
- **ZF** – provider of advanced mobility solutions for passenger cars, commercial vehicles, and industry (Łódź)
- **ZREW** – manufacturer of oil-filled transformers (Łódź)

ŁÓDŹ AT THE CENTRE OF MAJOR **INFRASTRUCTURE PROJECTS**

Łódź is currently at the heart of transformative processes that will, in the coming years, reshape Poland's geographic and functional economic structure. The most important of these is the planned Central Communication Port (CPK), a flagship infrastructure project connecting the new airport with a network of high-speed rail and road links, creating a coherent multimodal system with national and international reach.

For Łódź, the planned High-Speed Rail (Y) line connecting Warsaw, Łódź, Wroclaw, and Poznan is of strategic significance. The planned track split near Sieradz will make Łódź the first major hub west of Warsaw and the only location offering a fast transfer between the two branches of the line. The estimated travel time to the planned CPK airport is about 30 minutes, further strengthening the city's role as a junction of major transport axes and emphasising its position in the new interregional mobility system.

An integral element of the planned CPK system is the integration of long-distance transport with next-generation regional connections. The introduction of AeroExpress (fast airport services) and RegioExpress (high-frequency regional connections) is aimed at increasing the rhythm, accessibility, and functionality of the national passenger rail network. In the long term, improved accessibility and flexibility in both rail and air transport will be a key location advantage for knowledge-intensive and highly specialised sectors. Workforce mobility, the ability to respond rapidly to operational needs, and the effective integration of regional labour markets are now fundamental to sustainable economic growth. In this context, Łódź – as a hub integrating long-distance, regional, and airport transport networks – is gaining the status of a "system city", a key element of Poland's future mobility architecture.



Golden Triangle – A New Investment Macroregion in Central Europe

An informal but coherent configuration of metropolitan areas, ready to:
- take on projects that exceed the capacity of individual cities,
- compete with Europe's largest regions in terms of scale, accessibility, and absorption capacity.

A new framework that enables **positioning investments on a supra-local scale.**

An opportunity to participate in the creation of **structures capable of absorbing megaprojects**.

A stronger promotional narrative that acts as a **magnet for global funds, policies, and investors.**

The center of gravity lies in Łódź – **the natural coordinator of activities and investment space.**

ŁÓDŹ AT THE CENTRE OF **MAJOR INFRASTRUCTURE PROJECTS**

In parallel with growing passenger mobility, Łódź has for years been developing as one of the main logistics hubs in Central Europe. The city lies at the intersection of key road and rail corridors, supports intermodal connections, and plays an important role in the New Silk Road. In practice, the main stage of the railway route from China often ends here – with containers being transshipped in Łódź terminals and then distributed across Europe.

Against this backdrop, the CPK project – with its planned cargo terminal offering a target capacity of up to 1 million tonnes annually – creates new opportunities for integrating air transport with the region's existing logistics infrastructure. The combination of global distribution channels (rail, air, road) operating at high frequency and with reduced delivery times significantly boosts Lodz's operational potential in areas such as electronics, precision components, semiconductors, contract logistics, and just-in-time deliveries.

TAIWAN-RELATED DEVELOPMENTS IN LODZ

Partnership with the City of Tainan

Łódź – a city of transformation, ambition, and openness to change – is turning toward East Asia, which for many years has been a cradle of advanced technologies and innovations, driving economic growth and the prosperity of local communities. As part of this strategy, on June 6th, 2025, Łódź signed an official cooperation agreement with its new partner city: Tainan – a city located in southern Taiwan, and the heart of one of the world's most dynamic economic regions.

This partnership is not merely a symbolic gesture – it is a concrete investment in the city's future. Like Łódź, Tainan has built its strength on industry. Today, it is a global leader in modern manufacturing solutions, biotechnology, and advanced electronics, including the strategic semiconductor sector. It is in Tainan that TSMC – the world's largest microprocessor manufacturer – develops its most innovative technological solutions. Łódź now faces a real opportunity to become part of this global wave of transformation.

The partnership with Tainan opens new prospects for Łódź to:

- attract investment from the high-tech sector;
- build modern production facilities and research & development centers;
- create new jobs for young, talented engineers and specialists from Łódź universities;
- And above all – strengthen Łódź's position as the innovative heart of Poland.

We are already witnessing the first results of this partnership. The Łódź University of Technology has signed an agreement with National Cheng Kung University – a prestigious institution from Tainan that closely cooperates with the Taiwanese tech industry. This marks the beginning of an intensive academic and scientific exchange that will benefit both sides.

TAIWAN-RELATED DEVELOPMENTS IN LODZ

TEEMA recommendation

Finally, it is also worth noting that the partnership with Tainan fits into the broader context of strengthening ties between Poland and Taiwan. During the Polish-Taiwanese Economic Forum, held in Taipei in early July 2025, Taiwan's Deputy Minister of Economic Affairs, Cynthia Kiang, presented the initiative to create a Polish "semiconductor triangle," encompassing Wrocław, Katowice, and Łódź. This idea echoes a special report published earlier this year by TEEMA (Taiwan Electrical and Electronic Manufacturers' Association) – an influential Taiwanese organization representing over 3,000 leading ICT sector companies. In the report, TEEMA recommends Poland – and particularly the Łódź-Wrocław-Katowice triangle – as a priority destination for Taiwanese investment expansion, with a particular focus on semiconductors and information technologies.

Łódź is ready to become the European gateway for Taiwanese capital. The city boasts an excellent location in the center of the Old Continent, modern industrial and logistics infrastructure, and above all – an outstanding base of young talent. It is precisely their knowledge and creativity that form the foundation for the city's long-term economic development.

Semiconductor Triangle (ICT)

The concept of the **Polish ICT Triangle** (ICT - Information and Communication Technology) emerged following the March visit of representatives from Taiwan's **TEEMA (Taiwan Electrical and Electronic Manufacturers' Association)** to Poland, as well as the publication of a TEEMA report recommending that Taiwanese companies make production investments in three cities: **Wrocław, Katowice**, and **Łódź**.

台灣區電機電子工業同業公會
Taiwan Electrical and Electronic Manufacturers' Association

TEEMA – 3,006 member companies manufacturing a wide range of products across 16 categories, including semiconductors, telecommunications equipment, and consumer electronics.

SUCCESS STORIES

Taiwanese companies

- **CHIMEI FOODS** – a mega-company from partner city Tainan, specializing in the production of traditional Taiwanese delicacies. As part of a joint venture with Lipco Foods Polska, they operate a modern ready-made meal factory in Teofilów, Łódź, which is an important link in the group's global expansion strategy
- **COMPAL EUROPE (Poland)** a branch of Taiwanese OEM/ODM manufacturer Compal Electronics, operating since 2008 as a service and assembly center for electrical and computer components. The factory in Łódź manufactures parts and components used by global brands such as Toshiba, Lenovo, and HP as part of Compal Electronics' global production chain.
- **UNIVACCO EUROPE** – a branch of the Taiwanese group Univacco Technology Inc., specializing in advanced decorative and functional films, which is based in Łódź as a sales and technical service center for the region. The company has leased over 4,666 m² of warehouse space and 269 m² of office space in the modern Hillwood Łódź Chocianowice logistics park, which will enable it to operate as an automated distribution and film conversion center for the European market.

Chinese companies

- **ALIEXPRESS** – logistics center of the global e-commerce platform (Łódź)
- **ROCK COMMUNICATION (ZTT GROUP)** – manufacturer of fiber optic cables (Łódź)
- **YUNCHENG** – supplier of gravure cylinders used in packaging printing (Konstantynów Łódzki)

The investment by Japanese Nippon Seiki near Ksawerów, worth over PLN 80 million, was announced in July 2019. Head-up displays (HUDs) have been produced there since April 2022.

Japanese companies

- **DAIKIN MANUFACTURING** – manufacturer of air-to-water heat pumps for residential heating and cooling (Ksawerów)
- **FUJI SEAL** – manufacturer of shrink sleeve labels and flexible packaging (Zgierz)
- **FUJITSU TECHNOLOGY SOLUTIONS –** company specializing in IT services, technical support, and software development (Łódź)
- **HITACHI ENERGY** – manufacturer of transformers (Łódź)
- **JTI POLSKA (Japan Tobacco International)** – manufacturer of cigarettes and tobacco components (Stary Gostków)
- **NIPPON SEIKI** – manufacturer of head-up displays and instrument panels for the automotive sector (Ksawerów)
- **ROCOCO** – company developing AI technologies: facial recognition, OCR, authentication (Łódź)
- **TAKAOKAYA EUROPE** – producer and distributor of nori seaweed for the food industry (Łódź)
- **TAKEDA PHARMA** – shared services center for the Takeda Group (Łódź)
- **YAMADA WENTWORTH** – manufacturer of razors for Gillette (Lućmierz)

Support for Business

Invest in Łódź is the Economic Development and International Cooperation Bureau of the City of Łódź Office. The Bureau supports investors and local entrepreneurs, offering comprehensive assistance at every stage of the investment process.

Its main areas of activity include attracting new investment to Lodz; stimulating industrial, technological, and service-sector growth; integrating the academic and business communities; and supporting job creation in a rapidly developing city.

- **Industry X.0** – Invest in Łódź initiatives for the industrial sector:
- **Community first** – building Łódź's industrial community (integration of local and international companies, knowledge exchange, joint initiatives, networking).
- **Industry X.0** – supporting modern industry as an ecosystem (promoting automation, digitalization, and sustainable development as a shared direction for companies).
- **Talent pipeline** – connecting industry with education (collaboration with the Technical University of Łódź and vocational schools, aligning education with the needs of the factories of the future).
- **Data, map, report** – providing a solid foundation for promoting the sector (mapping competences and companies, preparing sector reports, showcasing facts and potential).
- **The Golden Triangle** – creating a new marketing vehicle: positioning Łódź as the central hub of Poland's emerging industrial corridor (along the High-Speed Rail: Warsaw – Łódź – Wrocław).

Łodź Special Economic Zone

The Łódź Special Economic Zone is today an ecosystem of over **500** companies implementing more than **700** investment projects in central Poland, as well as over **220** accelerated startups working with both business and academia.

We provide investors with a regional "one-stop shop":

- **Public aid** for the implementation of new direct investments amounting to 40–70% of investment costs – CIT exemption (Polish Investment Zone program),
- **Location advisory services**, a wide range of land for industrial investments, office space,
- **Recruitment support**, access to talent and skills: TAiR – Technical School of Automation and Robotics – is launching a new "cybersecurity technician" course, addressing the needs of the semiconductor industry and related services.

Łódź SEZ – what sets us apart?

Fast procedures, tailored instruments, and additional programs for companies and entrepreneurs:

- **Polish Investment Zone** – CIT exemption of up to 70% of the cost of a new investment or labour costs (new jobs),
- **European Digital Innovation Hub**: free support for the digital transformation of SMEs (AI, cybersecurity, automation, "test before invest"),
- **Startup Spark 3.0**: acceleration combining the potential of startups with the infrastructure and needs of mature businesses (grants up to PLN 400,000, sector-specific/sector-agnostic/Go Global tracks),
- **Strefa RozwoYou 3.0**: development vouchers for training and upskilling employees,
- **Transformation Zone**: co-financing of training, consultancy, and postgraduate studies for residents of the Bełchatów region,
- **Re_Enter:** an ecosystem of Polish companies interested in internationalisation, exports, and cooperation with foreign partners,
- **Partner Program**: a network of trusted companies from various industries, consultancies, and institutions that support entrepreneurs in growth and implementation (legal, tax, HR services).

In addition to financing and acceleration instruments, we offer unique infrastructure for cooperation: conference facilities in the post-industrial walls of the Grohman Factory and offices in Re_connect – a meeting place for B2B events and project work.

Łódź, Katowice, and Wrocław together create an attractive offer for the semiconductor industry. ŁSSE is ready to comprehensively guide investors through the market entry process – from the investment decision, through competencies and partnerships, to scaling up in the heart of Europe.

EDUCATIONAL POTENTIAL OF ŁÓDŹ FOR THE DEVELOPMENT OF THE **SEMICONDUCTOR SECTOR**

Łódź's strengths as a location for education serving the semiconductor sector

- Strong academic base (Lodz University of Technology, University of Lodz)
- Existing technical courses in secondary schools and experience in creating patronage classes
- Potential for developing an industrial cluster involving schools, universities, and investors
- Experience in implementing EU-funded projects and integrating education with labour market needs

Higher education: Łódź University of Technology – education in electronics for the semiconductor industry

Specialists education

Łódź University of Technology is one of the leading academic institutions in Poland, offering education in fields of electronics and the semiconductor industry at both undergraduate and graduate levels. Each year, we admit approximately 100 new students to the Electronic and Telecommunication Engineering program, taught in Polish. Additionally, around 50 students get accepted into the master's program, which is available in both English and Polish.

Łódź University of Technology's Programs provide education in microelectronics, micro- and nanoelectronic technologies, digital and programmable software, and embedded systems, at both BSc and MSc levels. Because of our unique and flexible learning plans, students have an opportunity to specialise in semiconductor technologies along with integrated circuit design. Students develop intricate designs as part of their thesis or project work, and in collaboration with Europractice, they can get a completed product.

Students in the second cycle (MSc), particularly those studying in English, are eligible to pursue a double degree in collaboration with the University of Vigo in Spain and the University of Naples Federico II in Italy, which specialises in developing competencies necessary in the semiconductor industry. Students have a unique opportunity to undertake internships and thesis projects in collaboration with industry-leading companies such as Qualcomm and Infineon.

The academic staff consists of approximately **80 faculty members**. Among them are nearly 20 professors and over **50 PhD** holders with substantial experience in electronic circuit design, including digital circuits and embedded systems. They are also proficient in modelling, designing and manufacturing semiconductor devices based on silicon and wide-bandgap materials.

EDUCATIONAL POTENTIAL OF ŁÓDŹ FOR THE DEVELOPMENT OF THE **SEMICONDUCTOR SECTOR**

Research & development background

Łódź University of Technology possesses specialised research infrastructure that is the foundation of a technological ecosystem which supports the development of the semiconductor sector in Poland. The technological laboratories operating within the **Microtechnology Centre** focus on researching novel materials for **electronics and new semiconductor devices**. They also conduct simulations and analyses aimed at materials with properties essential in modern electronics. The Centre consists of several distinct, interconnected laboratories dedicated to the development of semiconductor devices and systems. The unique, concentrated structure of analysis equipment and new technology inside the laboratory environment enables a comprehensive execution of research projects. Beginning with a simulation-assisted design using CAD tools such as QuantumATK, MedeA, SENTARUS, ANSYS, CADENCE, then assembling test structures with the available infrastructure, and ending with advanced physical and electrical characterisation.

One of the core elements is the **Advanced Microelectronics Technology Laboratory**, a clean room facility. It has an ISO 6 cleanliness classification throughout, and ISO 4 at selected workstations. The laboratory carries specialised equipment, including a diffusion furnace, a Degussa furnace, a rapid thermal processing (RTP) system, a reactive ion etching (RIE) unit, wet etching and cleaning fume hoods, PVD and CVD deposition systems, photolithography stations, climate chambers, and a scanning electron microscope (SEM). **These tools enable the processes of creating semiconductors based on silicon and silicon carbide (SiC), as well as characterising semiconductor devices and the physical properties of microelectronic materials.**

The laboratories' resources, capabilities and the staff's expertise have contributed to the implementation of numerous key research projects in the field of semiconductor device technologies based on silicon, silicon carbide, and gallium nitride. Notable projects include: Internal research project "*High-temperature diffusion doping processes in SiC*", Contract research project "*New technologies based on silicon carbide for high-frequency, high-power, and high-temperature electronics*", Internal research project "*ToF-SIMS analysis of interfacial structure and chemical composition in metal–SiC contacts for advanced semiconductor devices*", FP7 project GECCO: "*3D GaN for High Efficiency Solid State Lighting*", OPUS project: "*Application of computational physics methods to study the impact of structural defects on the properties of SiC semiconductor structures*", Projects on wide-bandgap materials for photovoltaic applications, including: POLONIUM bilateral project "*Solar cells with energy converters based on ZnO nanoparticle layers*", SONATA project "*Use of energy conversion layers in new photovoltaic cell designs*", POIR project "*SolarHybrid: Hybrid systems for solar energy conversion", POLONIUM bilateral project "Ultraviolet light converting glass for applications in health and environmental protection*".

EDUCATIONAL POTENTIAL OF ŁÓDŹ FOR THE DEVELOPMENT OF THE **SEMICONDUCTOR SECTOR**

All of the qualities listed enable the design and development of semiconductor devices, as well as contribute to the solid foundation that supports and accelerates the sector in Poland. This sector is a key enabler in many strategic areas of the modern economy, including automotive (especially in the context of electromobility and ADAS systems), telecommunications (including 5G and future 6G networks), consumer electronics, defense industry, medical technology (diagnostic and therapeutic equipment), energy (energy management and power conversion systems), industrial automation, and space technologies. The dynamic growth seen in these areas makes domestic capabilities in semiconductor design and development a strategic move in ensuring Poland's safety in the fields of technology and economy.

Collaboration with industrial sector

Łódź University of Technology is an active collaborator with key technology and industrial companies within the semiconductor sector. Building those business and academic connections ensures steady, durable and effective partnerships. Cooperations encompass advanced research and development projects as well as educational initiatives that support innovation in devising technologies and expanding competencies essential in the industry. Semiconductors are the basis of multiple areas of the contemporary economy, which extends the collaborations to commodities related to automotive (especially in the context of electromobility and ADAS systems), telecommunications (including 5G and future 6G networks), consumer electronics, defence industry, medical technology, energy, industrial automation, and many others.

The Integration of Academia and Industry

Łódź University of Technology implements a myriad of R&D projects. Their funding comes from national and European sources aimed at the development and implementation of advanced technological solutions for the semiconductor industry. These innovations arise in state-of-the-art laboratories and research centres equipped with specialised instrumentation. All those factors enable world-class research.

Internships and practical training are also part of industry collaborations. They allow students to gain hands-on experience and unique skills. They give scholars exposure to cutting-edge technologies. Additionally, the University is actively engaged in technology transfers and the commercialisation of innovative products and services, as well as fostering technological entrepreneurship.

Łódź University of Technology is also involved in organising conferences, workshops and industry training sessions. These promote knowledge exchanges, foster business-science relationships and build competencies tailored to the sector's needs.

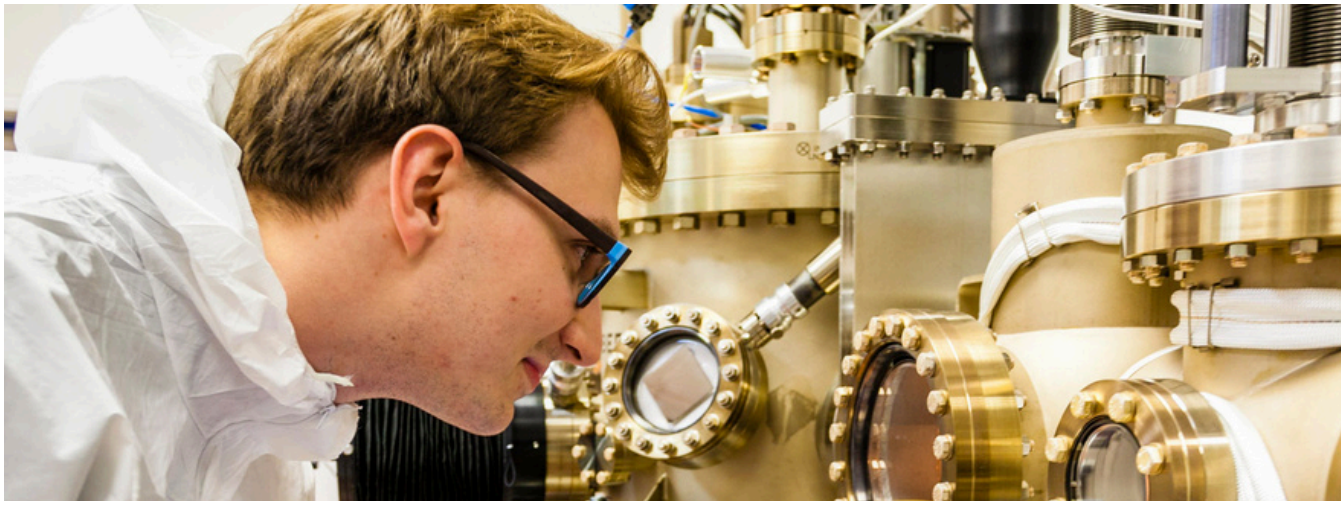
EDUCATIONAL POTENTIAL OF ŁÓDŹ FOR THE DEVELOPMENT OF THE **SEMICONDUCTOR SECTOR**

Industry Partners

Among the various partners collaborating with Lodz University of Technology in the semiconductor field, several significant associates deserve special mention:

- **Corning Optical Communications**, specialising in innovative fibre optic solutions for telecommunications, consumer electronics, science, and industry;
- **FlexiPower Group**, providing renewable energy solutions, specialising in the design, installation, and servicing of photovoltaic systems, heat pumps, energy storage, and electric vehicle charging stations;
- **ZF Automotive Systems Poland**, specialising in manufacturing advanced electronic components for advanced driver assistance systems (ADAS), such as cameras, radars, and supercomputers for automated driving;
- **Rateart**, supplying advanced devices and measurement equipment for telecommunications, including fibre optic network construction, radio, and microwave technologies;
- **El-Cat Inc.** USA, which specialises in supplying high-quality silicon substrates, compound semiconductors, and other electronic materials, offers custom solutions and processing services for the semiconductor industry.
- **Vigo Photonics**, aiming to become the first manufacturer of integrated photonic circuits for the mid-infrared range (MIRPIC);
- **Kubara Lamina**, whose activity focuses on two main pillars — production of high-power semiconductors and microwave devices;
- **TopGaN**, producing advanced GaN-based light emitters operating in the visible and UV spectral range (395–461 nm), including wavelength-tunable lasers (external cavity lasers), semiconductor optical amplifiers, superluminescent diodes, and custom integrated photonic circuits;
- **Dacpol**, specialising in supplying components and solutions for power electronics, automation, electronics, and electrical engineering, also offers consulting, manufacturing, and servicing.
- as well as industry giants in semiconductor devices and integrated circuits, such as **Intel, Motorola, Qualcomm, and Infineon.**

The network of start-ups and spin-off companies that emerge from research conducted at the University is a crucial part of the field's ecosystem.



One of the partners of the Łódź University of Technology is VIGO Photonics SA, the world leader in the market of mid-infrared photon detectors.

Secondary Education: Secondary school offer in Łódź for the development of the semiconductor sector

As one of Poland's key industrial and academic centres, Lodz has significant potential in vocational and technical education. The existing network of technical schools and vocational schools can serve as a foundation for developing local competencies essential for the semiconductor sector – both in production, as well as in testing, integration, and servicing advanced electronic systems.

Current educational offer of technical schools in Łódź

Lodz hosts a number of schools providing education in technical professions, including:

- Zespół Szkół Politechnicznych (Polytechnic School Complex): automation technician, electronics technician, electrical technician, energy technician, IT technician, programmer
- Zespół Szkół Techniczno-Informatycznych (Technical and IT School Complex): IT technician, programmer, mechatronics technician, mechanical technician
- Zespół Szkół Elektroniczno-Informatycznych (Electronics and IT School Complex): programmer, IT technician, mechatronics technician
- Zespół Szkół Edukacji Technicznej (Technical Education School Complex): mechatronics technician, mechanical technician, electrical technician, IT technician
- Technikum nr 3 (Technical Secondary School No. 3): refrigeration and air-conditioning technician, renewable energy technician, sanitary engineering technician, gas engineering technician
- Łódzkie Centrum Doskonalenia Nauczycieli i Kształcenia Praktycznego (Lodz Centre for Teacher Development and Practical Training): CNC machine programming courses for students

Other professions already available in the educational system that may be applicable to the semiconductor sector include electronics technician, automation technician, mechatronics technician, IT technician, programming technician, and electrical technician.

Teaching staff and school infrastructure potential

Technical schools in Łódź have highly qualified teaching staff, including teachers with industrial experience and engineers cooperating with universities and technology companies. Staff participate in industry training, EU-funded projects, and programmes organised by industrial partners.

Many schools have been equipped with modern classrooms and laboratories through EU funding. Educational infrastructure includes:

- Laboratories for automation, electronics, mechatronics, and robotics
- Modern IT laboratories (computer networks, programming, databases)
- Workshops equipped with CNC machinery, industrial process simulators, and educational-scale production lines

Some schools run patronage classes and implement projects in cooperation with companies from the advanced technology sector, strengthening the practical dimension of education.

EDUCATIONAL POTENTIAL OF ŁÓDŹ FOR THE DEVELOPMENT OF THE **SEMICONDUCTOR SECTOR**

Cooperation between schools, universities, and industry

A key element of the technical education system in Lodz is cooperation with Łódź University of Technology, which acts as a substantive mentor for many educational initiatives. Examples of cooperation include:

- Joint teaching programmes and research projects
- Internships and workshops for students in university laboratories
- Participation of academic staff in classes held in schools

Schools also collaborate with modern companies (e.g. in IT, electronics, automation) that offer students internships, scholarships, mentoring, and participation in technical projects. Examples include patronage classes supported by companies such as Ericsson, ABB, Dell Technologies, Philips, and local industrial integrators.

Adapting secondary education to the needs of the semiconductor sector

- Creating specialised education profiles:
- Modifying existing courses for the semiconductor sector – e.g. electronics technician with a semiconductor profile

Dual education system:

- Practical classes in university research and production centres (e.g. Łódź University of Technology)
- Internships and apprenticeships in companies specialising in electronics, automation, and systems integration

Partnerships with semiconductor sector companies:

- Patronage classes
- Co-financing laboratory equipment
- Scholarship and mentoring programmes

Modernising school infrastructure:

- Precision electronics laboratories
- Creating workshops and laboratories equipped with modern devices

Developing teacher competencies:

- Training at industrial partner sites
- Study visits
- Collaboration with universities

Integration with higher education pathways:

- “Technical school + dual studies” model
- Qualification and certification courses

CONTACT

Agnieszka Sobieszek
Deputy Director
agnieszka.sobieszek@sse.lodz.pl
(+48) 607 070 136

Łódź Special Economic Zone
ul. Ks. Biskupa Wincentego
Tymienieckiego 22G
90-349 Łódź

Mateusz Sipa
Director
m.sipa@uml.lodz.pl
(+48) 508 297 192
Invest in Łódź

City of Łódź – Business Development and International Relations Bureau
ul. Piotrkowska 104a
90-926 Łódź