SWITZERLAND GLOBAL ENTERPRISE

KEY FIGURES

1st Place – Global Innovation Index (WIPO)

1st Place – Global Competitiveness Index (INSEAD)

2nd Place – Global Resilience Index (FM Global)

3rd Place – Global robotics patents in relation to number of inhabitants

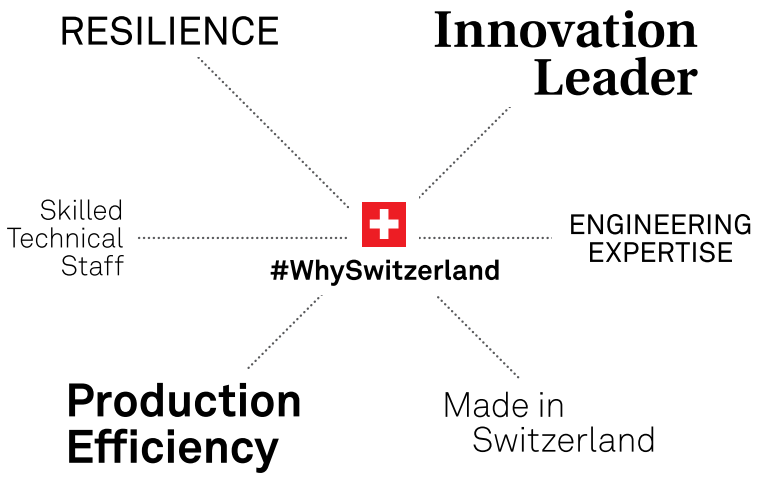
Sources: WIPO; INSEAD; FM Global, 2020; BAK Economics, 2018

ADVANCED MANUFACTURING IN SWITZERLAND

INTRODUCTION

Thanks to its traditional watch, MEM (mechanical, electrical and metal) as well as med-tech industry, Switzerland has developed a highly industrialized precision cluster over the years and now holds a leading position in the field of advanced production processes (Industry 4.0). Characterized by particularly close cooperation between leading research centers and innovative industry, Switzerland offers international companies ideal conditions to optimize their manufacturing processes and to set up high-performance production facilities. The great availability of skilled technical staff due to the Swiss vocational system and a liberal labor law increase efficiency and productivity further. Switzerland is an excellent starting point to manage efficient supply chains for the European market or to set up highly automated production facilities.

Switzerland is particularly well positioned to address new challenges many companies face when it comes to predictability. The alpine country has repeatedly proven strong and resilient amidst global crises. Here, companies not only profit from a stable and low-risk environment but also from a brand that has been consistently linked to high quality, technological superiority and trust: “made in Switzerland.”



THE ADVANTAGES OF SWITZERLAND

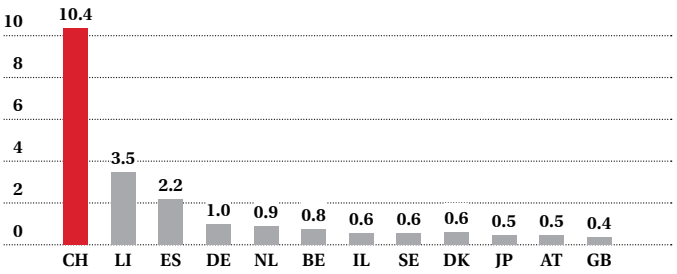
1. Specialized Talent Pool and Liberal Labor Law

Emerging and mature markets share a similar problem: a shortage of highly skilled workers who possess the capacity to work in smart production. This gives a huge competitive advantage to the few locations that can provide a steady stream of qualified, motivated workers.

Why Switzerland:

- **Vocational training** in Switzerland is **oriented to the labor market** and based on a duality between theory and practice. The Swiss dual education system attracts a great deal of international interest and is increasingly held up as an example as it enables **good availability of technical staff**, which plays a key role in high-tech sectors. Particularly in the precision manufacturing industry, thousands of young, well-trained individuals enter the labor market every year. Having skilled staff to operate highly automated machinery effectively leads to **fewer errors, more efficiency and cost savings**.

Additive Manufacturing Patent Applications
Per economic output (2000-2018)



Source: EPO study "Patents and additive manufacturing: Trends in 3D printing technologies", July 2020

- Switzerland enjoys **some of the most liberal labor legislation in the world**. Companies can employ and dismiss staff at short notice and with no difficulty, depending on their commercial requirements. The incidental wage costs are also comparatively low. Labor disputes are rare, and no other European country has seen fewer strikes in the last decade. All of this creates a stable environment in which **undisturbed and cost-efficient production** can take place.

2. Strong Production Clusters with a High Level of Innovation Potential

Of special significance for smart production, cluster manufacturing refers to the importance of a regional concentration of interrelated companies operating along an entire value chain (manufacturers, service providers, suppliers, key customers, research institutes and universities). More than ever, a production environment is required that provides the possibility of rapid scalability and an industry-specific "business culture" that nurtures innovation and fosters competition.

Why Switzerland:

- Switzerland is exceptionally **highly industrialized**. The proportion of GDP stemming from manufacturing industry is among the highest in the industrialized world – an impressive sign of its manufacturing cluster strength and **strong engineering expertise**.

- It is precisely because Switzerland is a small country that industry benefits from a unity of suppliers and specialized service providers **across** the **entire value chain over a geographically manageable terrain**. Switzerland also has a strong international network and offers **direct access to Europe, the world's largest consumer market.** This also helps companies to meet the requirements of one of the latest trends: to produce where the customers are.

- Switzerland is notable for its **high level of efficient knowledge and technology transfer**. Pragmatic cooperation between universities and local industry enables companies to regularly optimize their production processes and make them more innovative.

- For the past ten years, Switzerland has ranked at the **top of the Global Innovation Index** (WIPO). According to the corresponding report, the country is **most effective worldwide in transforming innovation investment into results**. In addition to substantial investment in research and development, Switzerland's consistently strong position is due to the high quality of local universities and extensive human resources.

"For us, it pays off to produce in Switzerland, because we produce products that meet the high-tech standard."

ANDREAS WIELAND
CEO Hamilton, Bonaduz (GR)

SWISS SMART FACTORY

The Swiss Smart Factory (SSF) is the first test and demonstration platform for Industry 4.0 in Switzerland. It supports technology development and transfer from the first idea to market introduction. The SSF's vision is to become Switzerland's leading, internationally recognized center of competence in application-oriented research and transfer of Industry 4.0, as well as to create an ecosystem of partners, through which unique innovations and activities can be developed. The SFF is located at Switzerland Innovation Park Biel/Bienne (SIPBB).
www.sipbb.ch

- The technical universities and institutes of applied sciences across the French, Italian and German-speaking regions of the country are a main pillar of Switzerland's scientific and technical excellence. The two Federal Institutes of Technology in Lausanne (EPFL) and Zurich (ETHZ) both preside over **globally recognized industrial manufacturing faculties.**

- Over the years, a real **precision cluster** has developed in Switzerland on the basis of the traditional and successful Swiss watch industry. The presence of excellent knowledge and a highly qualified workforce has led to the establishment of an increasing number of industries requiring similar technologies for their production. Today, this precision cluster also includes manufacturing technologies for robotics, medical technology and additive manufacturing (3D printing processes).

3. "Swiss Made" – a Strong Label That Stands for High Quality and Reliability

Customers increasingly regard "authenticity" – meaning the integration of innovation, design and production in one country or within one company – as a desirable quality. Switzerland offers unique opportunities not only to invent and design products but also to manufacture them. The "Made in Switzerland" label can be an important boost to growth and can be of vital significance in the global market.

Why Switzerland:

- Swiss products and services have enjoyed a very good reputation around the world for a long time. Customers associate Swiss made products with **reliability, highest quality, longevity and technological superiority**. For these attributes, they are also willing to pay a **higher price**.

- The good reputation of Swiss products results not least from the important role that **product and industrial design** play in the manufacturing process. This is evident both in everyday objects such as fully automatic coffee machines and in industrial products such as modern machine tools.

- "Made in Switzerland" as a brand is benefitting manufacturing companies in B2B. A wide variety of global companies rely on Swiss precision and produce **key manufacturing parts** of their star products in Switzerland, e.g. Starbucks, Tesla, Hamilton, and many more.

SWISSNESS

In order for a company's industrial product to earn the **"made in Switzerland"** label, at least 60% of the product's manufacturing costs (including R+D, material and production costs including costs for quality assurance and certification) must be incurred in Switzerland. In addition, the main production stage must take place in Switzerland.
For more details, visit s-ge.com/swissness.

4. A Stable Environment for Resilient Supply Chains

Global challenges such as the recent pandemic have shifted the importance of enterprise resilience. Senior leaders now evaluate their company's exposure to risk differently; resilient regional supply chains and ensuring business continuity have become essential in their strategic consideration.

Why Switzerland:

- Switzerland is a location of contrasts, standing for emerging technology as well as traditional values such as trust and safety. Its **stable political and economic environment** offers globally active companies a safe place to develop their digital manufacturing and supply chain processes in this new age.

- The FM Global Resilience Index 2020 ranks Switzerland in second place as **one of the most resilient economies in the world**. The Index provides critical insights for businesses making far-reaching choices as they build facilities, extend supply chains and access new markets.

- Being located **in the heart of Europe**, Switzerland provides a favorable environment for setting up a **regional supply chain** that is close to its customers.

- The Swiss legal system, being both stable and liberal, offers both **significant protection for intellectual property** and a high degree of investment security for R+D activities.

Global Resilience Index

Ranking of 130 countries and regions by the resilience of their business environments

Country	Rank	Country	Rank
Norway	1	Finland	6
Switzerland	2	Luxembourg	7
Denmark	3	Austria	8
Germany	4	USA (Central)	9
Sweden	5	USA (Eastern coast)	10

Source: FM Global, 2020

Case Studies

- The American biotech firm **Biogen** is building one of the most modern biotech production plants worldwide in the Solothurn area. The plant combines the latest Biogen ideas on fed-batch cell culture technology and protein purification. This allows the **production of biopharmaceuticals on a large scale**. The Group will invest around 1.5 billion Swiss francs over the coming years and create up to 600 new jobs.

- Swiss global player **ABB** presented its new dual arm robot solution called **YuMi** in April 2015. It is specifically designed to address the needs of small parts assembly. A unique feature and key attribute of YuMi is its "inherently safe" rating, meaning it can work alongside humans without posing any risk to their safety. YuMi was invented, developed and designed in Switzerland.

- In 2019, the multinational **Hewlett Packard Enterprise (HPE)** opened a new **IoT Innovation Lab** in Geneva, where its EMEA headquarters are located, to help customers capitalize on the vast amounts of data generated outside of data centers by devices, machines, etc. After Houston and Singapore, Geneva is HPE's third IoT center worldwide.

- **Hamilton** is a global leader of technology in life science, storage, measurement and medtech. The company currently employs more than 2,850 people worldwide, with more than 1,300 of them in Switzerland. Its European headquarters and main production facility are located in Bonaduz and Domat/Ems in the Grisons Rhine Valley. In April 2018, the company built a **fully automated production facility** in the Vial industrial park to produce consumables for its medical equipment. Hamilton chose Switzerland due to its attractive employment environment, its traditional importance as a center for quality and precision as well as its highly skilled workforce.

- **Rinco Ultrasonics** is a leading company in the field of ultrasonic welding and cutting technology, based in Romanshorn, Eastern Switzerland. Within almost 40 years, the firm has grown from a small family firm to a global player with a presence in more than 40 countries. It offers ultrasonic devices for production processes at the highest level, with all its products **manufactured 100% in Switzerland**.

- The pharmaceutical company **Novartis** is at the forefront of **continuous manufacturing**, a new process that aims at transforming pharmaceutical production. Its continuous manufacturing site, located at Novartis' headquarters in Basel, is the first in the industry to integrate all steps of chemical and pharmaceutical production in one location. Novartis expects this revolutionary approach to potentially reduce drug manufacturing time by 90% and production costs by 30 to 50%.

CONTACTS AND FURTHER INFORMATION

Authorities and Regulators

State Secretariat for Education, Research and Innovation SERI
www.sbfi.admin.ch

Innosuisse – Swiss Innovation Agency
www.innosuisse.ch
> Additive Manufacturing Network (AM Network)

Associations and Networks

arcm.ch
cluster-precision.ch
swissmem.ch
swissphotonics.net
swisst.net
switzerland-innovation.com
virtualswitzerland.org

Research and Tech Transfer Centers

advanced-manufacturing.ethz.ch
amnetwork.ch
am-ttc.ch
www.csem.ch
empa.ch
iot-lab.ch
microcity.ch
m2c.epfl.ch
www.satw.ch
www.sfa-am.ch
sipbb.ch
unitectra.ch
uptownbasel.ch

S-GE Resources

Tech Location Switzerland
s-ge.com/tech

Handbook for Investors
s-ge.com/handbookforinvestors

More factsheets on Switzerland as a business location
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