

**Welcome to VAT**  
**High Performance**  
**Vacuum Valve & System**  
**Solutions**

2022



# The Company

## About VAT



### Global market leader for high performance vacuum valves,

- mission-critical components for advanced R&D and manufacturing
- processes of semiconductors, LED, solar cells, displays and other high vacuum demanding products.

### Broadest valve technology and related products portfolio

- Vacuum valves, gas inlet valves, multi valve modules (manifolds)
- Vacuum chambers with integrated valves
- Motion components (like wafer lift systems)
- Edge welded bellows
- Retrofitting, refurbishment and upgrading services
- Custom engineering and ultra-clean production

### Close to customer

Sales/Service representations in 29 countries.

R&D sites: Haag (Switzerland), San Jose CA (United States), Penang (Malaysia)

Manufacturing sites: Haag (Switzerland), Penang (Malaysia), Arad (Romania) and Xinwu (Taiwan).

### Over 2,500 employees\* worldwide

\*Full time equivalents (FTE)



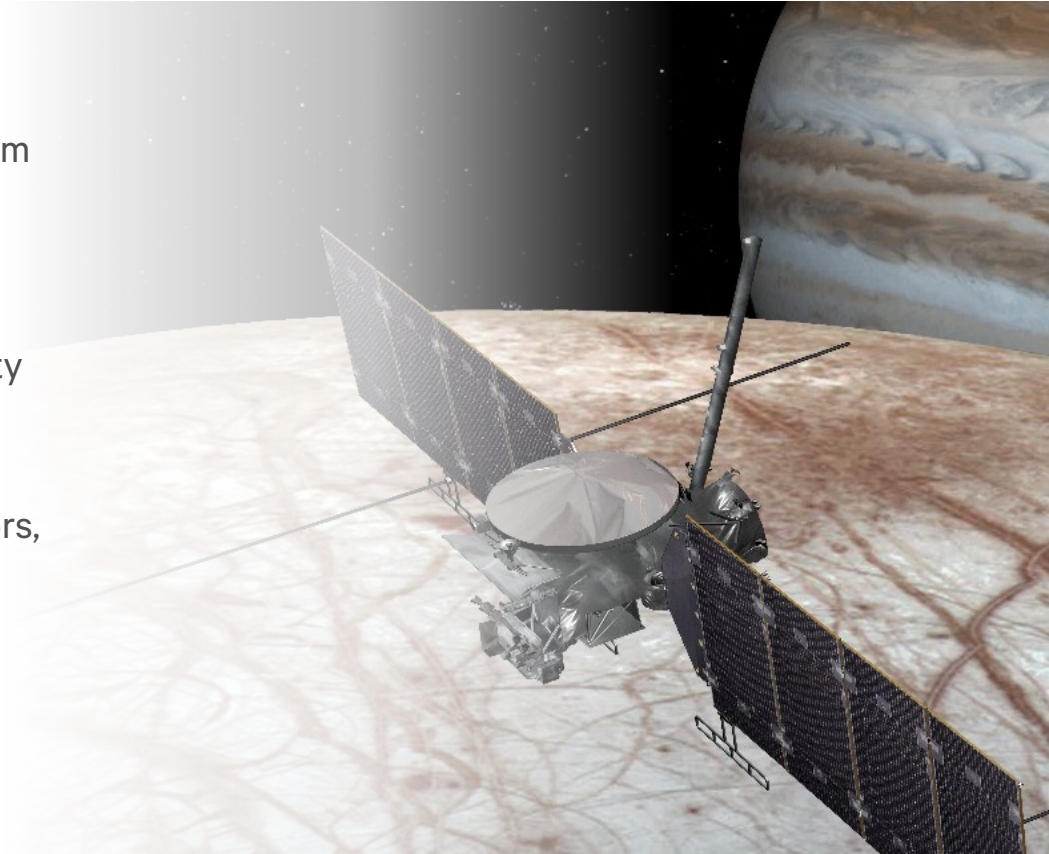
PASSION.

## We Reach for the Stars.



Innovation is our passion. From the very beginning in 1965, VAT has focused on the development of innovative solutions for vacuum valves and related appliances.

- Over 300+ patents registered
- Constant innovation: R&D a company priority
- Strategy of entry into new markets and development of new applications
- Vacuum valves help produce microprocessors, flat screens, laser technology & PV arrays.
- To infinity and beyond: VAT part of a NASA satellite mission to Jupiter's moon Europa



# PRECISION.

## For the World's Toughest Manufacturing Processes



Our claim is precision of the highest standards. The outstanding quality of VAT products and services stands behind our customers' success.

- Valves produced with 1/100th mm accuracy
- Highest precision for valves used in high, ultra-high and extreme ultra high vacuum applications
- Most comprehensive range of vacuum valve products worldwide; >1,000 standard products available
- Customer collaboration to develop special valves and integrated valve systems for manufacturing and research facilities





PURITY.

## Maintaining the Highest Production Standards



Purity is our highest goal – because our customers' technology requirements are among the most stringent of any industry.

- VAT valves enable ultra-pure vacuum for production processes and research
- Our vacuum valves ensure leak tightness, minimal to zero particle contamination and max. process flexibility
- High purity cleaning processes after every production step and assembly at highest level clean rooms (class 6 and 8)
- Process purity and reliability enabled by VAT vacuum valves are crucial for customer manufacturing



A worker in a cleanroom wearing a blue protective suit, hood, and mask, working on a table. Another worker is visible in the background.

**VAT Solutions**

# Our Potential

## Realizing the Potential of Vacuum Technology



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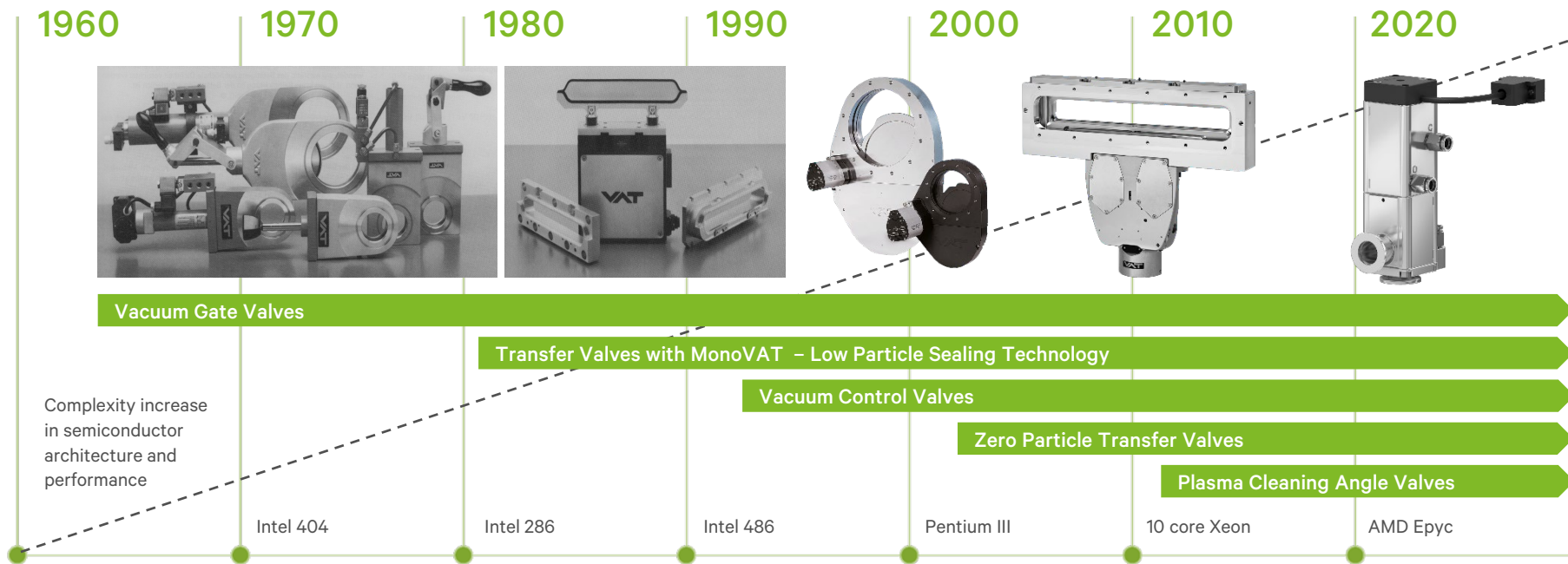
VAT Company Presentation

V2.4

# Increasing Technological Demand Faster, Cleaner, More Durable, More Precise



Vacuum valve performance development – example semiconductor development.



Complexity increase  
in semiconductor  
architecture and  
performance

Intel 404

Intel 286

Intel 486

Pentium III

10 core Xeon

AMD Epyc

Vacuum Gate Valves

Transfer Valves with MonoVAT – Low Particle Sealing Technology

Vacuum Control Valves

Zero Particle Transfer Valves

Plasma Cleaning Angle Valves

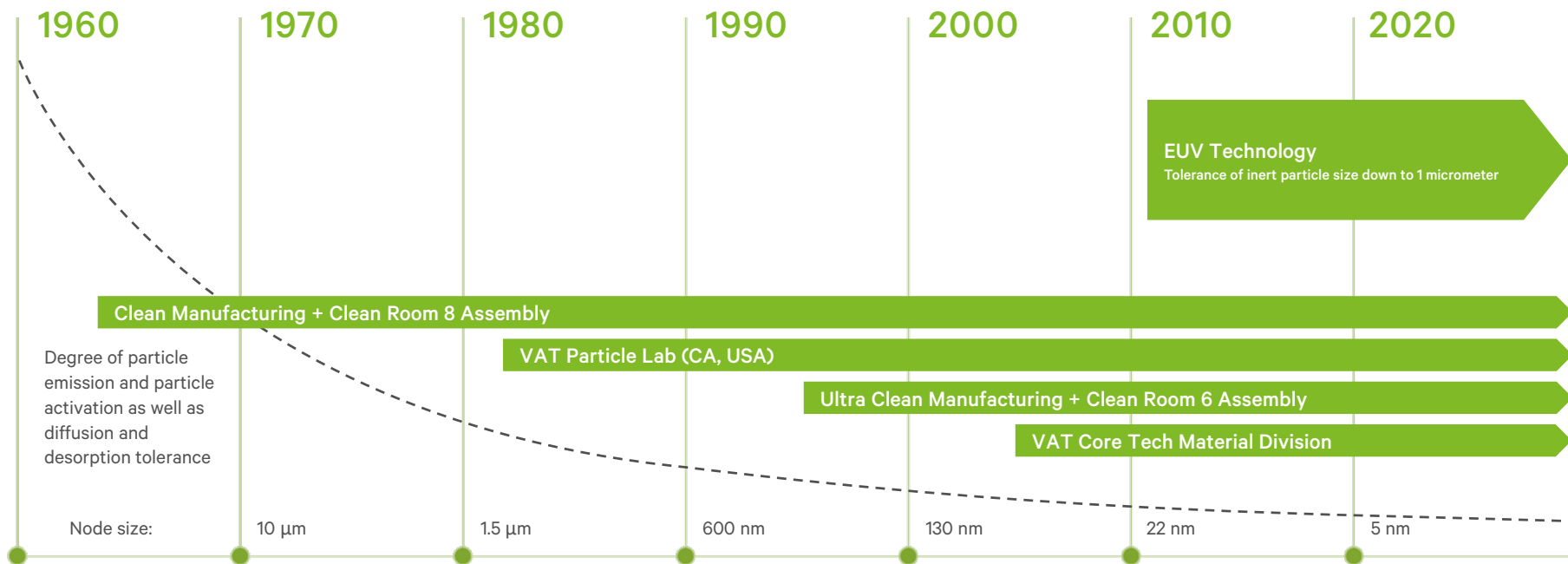


# Technological Leadership

## R&D is our DNA



### Vacuum valve performance development – example ultra clean vacuum development (UCV).



# Our Standard Vacuum Valve Portfolio



Based on three core valve types (transfer, control & isolation) our product portfolio comprises over 140 valve series with more than 8,000 customized products and 2,500 standard products.

- VAT's product line includes:
- Gate valves and pendulum valves
- Control valves
- Transfer valves and doors
- Angle valves and diaphragm valves
- Customized products for high purity and industrial applications
- Flange connections & bellows
- Customized multi-valve modules



# High End Custom Valve Manufacturing



# Tailored to Your Needs

## Advanced Vacuum System Solutions



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### Vacuum Components

- Load-Lock Modules (LL)
- Transfer Modules (TM)

### Vacuum Motion Components

#### Substrate Lift Systems (LS)

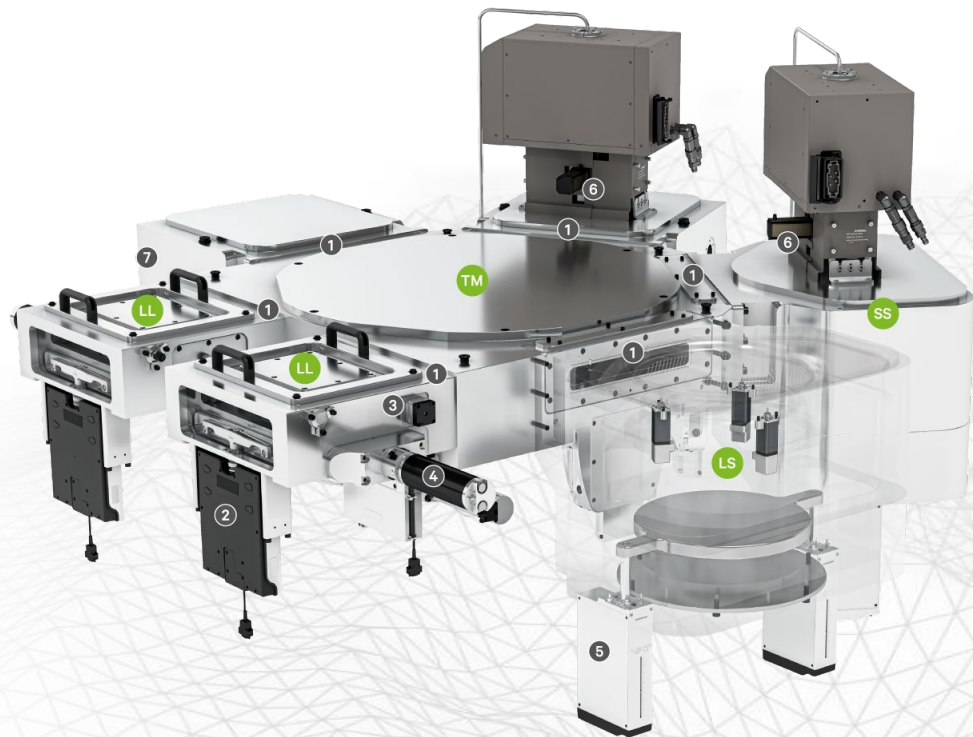
- Wafer Lift Systems
- Wafer Cassette Lift Systems
- Wafer Tray Lift Systems
- Solar Cell and Display and Substrate Lift Systems

#### Movable Shield Systems (SS)

- Shield Mover Systems
- Ring Lift Systems

### Vacuum Valves

- Vacuum Transfer Valves (1)
- Vacuum Transfer Doors (2)
- Vacuum Angle Valves (3)
- Vacuum Gate Valves (4)
- Vacuum Control Valves (5)
- Vacuum Cylinder Valves (6)
- Vacuum Pendulum Valves (7)





# Engineering Solutions R&D Teams with Industry Know-how



The R&D and product development teams at VAT continuously assesses the industry's needs and expectations.

- VAT offers expertise for high-purity production and precision manufacturing
- Constant development efforts help to anticipate emerging production trends
- Range of potential production solutions go beyond vacuum valve applications
- Upgrade/retrofit solutions
- Repair services





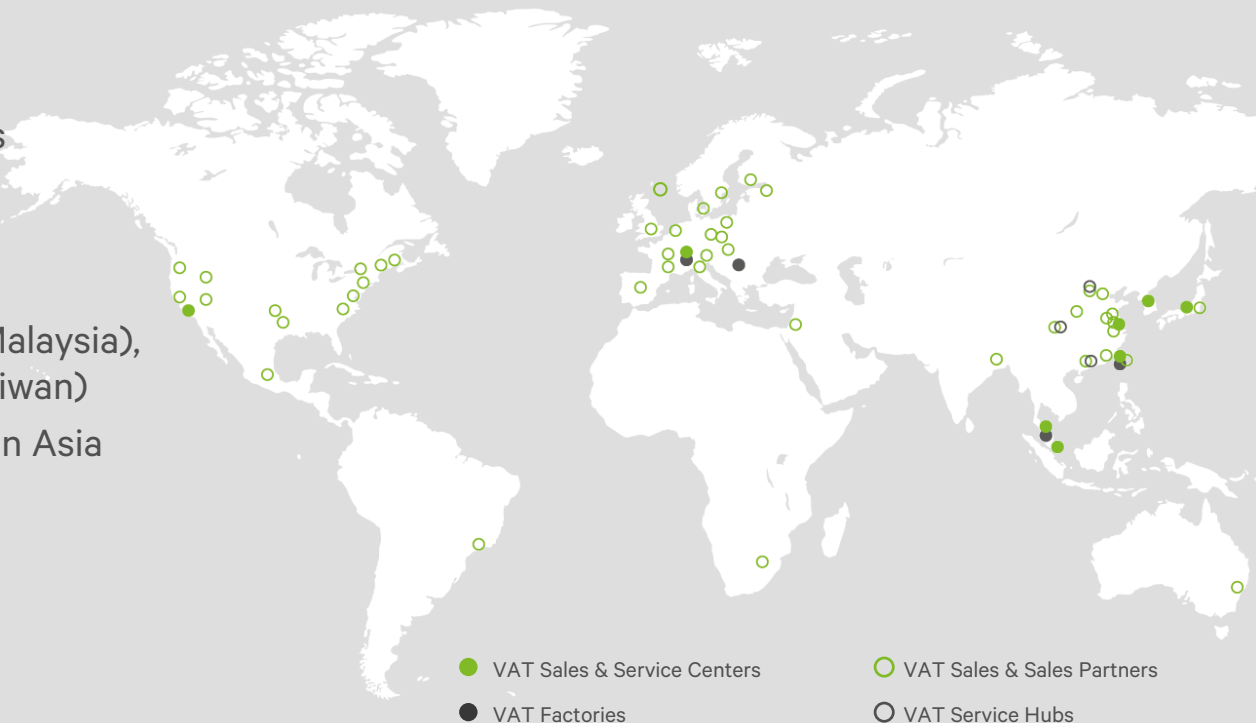
PASSION. PRECISION. PURITY.

## VAT Organization

# A Global Footprint For Global Markets



- Global presence ensures proximity to the customer
- Sales and Service representations in 29 countries
- R&D sites: Haag (Switzerland), San Jose CA (United States)
- Manufacturing sites: Haag (Switzerland), Penang (Malaysia), Arad (Romania) and Xinwu (Taiwan)
- 70 % of our products installed in Asia



# On a Sustainable Growth Path

## VAT Facts & Figures 2022



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**901.2**  
Net sales in CHF million

**195.7** Free cash flow  
in CHF million

**2,540**  
Employees worldwide



**>20**  
Nationalities



**307.9**  
EBITDA in CHF million

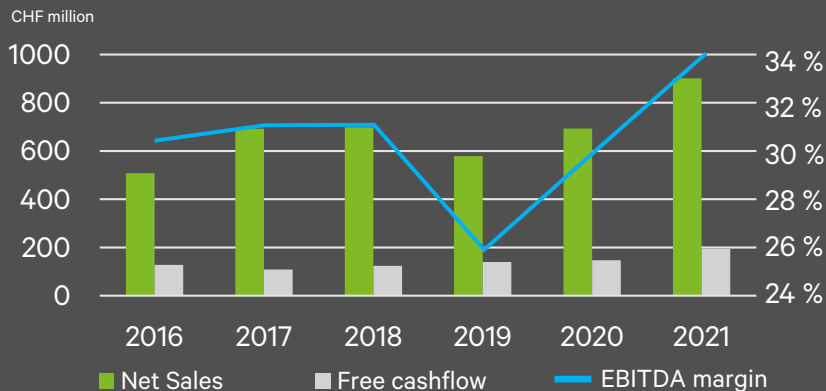
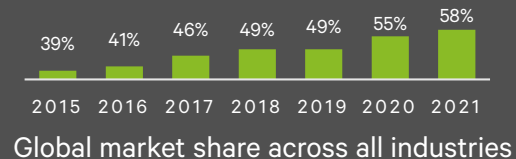
**34.2%** EBITDA  
margin

2021

**5.50** Dividend per  
share in CHF

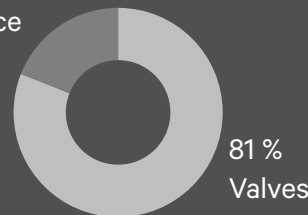
2022

**40.0**  
R&D investments  
in CHF million



### Net sales by segment

19 % Global  
Service

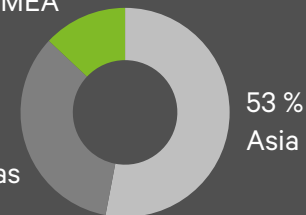


### Net sales by region

13 %  
EMEA

34 %  
Americas

53 %  
Asia





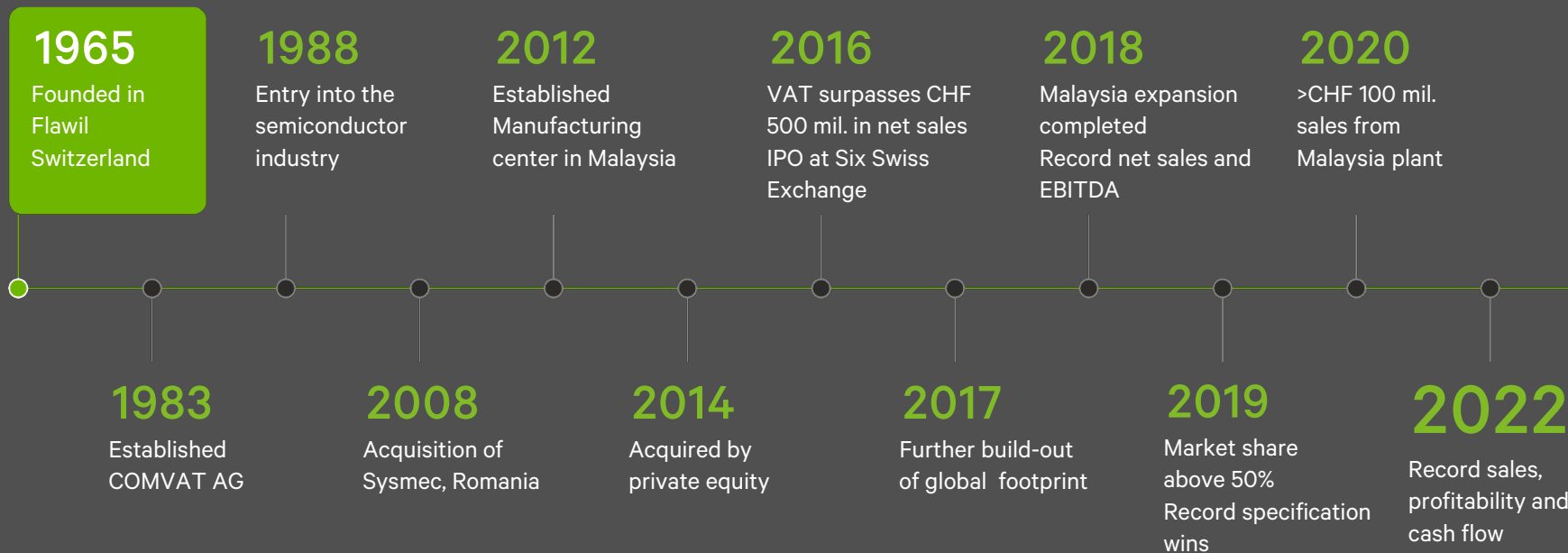
# Evolution

## A Company in Constant Evolution.



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VAT Company Presentation

# VAT Leadership

## Board of Directors



**Martin Komischke**  
Chairman



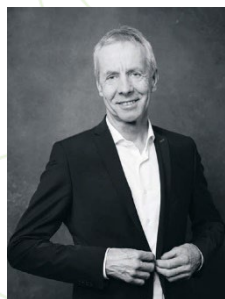
**Urs Leinhäuser**  
Vice-Chairman



**Maria Heriz**  
Member



**Libo Zhang**  
Member



**Karl Schlegel**  
Member



**Hermann Gerlinger**  
Member



**Daniel Lippuner**  
Member

# VAT Leadership

## Group Executive Committee



**Michael Allison**  
CEO



**Thomas Berden**  
COO



**Fabian Chiozza**  
CFO



**Urs Gantner**  
Executive Vice-President,  
Semiconductor Solutions  
Group

# VAT Leadership

## Group Management Board



**Karin Dahlström**  
Advanced Industrials



**Joseph Haggerty**  
Global Service, Sales & Marketing



**Gebhard Lutz**  
Central Engineering



**Ottmar Müller**  
Strategy & Business Development



**Michael Zickar**  
Core Technology



**Jürgen Zoller**  
Display & Solar

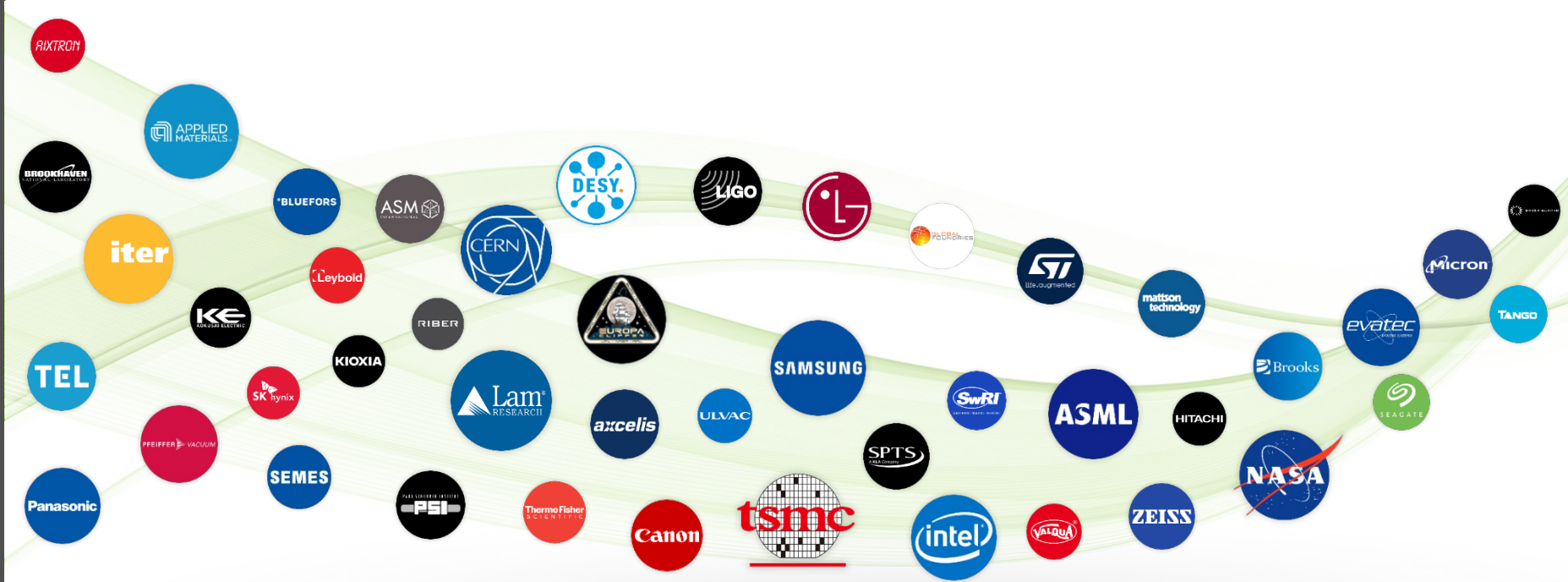


# VAT a Trusted Partner For Science and Industry



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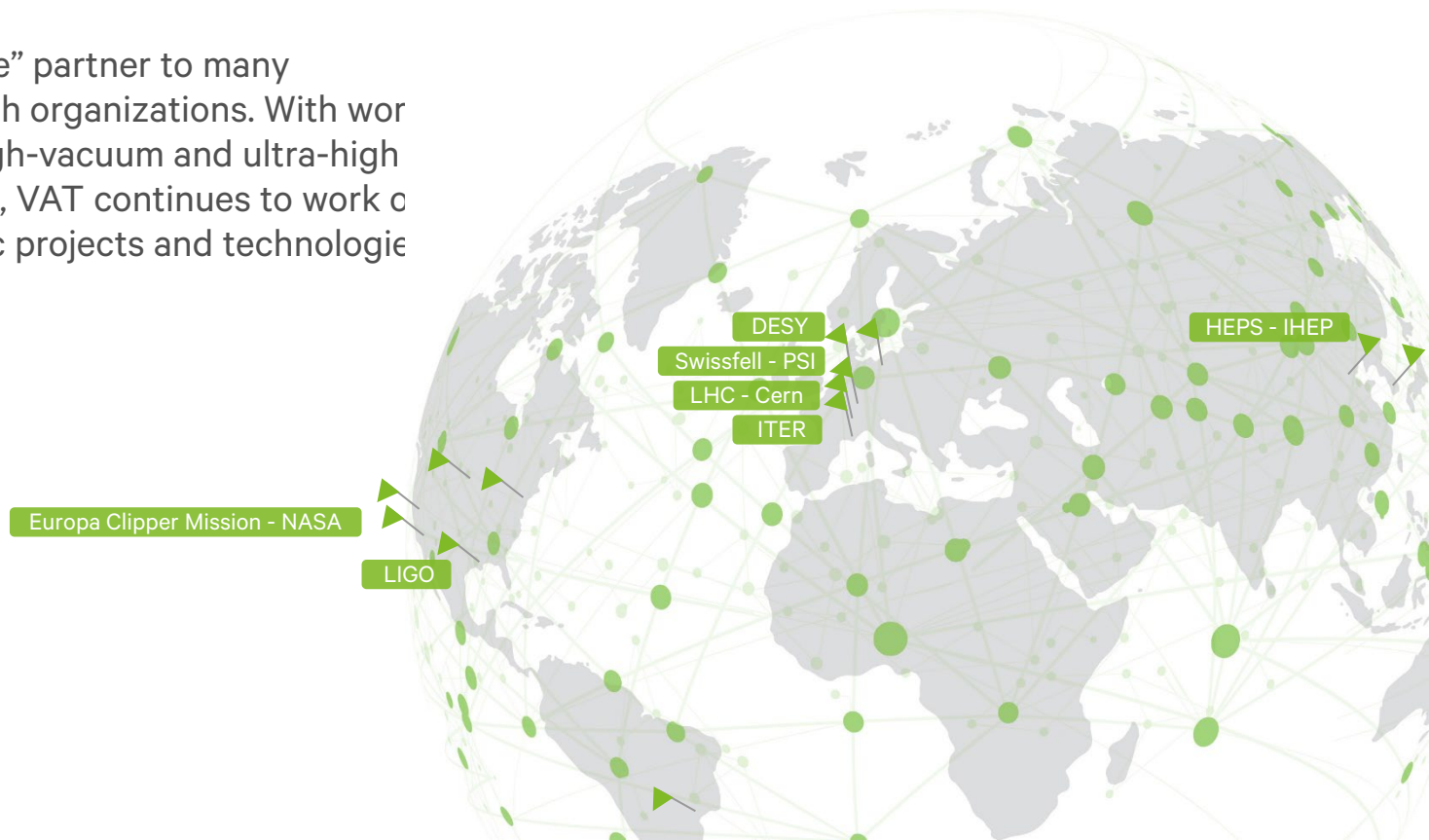


VAT Company Presentation

# Trusted Partner for “Big Science” Organizations



VAT is a “Big Science” partner to many international research organizations. With world class expertise in high-vacuum and ultra-high vacuum applications, VAT continues to work on high profile scientific projects and technologies



## The Preferred Supplier to the Industry

VAT continues to expand its global R&D platform to enable ongoing collaboration on new projects and technologies.

Customers and research partners across a wide range:

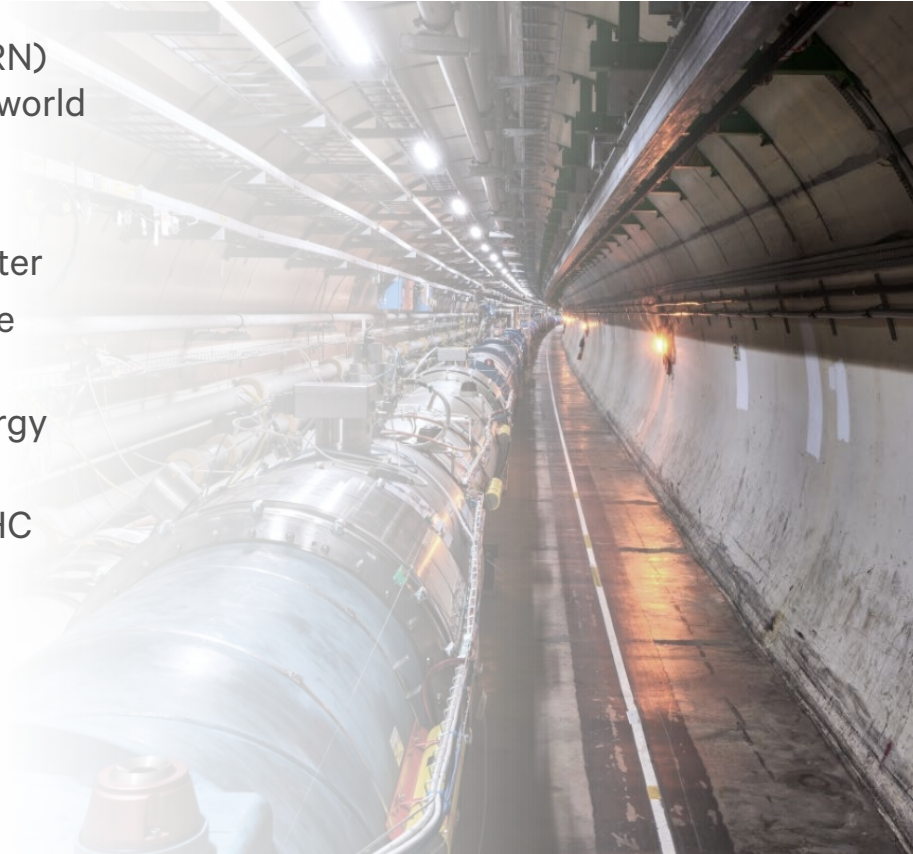
- Semiconductors, Solar Panels & Flat Panel Displays
- Automotive & Chemicals
- Medicine & Pharmaceuticals
- Sensor & Measurement Technology
- VAT a partner for all high, ultra-high or extreme ultra-high vacuum process applications



# Hunting for Building Blocks of the Universe

The European Organization for Nuclear Research (CERN) operates the largest particle physics laboratory in the world and is a long-term VAT research partner.

- CERN's LHC hunts for the basic constituents of matter
- LHC is the world's largest and most powerful particle collider
- An international collaboration platform for high-energy physics research
- VAT sector valves help avoid leaks over the large LHC volume

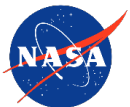
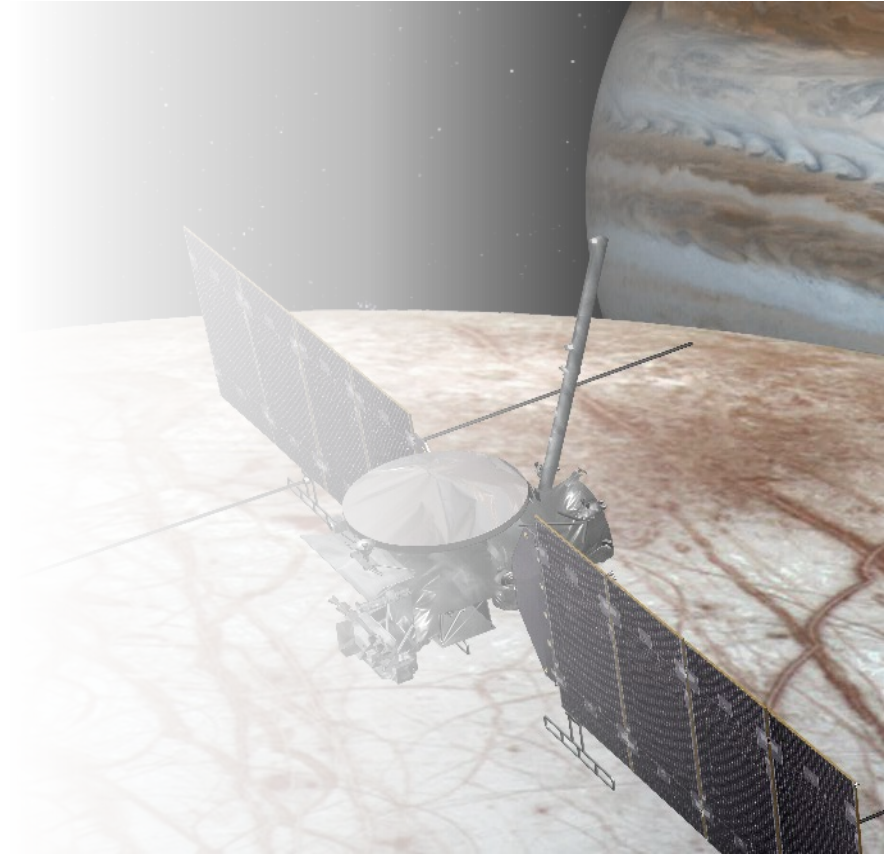




# Is There Life on Other Planets?

NASA's Europa Clipper Mission to Jupiter's moon will explore the icy world of Europa – does it harbor conditions suitable for life?

- Europa: fourth largest of Jupiter's 79 moons
- Looking for clues about the potential for life on other worlds
- NASA satellite may launch as early as 2023
- VAT developed a key valve for the mission's mass spectrometer

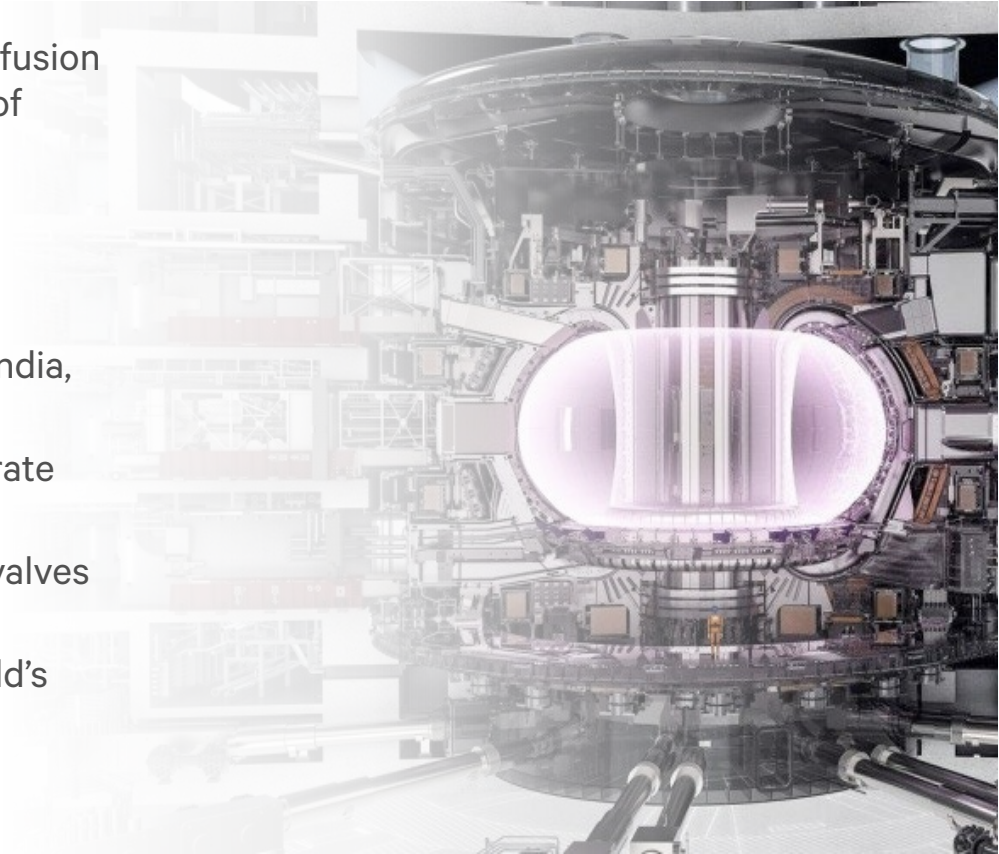




# Realizing the Potential of Fusion Energy

Research carried out at ITER is key to advancing fusion science and ramping up the fusion power plants of tomorrow.

- 35 nations are collaborating on the world's largest tokamak (magnetic fusion device)
- Members include: China, the European Union, India, Japan, Korea, Russia and the United States
- A 35-year collaboration effort to build and operate an experimental fusion device
- VAT developed a dedicated “ITER Catalog” of valves for this device
- All-metal 1.6 m valve developed for ITER is world’s



# Paul Scherrer Institute (PSI) Global collaborative R&D platform



The Paul Scherrer Institute for the natural sciences and technology relies on VAT engineering expertise and on-site consulting for real-time testing.

- PSI develops, builds and operates complex large research facilities for >2,400 scientists
- Satellite instruments from PSI on ESA's Solar Orbiter mission
- PSI Laboratory for Energy Systems looks to make automobiles cleaner and more efficient
- VAT bellows: low magnetic permeability and radio frequency shielding (RF-shield)



DESY

## X-Rays Lighting up the Future



The German Electron Synchrotron (DESY) is a world leader in accelerator technology, structure research, particle physics and astroparticle physics.

- Develops, constructs and operates particle accelerators to investigate the structure of matter
- Developed a new generation of research tools in the form of X-ray lasers
- Provides support to research initiatives, institutes and universities
- VAT valves an integral part of the DESY synchrotron and ring accelerator





The Institute of High Energy Physics (IHEP) of the Chinese Academy of Sciences (CAS)

- Provides beam facilities for particle physics researchers
- Maintains partnerships with universities and research institutes around the world
- VAT valves are part of the IHEP particle accelerator



# LIGO

## Discovering Gravitational Waves



The “Laser Interferometer Gravitational-wave Observatory” (LIGO) is the world's largest gravitational wave observatory.

- Built to detect gravitational waves from far out in the universe
- LIGO is actually two detectors located far apart
- Sensational detection of the collision of two neutron stars
- VAT valves integrated in the long LIGO laser tubes





# Fueling Industry Innovation



VAT offers industry partners unparalleled R&D and product development expertise to meet the most stringent production requirements.

- Focused on long-term collaboration for innovative projects & technologies
- Trusted by renowned 'Big Science' institutes and organizations
- In-house R&D and engineering teams familiar with stringent production requirements





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[www.vatvalve.com](http://www.vatvalve.com)