Fischertechnik Industrial Simulation Models

- High School CTE Training
- College & University Lab Use
- Incumbent Worker Training
- Workforce Development
- Trade Show Demonstrations
- Software Development
- Exploring and understanding IoT
- ...and more.
The Skills Gap

STEM Skills Gap

STEM is an acronym -- Science, Technology, Engineering, and Mathematics

Probably the most discussed topic in education over past decade
Manufacturing: Then & Now
Manufacturing: Then & Now
PLC – Programmable Logic Controller

- PLC is a specialized computer used to control automated processes in modern manufacturing.

- As our dependence on automated control systems grows, so does the need for skilled programmers.
How much can a PLC Programmer earn?

“The average PLC Programmer salary in USA is $78,000 per year or $40 per hour. Entry level positions start at $43,924 per year while most experienced workers make up to $132,600 per year.”

-- Neuvoo.com job search website
How Long Does It Take To Learn?

• Depending on background, **very** basic PLC skills could be learned in as little as 30 to 40 hours.

• To be truly proficient, more extensive training is required.
Popular PLC Programming Languages:

- Ladder Diagram (LD)
- Sequential Function Charts (SFC)
- Function Block Diagram (FBD)
- Structured Text (ST)
- Instruction List (IL)
PLC Training Options:

- College and University Programs
- High School CTE (Career and Technical Education) Programs
- Adult Continuing Ed Programs
- Vocational Training
- Technical Training and Trade Schools
- Employer sponsored Incumbent Worker Training Programs
The Dilemma for Educators:

- How to make it relevant
- How to make it engaging
- How to make it realistic and “hands-on”
Other Areas of Need

- Product and software development
- Logistics and production planning
- Automation and digitization
- Trade show demonstrations
- IoT (Internet of Things) and Cloud Based Control
The fischertechnik Solution:

• A compact, engaging, and hands-on method for teaching and demonstrating high-end automated systems.

• Pre-assembled, table top models.

• Replicate in appearance and function automated systems found in commercial manufacturing.

• Highly affordable, cost-effective!
What is fischertechnik?

• **fischertechnik** is the brand name for a technology-focused building system.

• Used in education for over 50 years.

• System is unique in that the core building component allows attachment from all six sides.

• Address very specific design needs.
Artur Fischer, German Inventor

• Created fischertechnik in 1964.

• More patents than Edison (1100 total).

• Synchronized flash photography (1949).

• Expanding nylon wall plug (1958).

• Founder of fischer Group
Technology focused building sets.

STEM topics: mechanics, pneumatics, renewable energy, robotics, etc.

Standards-focused, curriculum based classroom programs.

Project-based learning.
• Pre-assembled.

• Small scale, table top sized models.

• Realistically replicate—in appearance and in function—automated and robotic machines and systems.
fischertechnik Simulation Solutions

- Conveyor belts
- Punching machines
- Three axis pick-and-place robotic arms
- Color sorting lines
- High-bay warehouse storage systems
- Complete material cycles
Hands-On Tools for Education

- Engaging, hands-on tools for teaching, exploring, and understanding various aspects of automation and programming.
Advantages of fischertechnik Simulation Models
Realistic in Appearance & Function

• Realistically replicate—in appearance and function—common automated systems such as conveyor belts, sorting machines, robotic arms, and more.
Compact, Table-Top Size Models

- Classroom
- Office
- Trade Show
High Quality, German Engineered Products

Assembled by hand.
24V versions for PLC

• Allen-Bradley
• Siemens
• Honeywell
• Mitsubishi
• GE
• and others.
PLC Programming Languages

- Ladder Diagram (LD)
- Sequential Function Charts (SFC)
- Function Block Diagram (FBD)
- Structured Text (ST)
- Instruction List (IL)
9V versions

- Ideal for classroom and non-industrial use.
- ROBO Pro graphic software.
- fischertechnik ROBOTICS TXT Controllers.
Ideal for IoT Applications

• “Internet of Things”

• Cloud-based control and monitoring of automated processes and systems.
Highly Affordable and Cost-Effective

• While competing hardware based simulation solutions can easily start at $20,000 to $30,000...or much more, fischertechnik solutions are available for only a fraction of that price!
Let’s get started with our overview...
Vacuum Gripper Robot
Automated High-Bay Warehouse
Multi-Processing Station with Oven
Sorting Line with Color Detection
Factory Simulation

Combines the following four models into one self-contained material cycle:

- Vacuum Gripper
- High-Bay Warehouse
- Multi-Processing Station
- Sorting Line with Color Detection
Travel & Storage Case

• Designed for storing either the 24V or 9V Factory Simulation models.

• Also for storing the Training Factory Industry 4.0 we’ll look at later in this presentation.
Conveyor Belt
Conveyor Belt
Punching Machine with Conveyor Belt
Punching Machine with Conveyor Belt
Indexed Line with Two Machining Stations
Indexed Line with Two Machining Stations
3-D Robot (Three Axis)
3-D Robot (Three Axis)
The Main Industrial Simulation Line

• All previously discussed models available in 24V versions for use with industry standard PLCs and programming.

• Previous models also available in 9V versions—pre-programmed with ROBOTIC TXT Controllers-- for classroom and non-industry users.
Training Factory Industry 4.0

Designed for exploring, teaching and understanding digitization, networking, and IoT.
Training Factory Industry 4.0

- Training and simulation on a realistic production model
- In-depth learning through haptic comprehension
- Optical and sensory applications
- Digital traceability with NFC/RFID
Training Factory Industry 4.0

• Customised production in lot size 1
• Integrated cloud connection, control via smart devices
• Using and operating dashboards
• Web-based remote maintenance
Training Factory Industry 4.0

• Linking of production and materials planning data
• Connection of upstream and downstream logistics processes
• For experts: own program creation in C/C++
Training Factory Industry 4.0

• **Cloud-Based Dashboard**—for remote control and monitoring of model.

• Offers three different views - **Customer View, Supplier View, and Production View**.
Training Factory Industry 4.0

- **Camera** — for remotely viewing all processes on the dashboard.
Training Factory Industry 4.0

- **NFC Chips** in each workpiece
- **NFC Reader**
- **MQTT**—Message Queuing Telemetry Transport
Training Factory Industry 4.0

- 9V version available now.
- Pre-wired to six ROBOTICS TXT Controllers.
- Programmed with C/C++
- Requires three 120V power adaptors.
Training Factory Industry 4.0

- 24V version is COMING SOON!
- Expected release date: Summer 2020
Training Factory Industry 4.0
So...how much do they cost?
Let’s review with pricing…
Vacuum Gripper Robot

- 24V version - #536630
  $899.00 each

- 9V version - #536625
  $1199.00 each
Automated High-Bay Warehouse

- 24V version -
  #536631
  $1035.00 each

- 9V version -
  #536626
  $1319.00 each
Multi-Processing Station with Oven

- 24V version - #536632
  $989.00 each

- 9V version - #536627
  $1479.00 each
Sorting Line with Color Detection

- 24V version - #536633
  $819.00 each

- 9V version - #536628
  $1129.00 each
Factory Simulation

- 24V version -
  #536634
  $3729.00 each

- 9V version -
  #536625
  $5239.00 each
Conveyor Belt

• 24V version - 
  #50464
  $220.00 each

• 9V version - 
  #50463
  $519.00 each
Punching Machine with Conveyor Belt

• 24V version - #96785
  $289.00 each

• 9V version - #51663
  $599.00 each
3-D Robot

- 24V version - #511938
  $829.00 each

- 9V version - #511937
  $1099.00 each
Indexed Line with Two Machining Stations

- 24V version - #96790
  $879.00 each

- 9V version - #51664
  $1399.00 each
Training Factory
Industry 4.0

• 24V version TBD

• 9V version -
#551584
$6495.00 each
Other Items:

• **120V Power Adaptors** (for 9V models) - **$12.99** each

• **Travel and Storage Case** – for all **Factory Simulation** and **Training Factory Industry 4.0** models-- **#551587** - **$1000.00** each
Please use the ZOOM Chat Window or Question Window

Any Questions?
Taking the Next Step:

• Request a **full-color brochure** and **current pricing**.
• Ask **questions** directly.
• Request a **quote**.
• Speak with your **dedicated educational representative**.
• And more!

• **Studica US (888) 561-7521**
• **Info@Studica.com**
• **Lance.Zurek@studica.com**
Thank you for attending today’s presentation!