

SIMULA - OUTDOOR SOLUTIONS

November 2018



B.C.E. s.r.l.
Via Regina Pacis, 54/c - 41049 SASSUOLO (MO) Italy
Tel. +39 0536 811.616 r.a. - Fax +39 0536 811.500
www.bce.it - E-mail: bce@bce.it



CONTENTS

1.0

SIMULA TECHNOLOGY

8 Facts About Simula

Global Support

Solution Overview

Quality System

General Overview: Product Solution

2.0

CORE COMPETENCIES

Engineering Integration

Design Integration

Manufacturing Integration

Tooling Competitiveness

Cable Assembly Competitiveness

Laboratory Equipment

3.0

SIMULA TECHNOLOGY Product Solutions

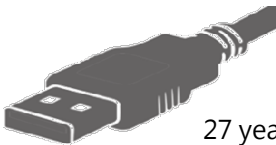
Outdoor Solutions

1.0

SIMULA TECHNOLOGY

- 8 Facts About Simula
- Global Support
- Core Competencies
- Solution Overview

8 Facts About Simula



27 years
experience



IPO in Taiwan (2009)



High speed
development



On site sales
and FAE



Established 1990



Global logistic



development
team list



Integrated
solution provider

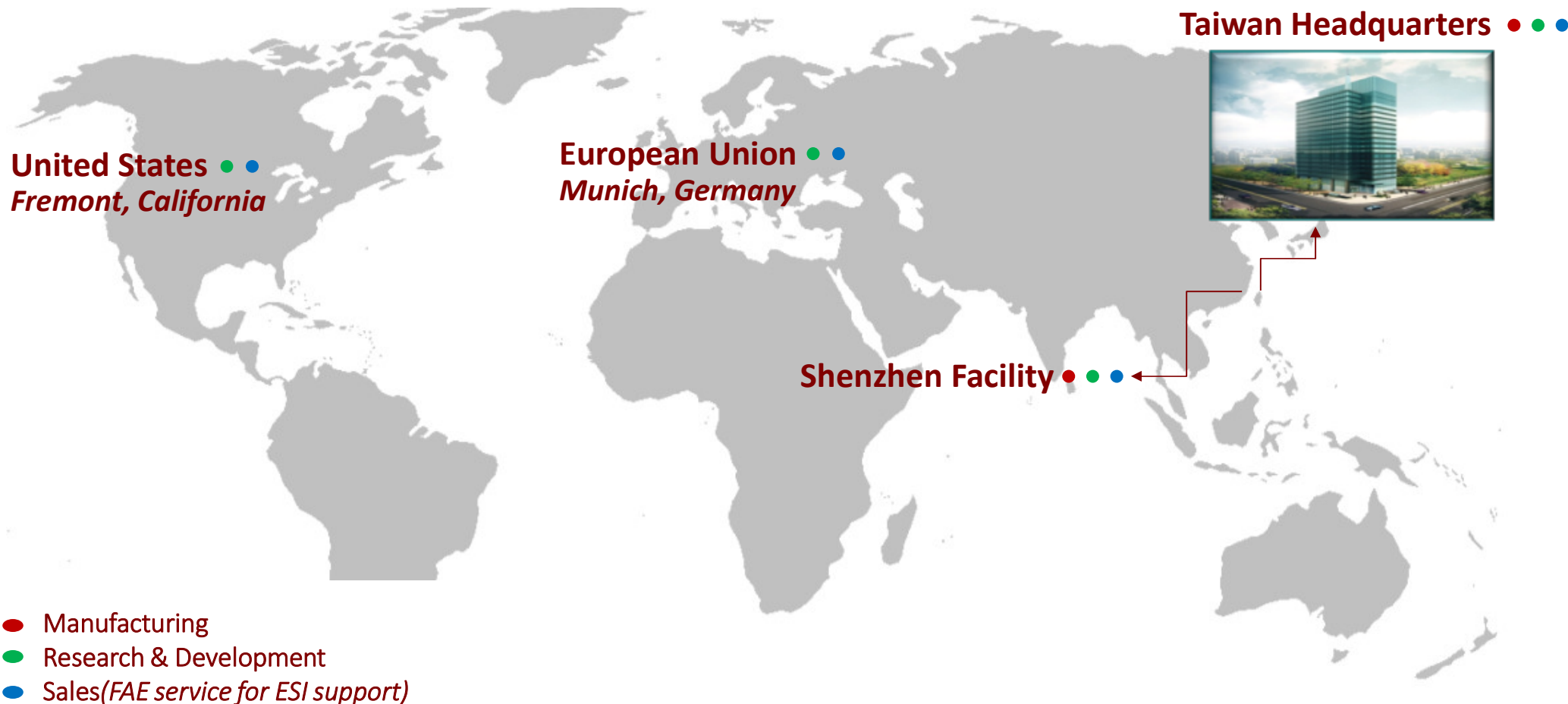


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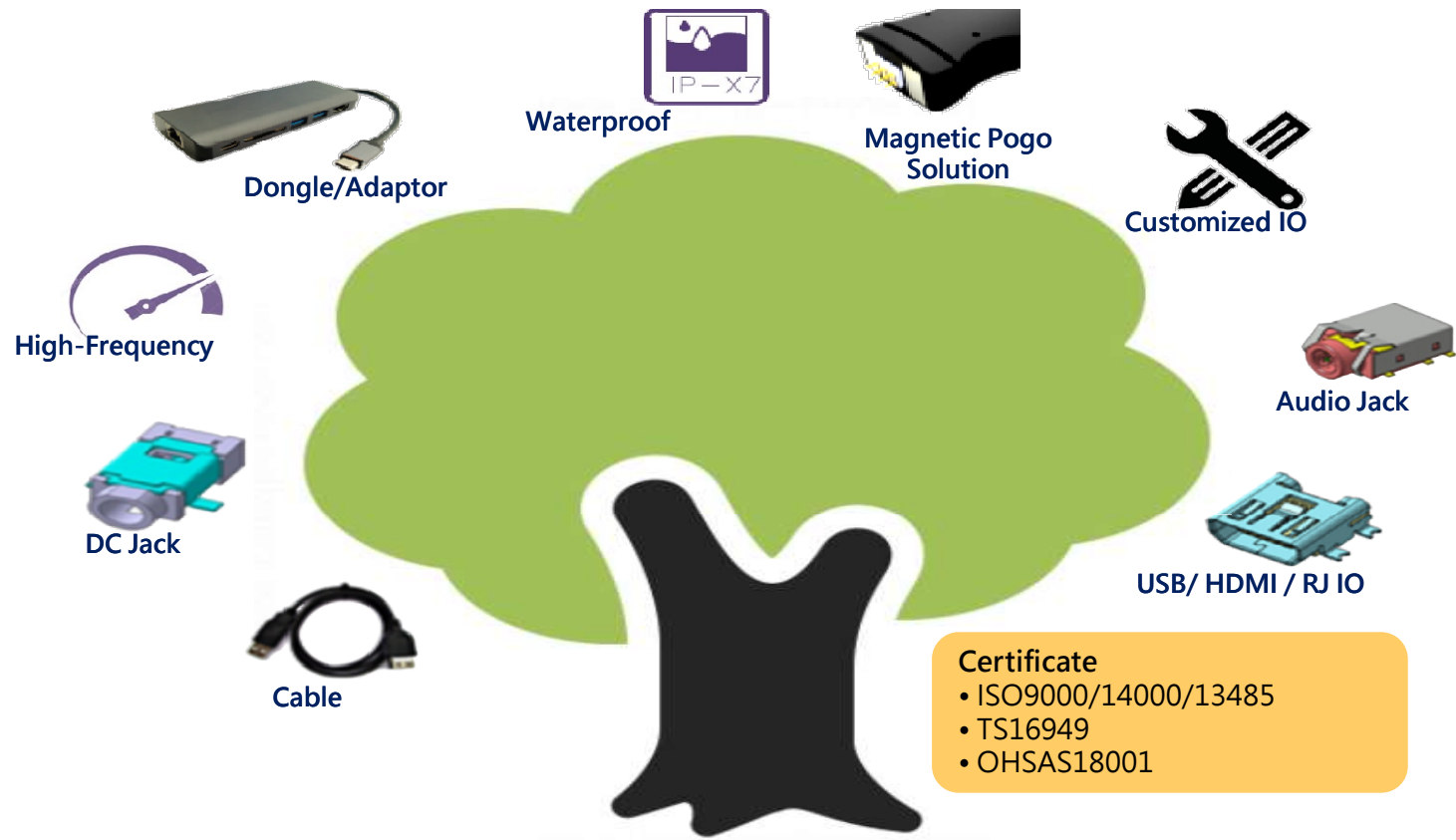


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Global Support



Solution Overview



Certificate

- ISO9000/14000/13485
- TS16949
- OHSAS18001

Consumer

Industrial

Medical

Automotive

Marine Electronics

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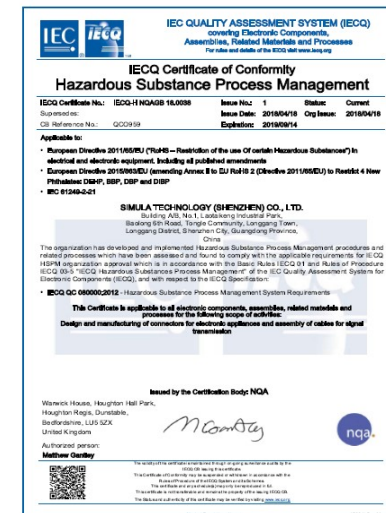


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Quality Systems

- ISO9001:2005
- IATF 16949:2016
- ISO13485:2003
- ISO14001:2005
- OHSAS18001:2007
- QC080000:2012



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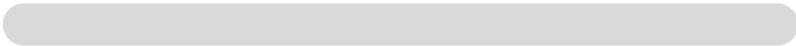
General Overview: Product Solutions



 Simula



Industrial & Outdoor Solutions



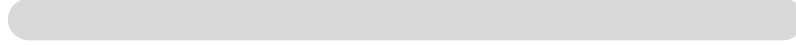
Automotive Solutions



Consumer Product Solutions



Medical & Healthcare Solutions



Others & Turn-Key Solutions



2.0

CORE COMPETENCIES

- Engineering Integration
- Design Integration
- Manufacturing Integration
- Tooling Competitiveness
- Cable Assembly Competitiveness
- Laboratory Equipment

Core Competencies

Engineering Integration

- Mechanical Analysis
- Injection Analysis
- Thermal analysis
- High Frequency analysis

Design Integration

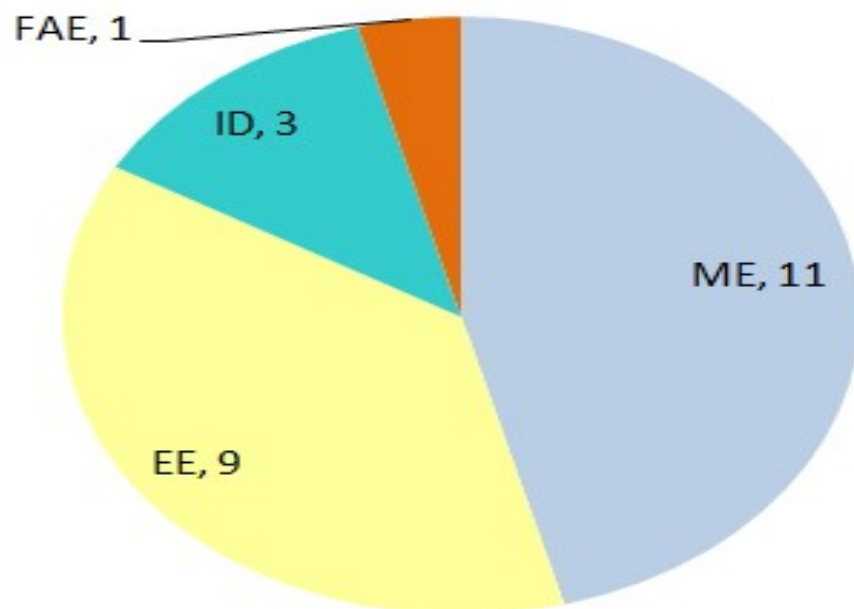
- Receptacle & plug design
- Component verification
- Raw cable design
- Variety ways for cable manufacturing

Manufacturing Integration

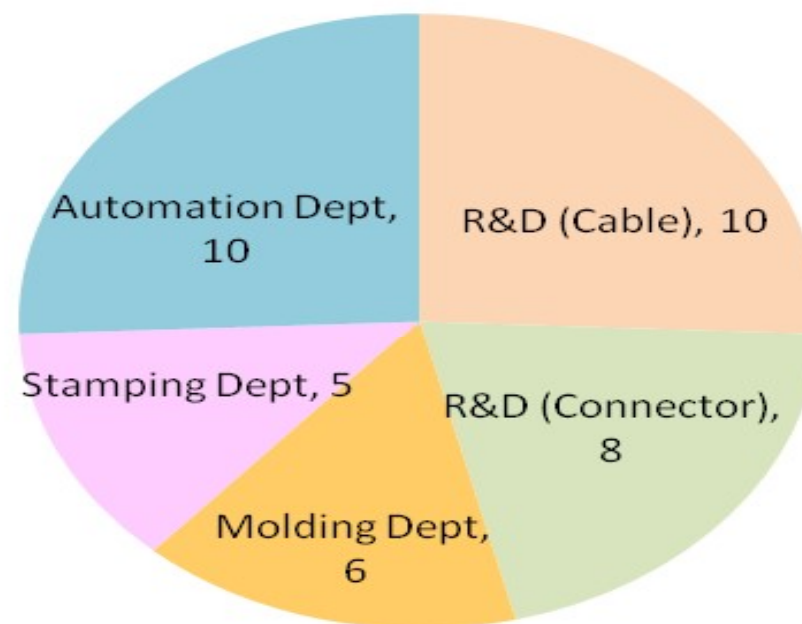
- In-House Tooling
- High precision stamping
- Precision injection
- Different ways for assembly

Core Competencies - Engineering Integration

Taipei R&D team
(Number of people)



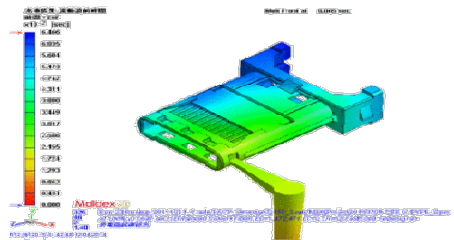
Shenzhen R&D team
(Number of people)



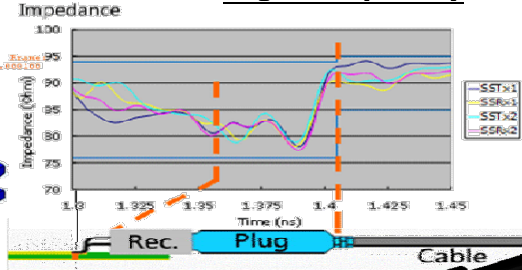
- (1) 63 R&D (24 TPE /39 CN) and 3 FAE for the Worldwide team (1 EE/ 2 ME).
- (2) Over 50% of R&D has more than 10 years of experience.
- (3) Taipei: New project development, Advanced technology;
- (4) Shenzhen: MP, process engineers, cable development.

Core Competencies - Engineering Integration

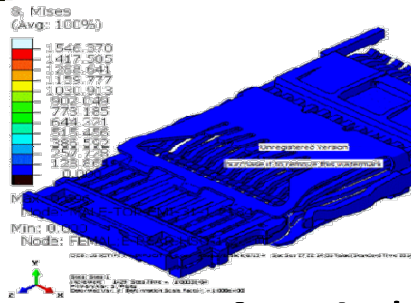
Injection Analysis



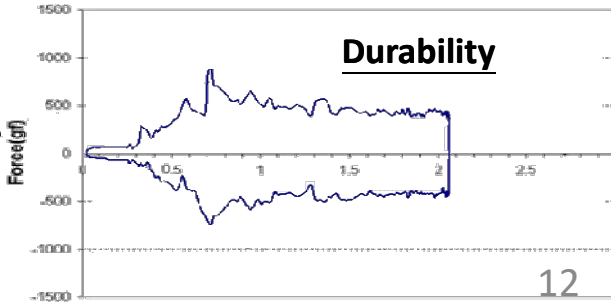
High Frequency



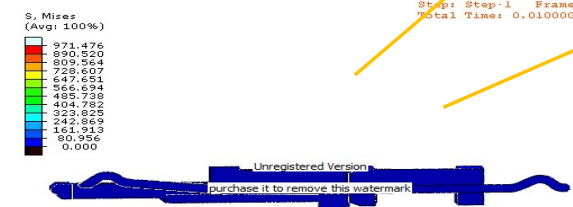
Stress Analysis



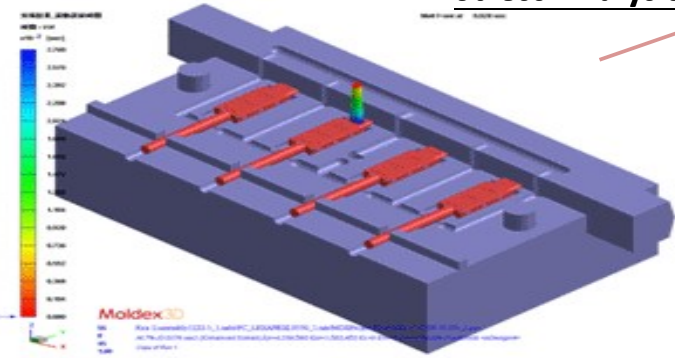
Durability



Force Analysis



Molding Simulation



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Core Competencies - Design Integration

Sub-System Design

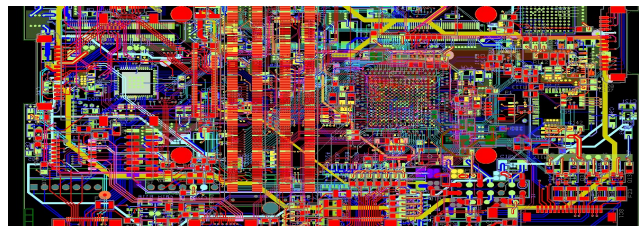
Component
Development



Component
Verification

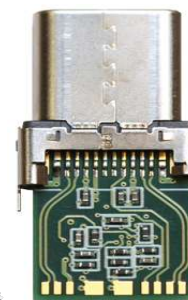


PCB Design



Cable
Process

Passive
Active



Raw Cable
Development

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13

Core Competencies – Manufacturing Integration



High Precision Stamping

- 16set 20~80 ton Aida, Kyori, etc...



Precision Injection



Assembly



CCD Inspection



Function Test



Packing

Capable of different ways for assembly.

- Capable for manual, semi-auto, fully auto, and module automation.

Verification Lab

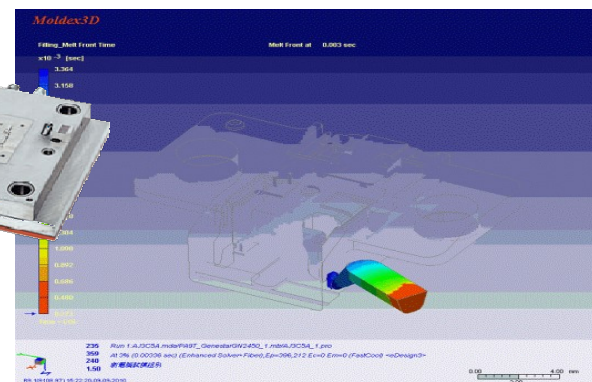
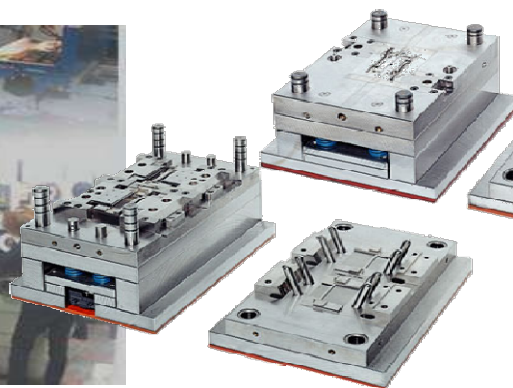


Tooling Shop



Tooling Competitiveness

- Vertical integration in tooling. Precision tool design and process.



Wire Cutting



- Seibu ($\pm 0.002\text{mm}$)
- Sodick ($\pm 0.003\text{mm}$)
- 泰州 ($\pm 0.03\text{mm}$)

EDM



- Sodick ($\pm 0.003\text{mm}$)
- 亞特 ($\pm 0.02\text{mm}$)

Optical Grinding



- Waida ($\pm 0.001\text{mm}$)

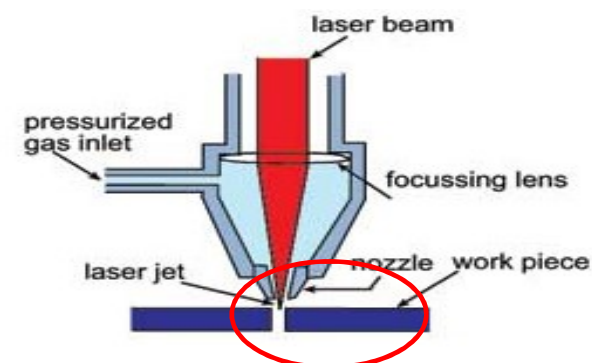
Cable Assembly Competitiveness

Auto - removing the cable jacket

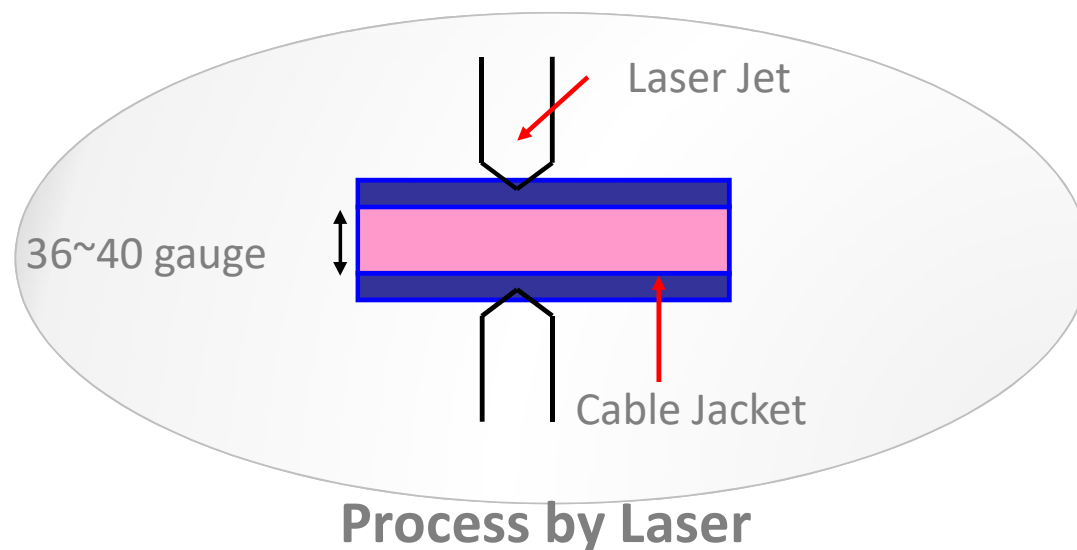
- Laser cutting because of the cable diameter only 36~40 gauge

Auto - soldering process

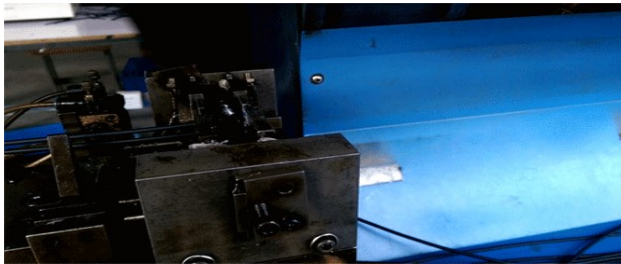
- Hot bar for HDMI D fine pitch 0.80 mm



Cable able to remove cable jacket above 36 gauge by using Laser Technology



Cable Assembly Competitiveness



Automatic Wire Cutting,
Stripping Machines



Automatic Welding Machine



Automatic Soldering Machine
(Hot Bar)



Automatic Cutting Laser Machine



Cable Assembly Competitiveness

Soldering Process

Manual Soldering



IR Soldering



Hot Bar Soldering



Cable Assembly Competitiveness

Automation

(wire cutting, pressing and soldering)



Low Pressure Molding



Laser Machine



Waterproof Tester

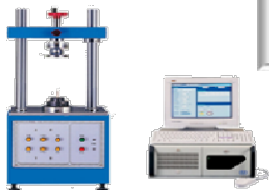


Ultrasonic Drilling Machine



Lab Equipment - Electrical & Environment

Electrical Performance



Spring Force / Contact Resistance Tester 自動抵抗力機

Measure and record spring force and contact resistance of each spring at specific working height.

- Function: Spring Force Test (彈力測試)
- Contact Resistance Test (阻抗測試)



AC Source 電源供應測試儀

Make sure connector work successfully under the particular range of voltage and current

- Function: High Current Test (大電流測試)



64-Pin Contact Resistance/Lifetime Tester 64-Pin 阻抗/壽命測試機

Life cycle testing for whole series products. Monitor the change of contact resistance during compression.

- Function: Life Cycle Test (壽命測試)
- Contact Resistance Test (阻抗測試)



Single-Pin Contact Resistance/Lifetime Tester 單pin 阻抗/壽命測試機

Life cycle testing for single pin. Monitor the change of contact resistance during compression.

- Function: Life Cycle Test (壽命測試)
- Contact Resistance Test (阻抗測試)

Environmental Testing



Thermal Shock Tester 冷熱衝擊機

Continuous environmental testing under the flashy cycle of extremely high and low temperature. To make sure the qualified electrical performance of material.

- Function: Highest and lowest temperature Test (高低溫檢測)



Salt Spray Tester 鹽水噴霧機

Checking corrosion resistance of gold-plated product. we can predict the suitability in use as a protective finish.

- Function: Oxidation Resistance Test (抗氧化測試)



Temperature & Humidity Chamber 恆溫恆濕機

To create repeatable environmental conditions for numerous product lines.

- Function: Environmental Test (環境測試)



Hot-Air Reflow Machine 全熱風回焊機

Simulate SMT process. Make sure gold-plated products and plastic materials keep same electrical performance and physical appearance. Do side force test for the pins mounted on PCB after Reflow machine.

Lab Equipment – Mechanical

Mechanical Performance



Profile Projector 立式光學投影機

Measure the length, width, angle of products
• Function: Physical Inspection (外觀檢驗)



X-Ray Plating Thickness Tester 螢光膜厚測試儀

Measure the thickness of plating and check the data fitting customer demand.
• Function : Plating Thickness Inspection (電鍍膜厚檢驗)



30X to 350X Measuring Microscope 30X至350X工具顯微鏡

Enlargement, photo, and high precision measurement.
Enlarge one part of product to check physical situation and provide effective analysis.
• Function : Physical Inspection (外觀檢驗)



X ray fluorescence spectrometer (ROHS) X 射線螢光光譜儀 (ROHS)

Analyze or measure element kinds and content, to test the content of poisonous and harmful substances
• Function: ROHS Compliance

X-ray Inspection System

- Non-destructive investigation
- Dimension characterization for assembly



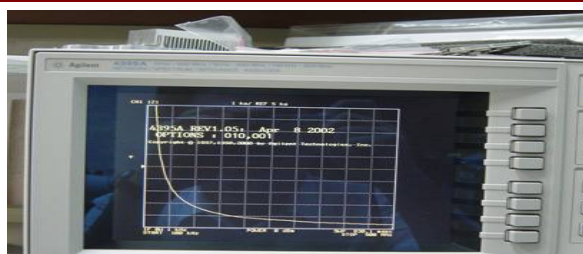
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Lab Equipment – Static/Dynamic

Static/Dynamic Performance



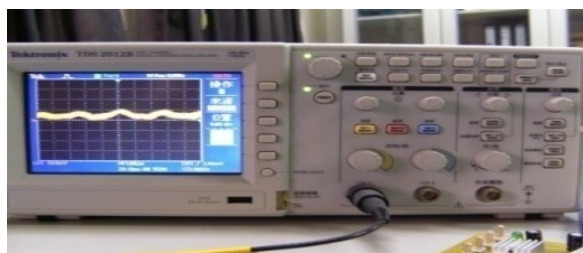
Arbitrary Wave Form Generator



Networking Analyzer



Package Loss Test Machine



Scope Machine



- **Efficient Technical Support**
Static Function

- Insertion Loss
- Return Loss
- Cross Talk
- CMRR
- Inductance
- Capacitance
- Hi-pot/IR Test

- **Dynamic Function**

- EMI
- IEEE
- ISN
- Surge/ESD

3.0

SIMULA TECHNOLOGY Product Solutions

OUTDOOR SOLUTIONS

- Circular Plastic Connectors
- M Series (M12 X Code)
- IO Box
- Header Series
- Waterproof Data Connectors (D-sub, USB, RJ45)

Outdoor Solutions

CIRCULAR PLASTIC CONNECTORS

- 3 different sizes available to cater various pin counts from 3 to 18 contacts

- ☐ **Standard (B-Size)**
- ☐ **Middle (C-Size)**
- ☐ **Large (D-Size)**

- Options from 2A to 20A current pin rating
- Receptacles, Field Installation & Cable Molding available
- Different mating styles: Screw Thread or Lock Bayonet
- Hybrid Connectors available – Power+Data in one
- IP67/IP68 Ingress Protection
- Configurable & customizable

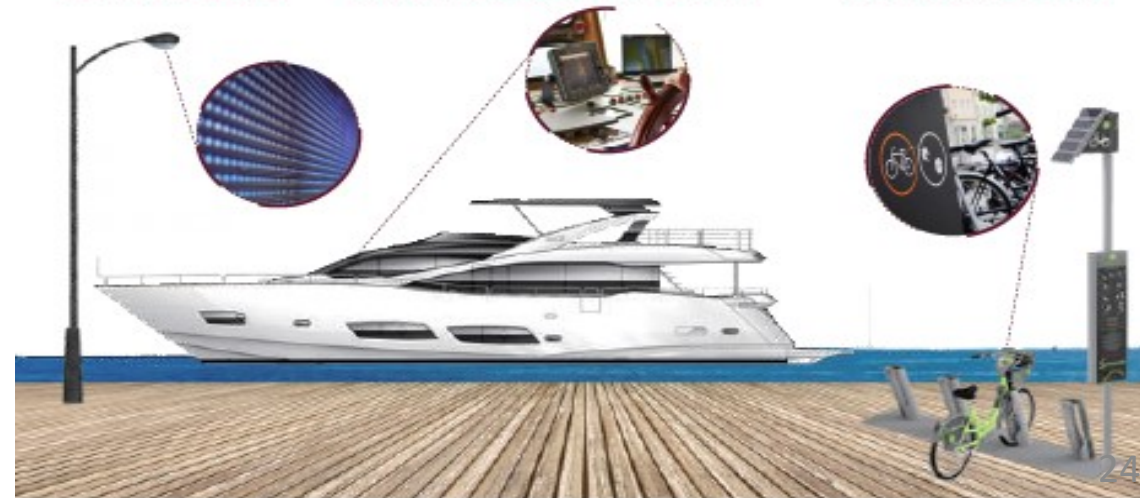
O Circular Series Outdoor



Panel Mount

Overmolded with Cable

Field Attachable

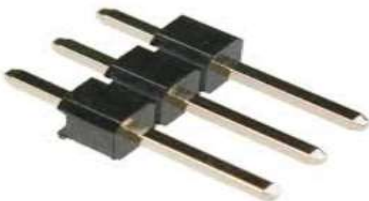


Outdoor Solutions

M-SERIES CONNECTORS

Header Series

- 1.0/1.27/2.0/2.54mm Pitch



M Series

- Waterproof
- Blind mating
- Several sizes

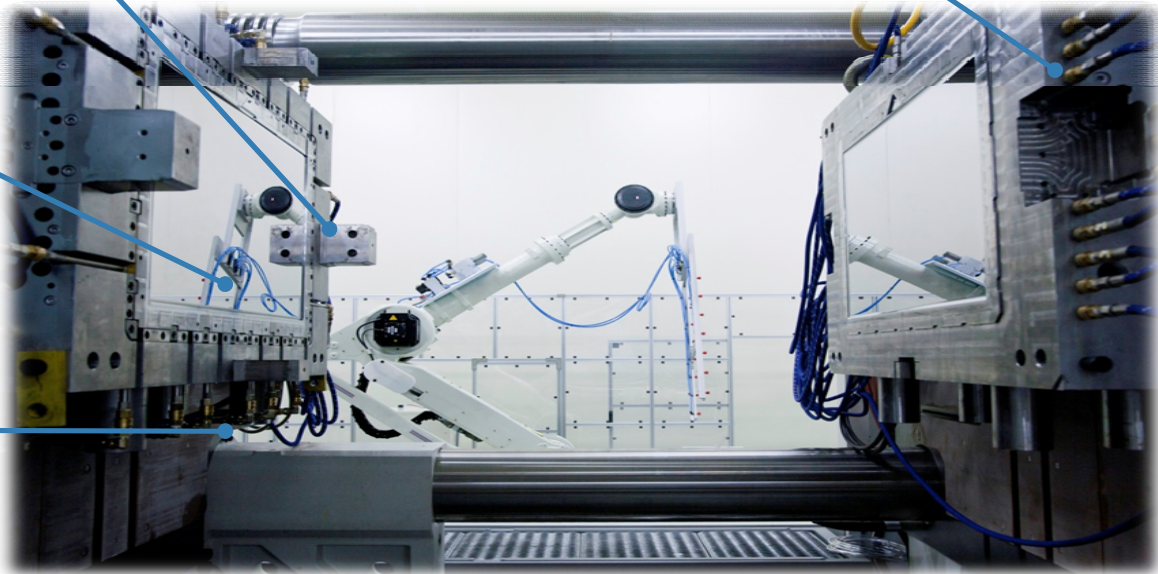
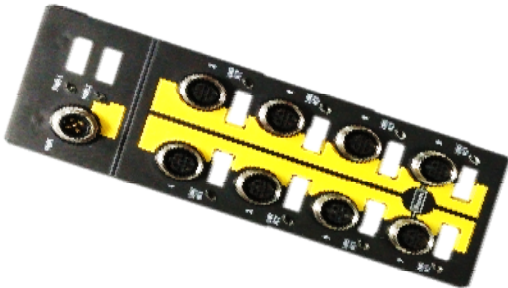
M12 X-CODE

- Waterproof
- X-Coding
- 10Gbps Ethernet

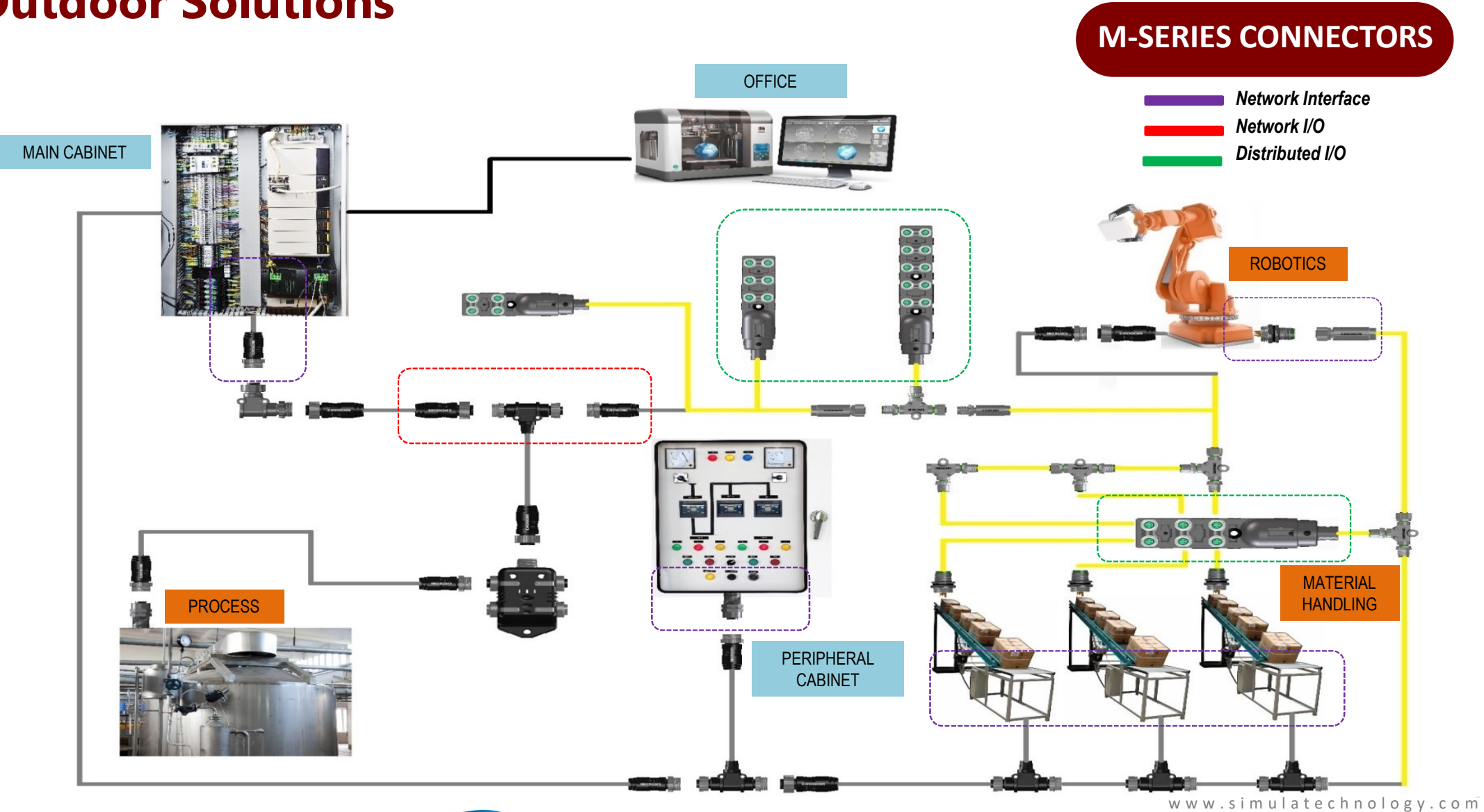


IO BOX

- 10/100Base-TX auto-negotiation
- Full/Half duplex
- Auto MDI/MDI-X function



Outdoor Solutions



Outdoor Solutions

M-SERIES CONNECTORS

M12 Series

M12 A, B, C, D, X, S, T-coding

*Note:

M12 circular connectors typically used for industrial process measurement and control.



M12

M8 Series

M8 A, B-coding

* Typically used in Industrial Conveyors, Heavy Machineries, Sensors, Light Electric Vehicle



M8

M5 M9 M16 M23 Series

No code...

* Typically used in Industrial Conveyors, Heavy Machineries, Sensors, Light Electric Vehicle



M5 M9 M16 M23

Distribution Box

M8 & M12

Ways: 4 to 22ways...

For field assembly IO application, Multi-port T-Adaptor



Distribution Box

Remark: M8, M12... is the dimension of the thread of the thread locking.

Outdoor Solutions

M-SERIES CONNECTORS



M5 Series

- Small size
- 3 & 4Pins
- IP67/ IP68

M8 Series

- 3, 4, 5, 6, 8Pins
- IP67/ IP68

M9 Series

- Straight/ Right Angle type
- Panel mount available
- IP67/ IP68

M12 Series

- 3, 4, 5, 8, 12, 17pins
- A, B, C, D, X, S, T, L coding
- IP67/ IP68

Outdoor Solutions



M16 Series

- 2, 3, 4, 5, 6, 8, 12, 14, 19, 24 Pins
- IP67/ IP68



M23 Series

- 6, 9, 12, 16, 19 Pins
- IP67/ IP68



M Series Box

- M8, M12 series
- Customized
- IP67/ IP68

Outdoor Solutions

Waterproof Data Connectors (D-sub, USB, RJ45)



HDMI Connectors

- Receptacle and Overmolded with Cable
- IP67 mated waterproof



RJ45 Connectors

- Receptacle / Receptacle With Cable / Overmolded with Cable
- Cat 5E
- IP67



USB Connectors

- Vertical, RA
- USB, micro USB 2.0/3.1 Connector and cable
- IP67



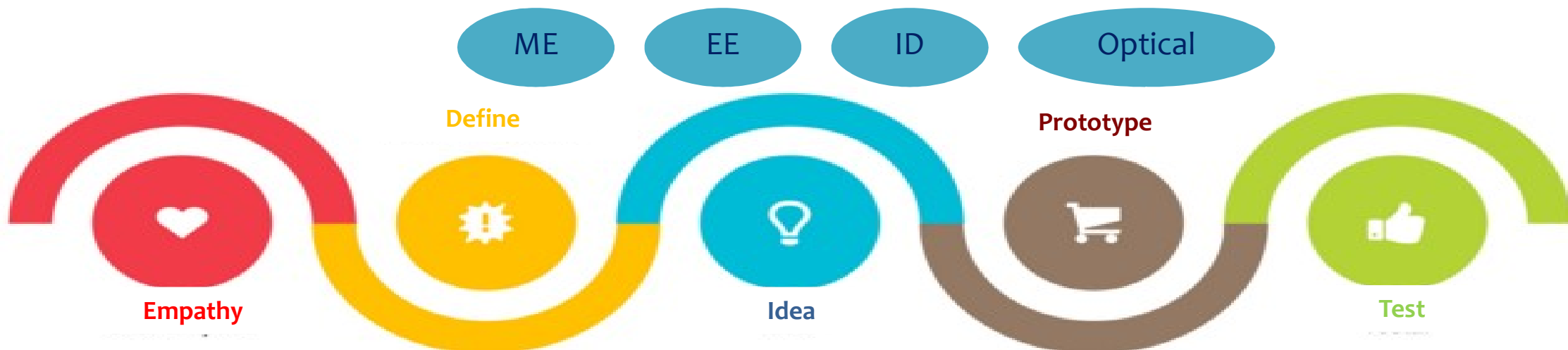
D-Sub Connectors

- Standard D-Sub Connector
- High Density D-Sub Connector
- Receptacle / Overmolded with Cable in 9, 15, 25, 37Pins
- IP67

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Why Simula?

- Design Capability
- Design Process
- Simulation Analysis
- Manufacturing Competitiveness
- Comprehensive & Advance Tester
- Superior Technology Solution Partner



Thank you



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