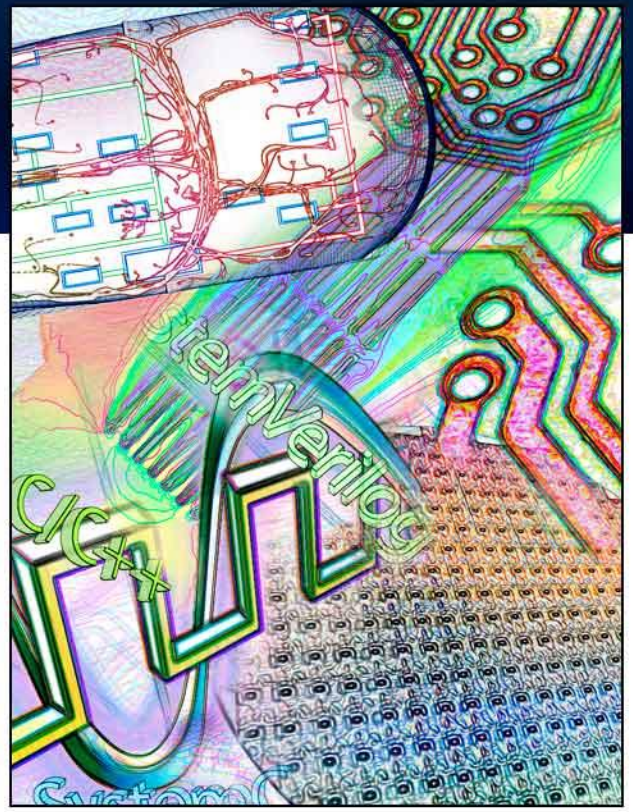

Using Mask Generator

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SDD / CSD

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Mentor Graphics®

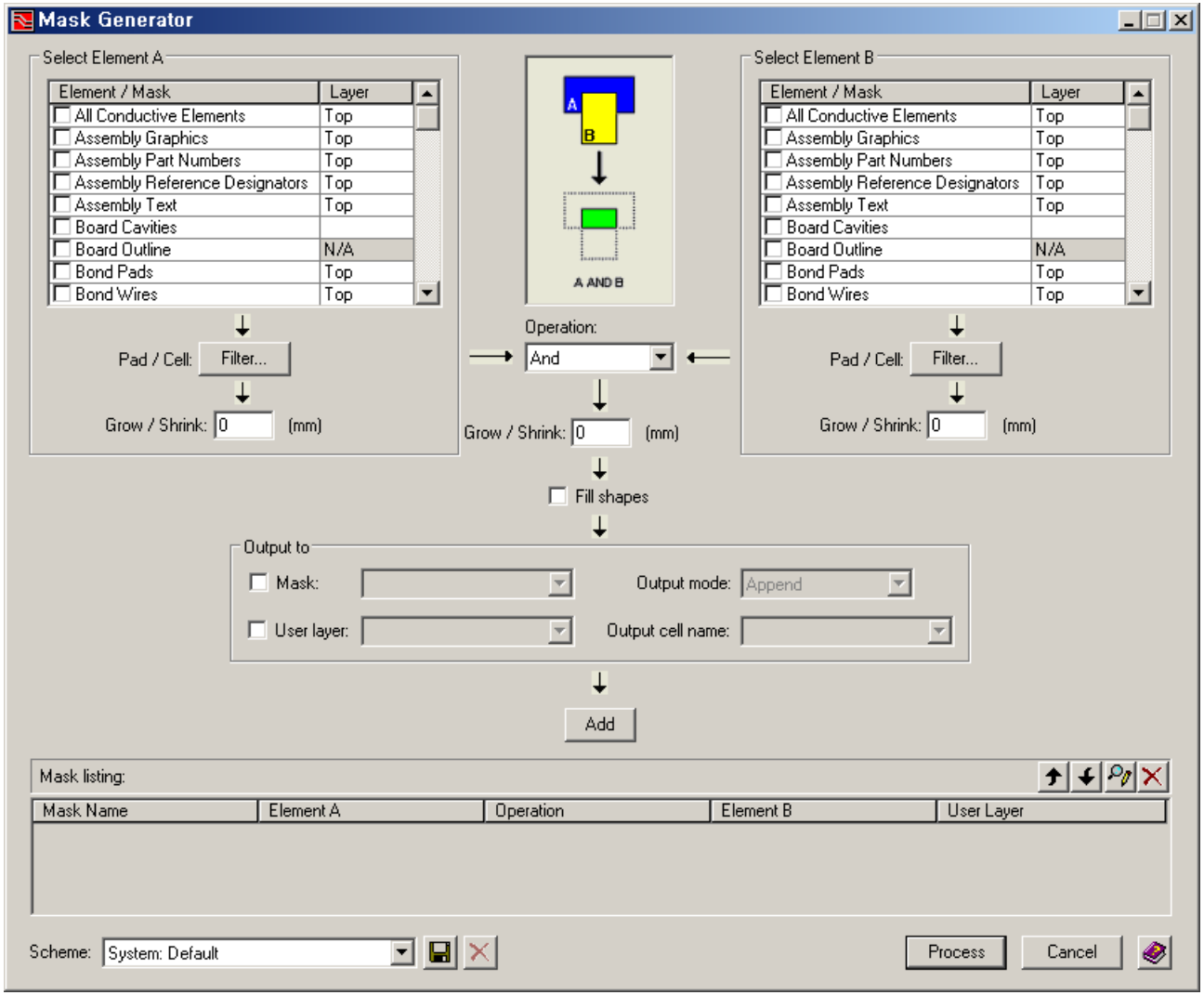
What is Mask Generator?

- Intro
  - Mask Generator는 verification, plotting, area calculation, documentation 에 사용하기 위해 design element들을 이용하여 사용자가 mask를 생성하는 기능
  - Element를 선택한 후에, element 또는 최종 mask의 사이즈를 증가/감소할 수 있으며, 다양한 operation으로 원하는 최종 mask를 생성할 수 있음

- Required License
  - Fablink XE Pro
  - Setup > Licensed Modules > Acquire FabLink XE Pro

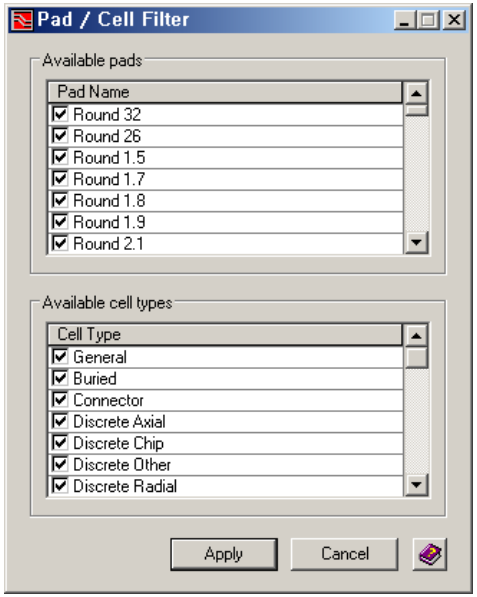
- To access
  - Output > Mask Generator

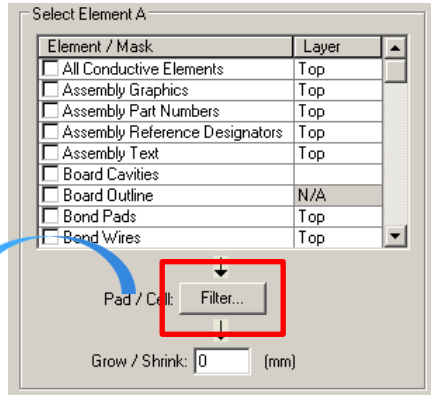
Interface

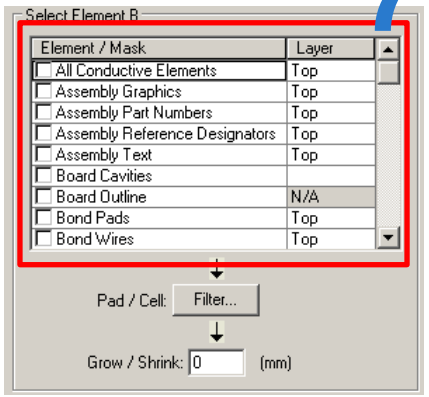


Elements A and B

- Elements
  - Operation을 실행할 Element를 선택
  - Operation에 따라서 Element A, Element B를 동시에 선택하거나 Element A만 선택
  - Pad/Cell에서 적용할 Type을 지정할 수 있음
  - 각 Element는 operation 전에 Grow/Shrink할 수 있음 (Extract As Is 제외)

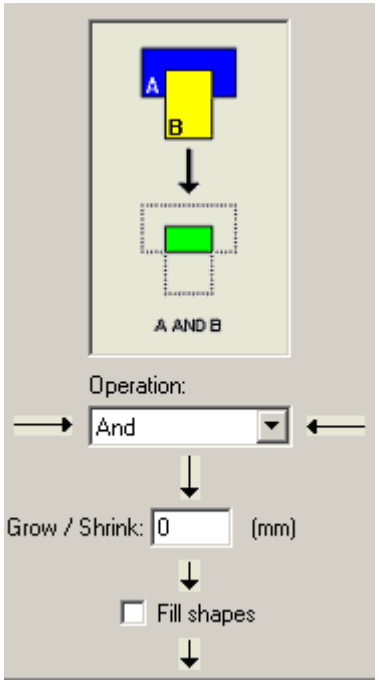


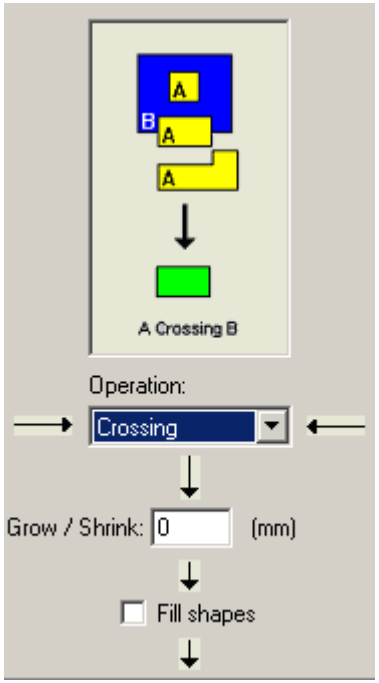


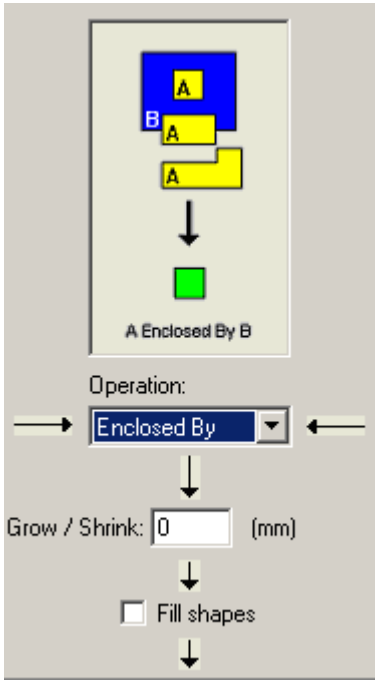


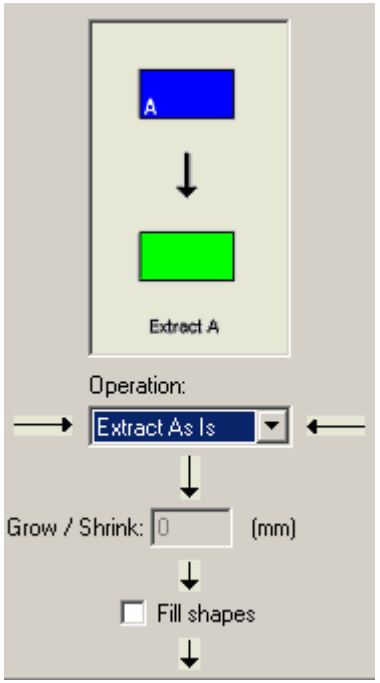
Element / Mask	Layer
All Conductive Elements	Top
Assembly Graphics	Top
Assembly Part Numbers	Top
Assembly Reference Designators	Top
Assembly Text	Top
Board Cavities	
Board Outline	N/A
Bond Pads	Top
Bond Wires	Top
Conductive Shapes	Top
Contours	
Copper Balancing	Top
Die Pins	Top
Edge Connector Pads	Top
Fiducial Pads	Top
Generated Silkscreen	Top
Insertion Outlines	Top
Manufacturing Outlines	N/A
Mounting Hole Holes	Top
Mounting Hole Pads	Top
Negative Plane Data	Top
Part Holes	Top
Part Pads	Top
Placement Obstructs	Top
Placement Outlines	Top
Plane Obstructs	Top
Positive Plane Data	Top
Reserved Areas	N/A
Resistors	Top
Route Border	N/A
Route Layer Text	Top
Silkscreen Graphics	Top
Silkscreen Part Numbers	Top
Silkscreen Reference Designators	Top
Silkscreen Text	Top
Soldermask Graphics	Top
Soldermask Nonvia Pads	Top
Soldermask Text	Top
Soldermask Via Pads	Top
Solderpaste Graphics	Top
Solderpaste Nonvia Pads	Top
Solderpaste Text	Top
Solderpaste Via Pads	Top
Test Pads	Top
Test Point Obstructs	Top
Tooling Hole Holes	Top
Traces	Top
Trace Obstructs	Top
Via Holes	Top
Via Obstructs	Top
Via Pads	Top
User Layer Graphics	Square_H...
User Layer Pads	Square_H...
User Layer Text	Square_H...

Operation



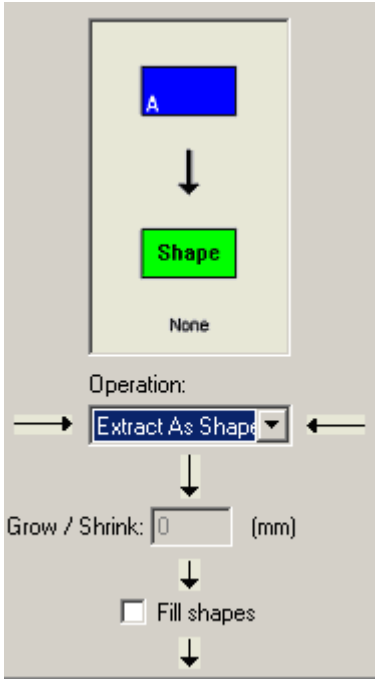


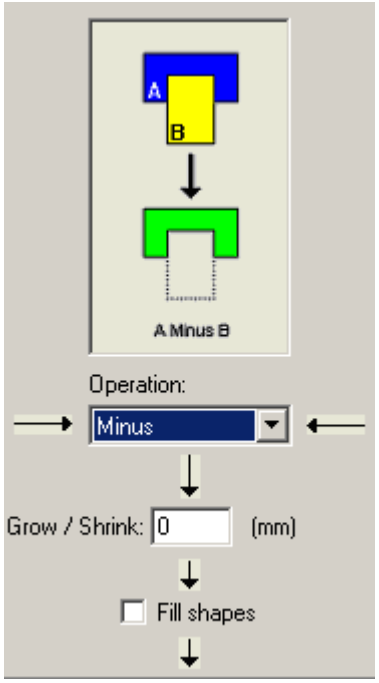


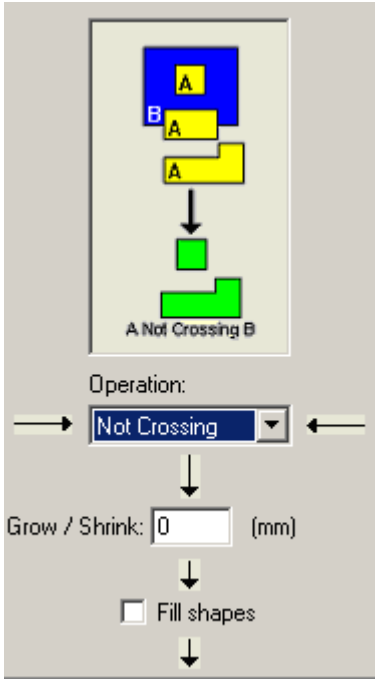


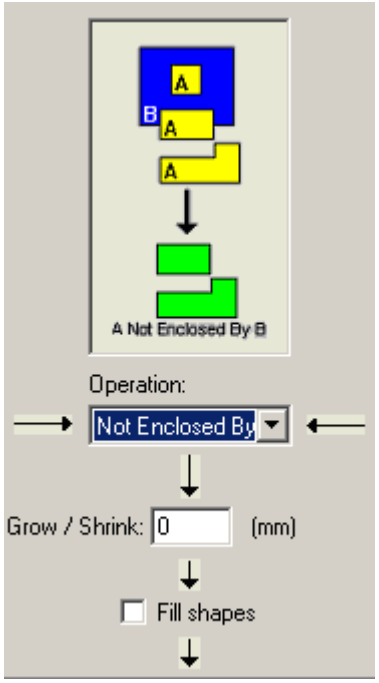
- AND – A와 B의 공유하는 부분을 shape로 생성
- Crossing – B에 겹치는 A를 shape로 생성
- Enclosed By – B로 둘러싸인 A를 shape로 생성
- Extract As Is – A를 추출하여 생성 (Element선택 시 Grow/Shrink 지정)
- Operation을 진행 후 적용할 Grow/Shrink 및 Fill shape을 지정할 수 있음

Operation (Cont)



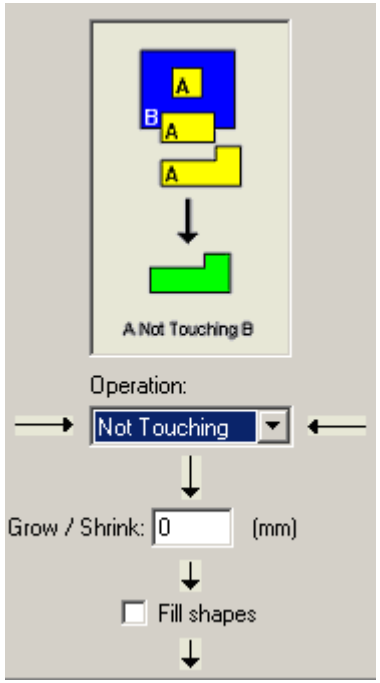


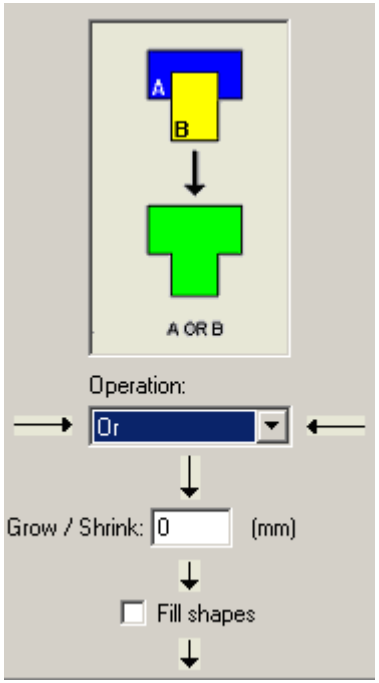


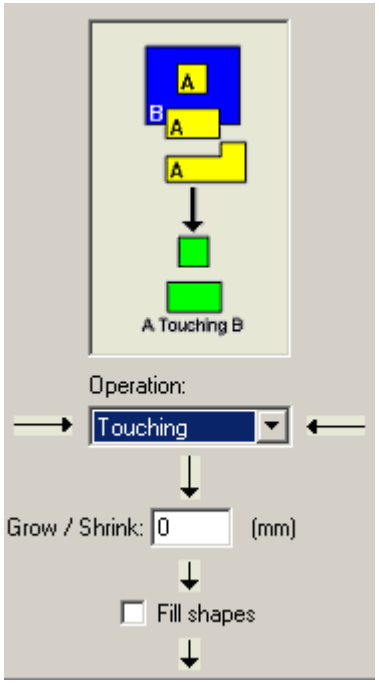


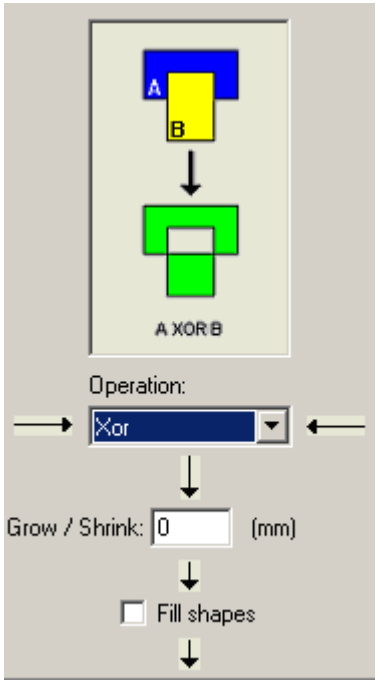
- Extract As Shape – A를 그대로 추출하여 shape로 생성 (Grow/Shrink 안됨)
- Minus – A에서 B와 겹치는 부분을 제거하여 shape로 생성
- Not Crossing – B에 겹치지않는 A를 shape로 생성
- Not Enclosed By – B에 둘러싸이지 않은 A를 shape로 생성

Operation (Cont)



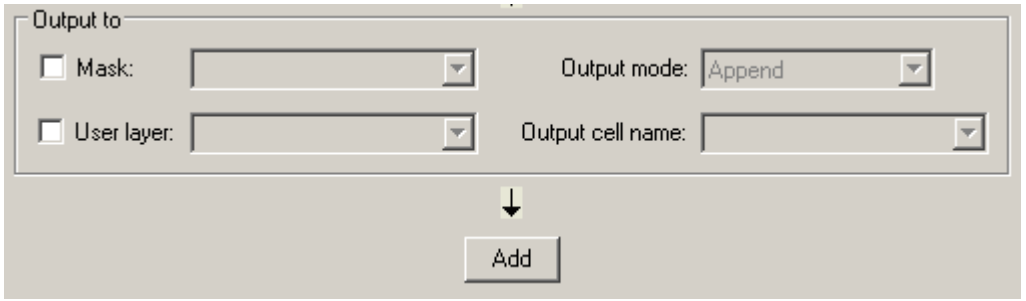






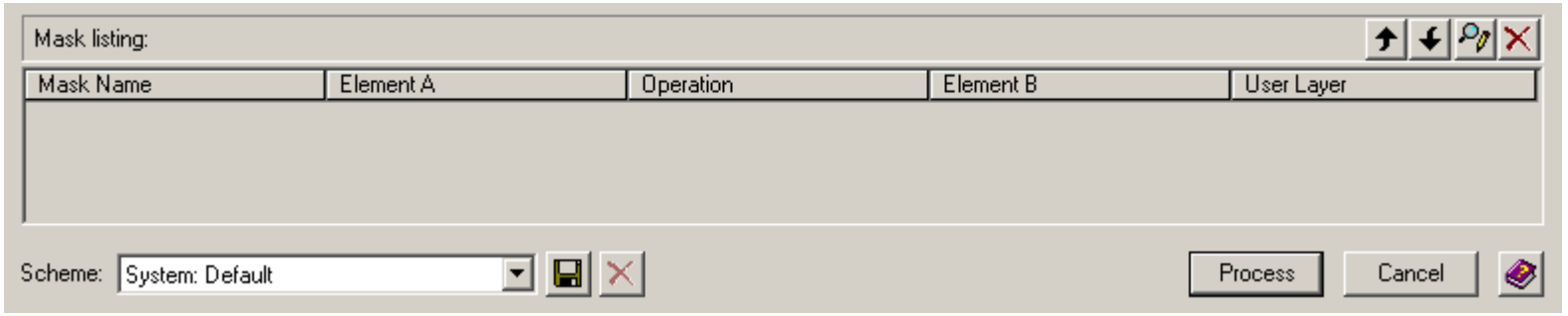
- Not Touching – B에 닿지않은 A를 shape로 생성
- Or – A와 B를 합쳐 shape로 생성
- Touching – B에 닿은 A를 shape로 생성
- Xor – A와 B가 겹친부분을 제외하여 shape로 생성

Output to



- Mask – Generation할 Mask이름을 지정 (지정하지 않으면 mask1 부터 maskn까지 자동으로 부여)
- User layer – Operation 완료 후 shape가 저장될 User layer를 지정 (지정하지 않으면 Output_MG라는 user layer를 자동으로 생성)
- Output mode – User layer를 지정시 Append, OverWriteCell, OverWriteLayersOnly 중 선택
- Output cell name – Operation 완료 후 shape가 저장될 cell을 지정, cell이 지정되면 Board에 생성되지 않고 cell에 생성됨, cell이 지정되지 않으면 board의 user layer에 생성
- Add – Output to에서 지정된 설정을 실행하기위해 Mask list에 추가, 1개 이상의 설정을 추가할 수 있음.

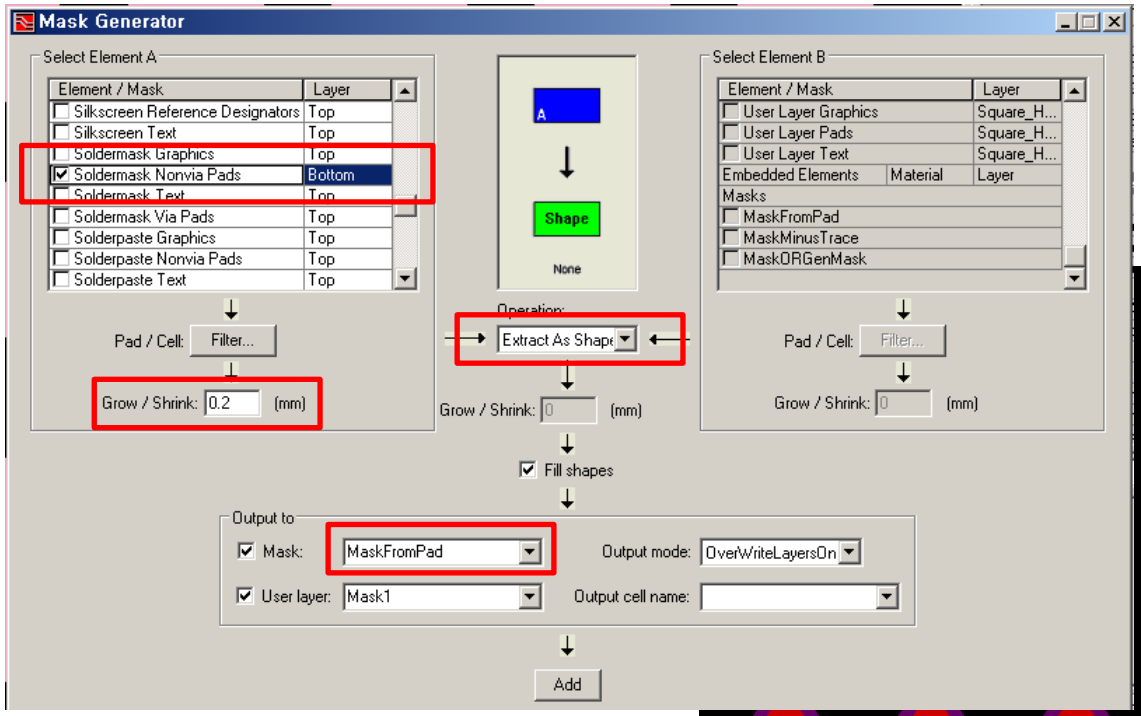
Process

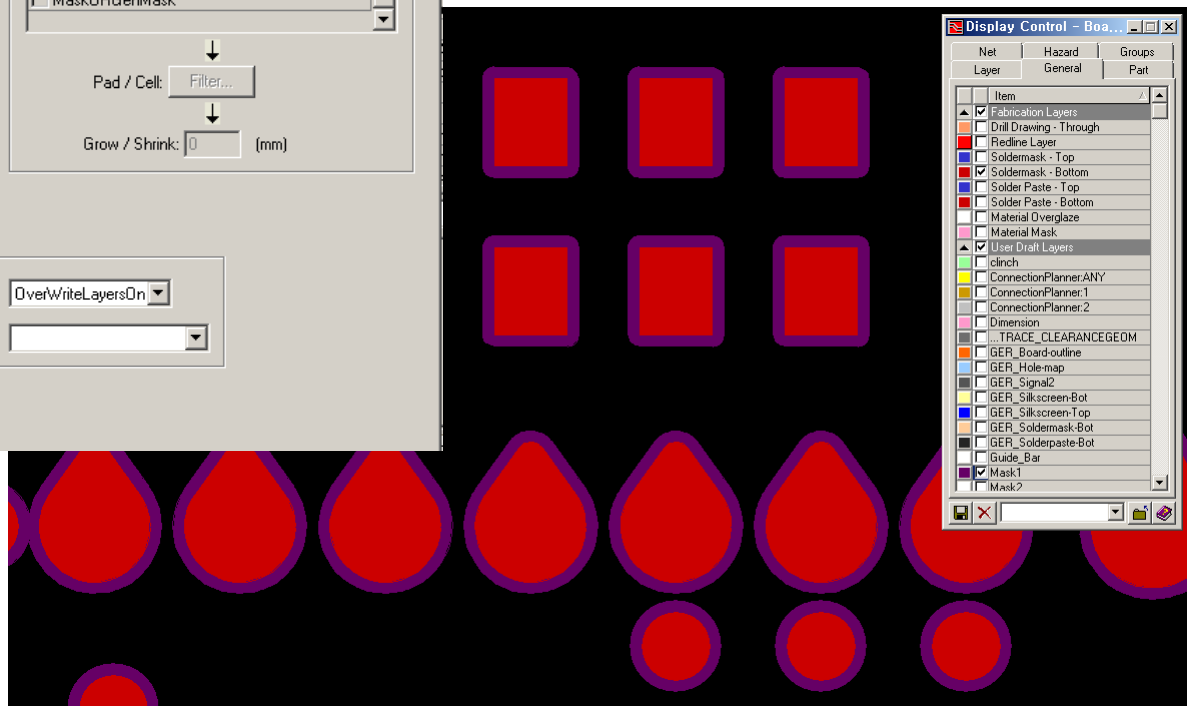


-  – Mask list에서 Mask의 실행 순서를 지정
-  – Mask list에 있는 Mask 설정을 수정, 수정 후  버튼을 클릭
-  – Mask list에 있는 Mask 설정을 삭제
-  – Mask list의 Mask 설정을 실행
-  – Mask list를 Scheme으로 저장하거나 저장된 Scheme을 선택

Example

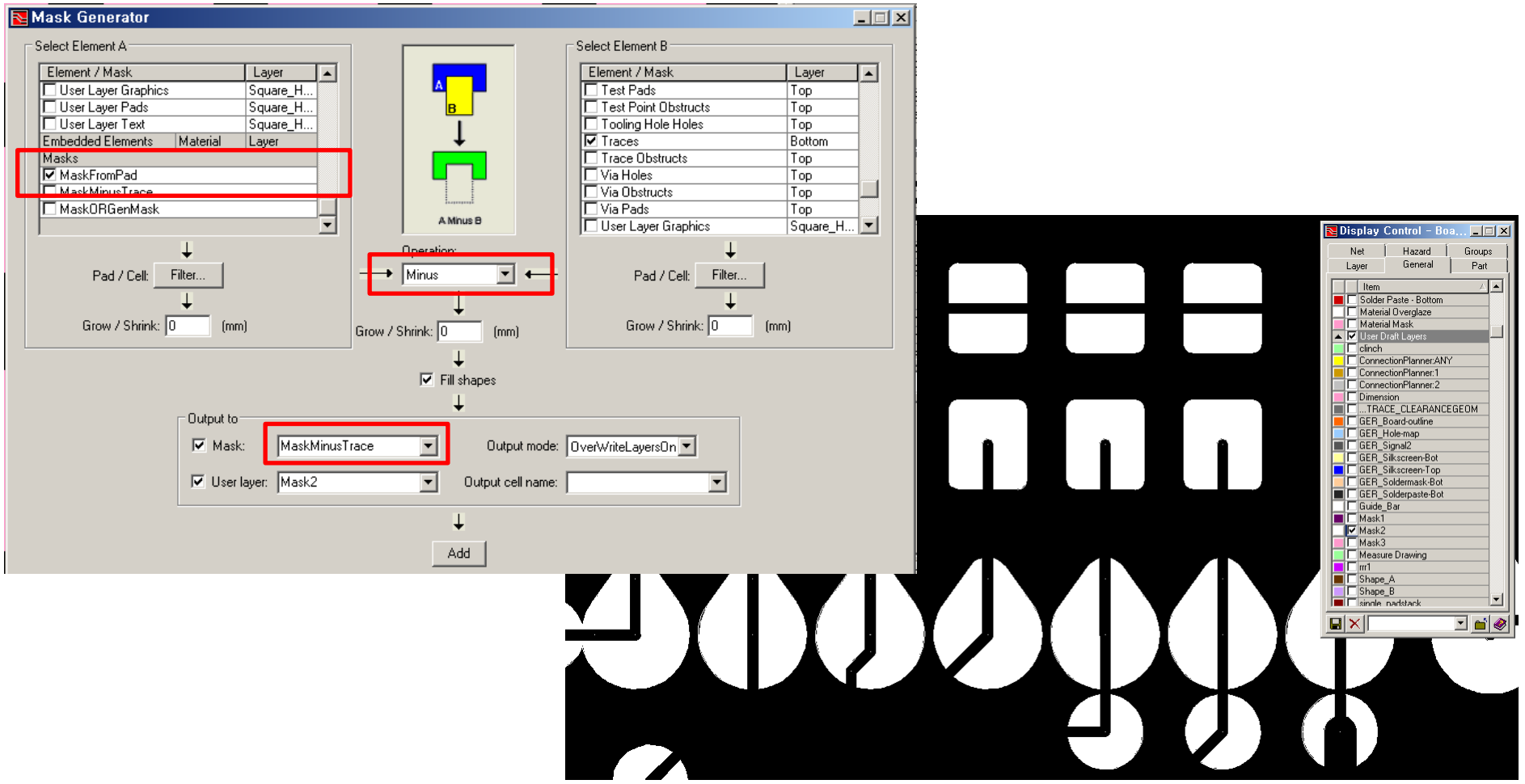
1. Pad(smd/throuth)의 Soldermask를 0.2mm 키우기





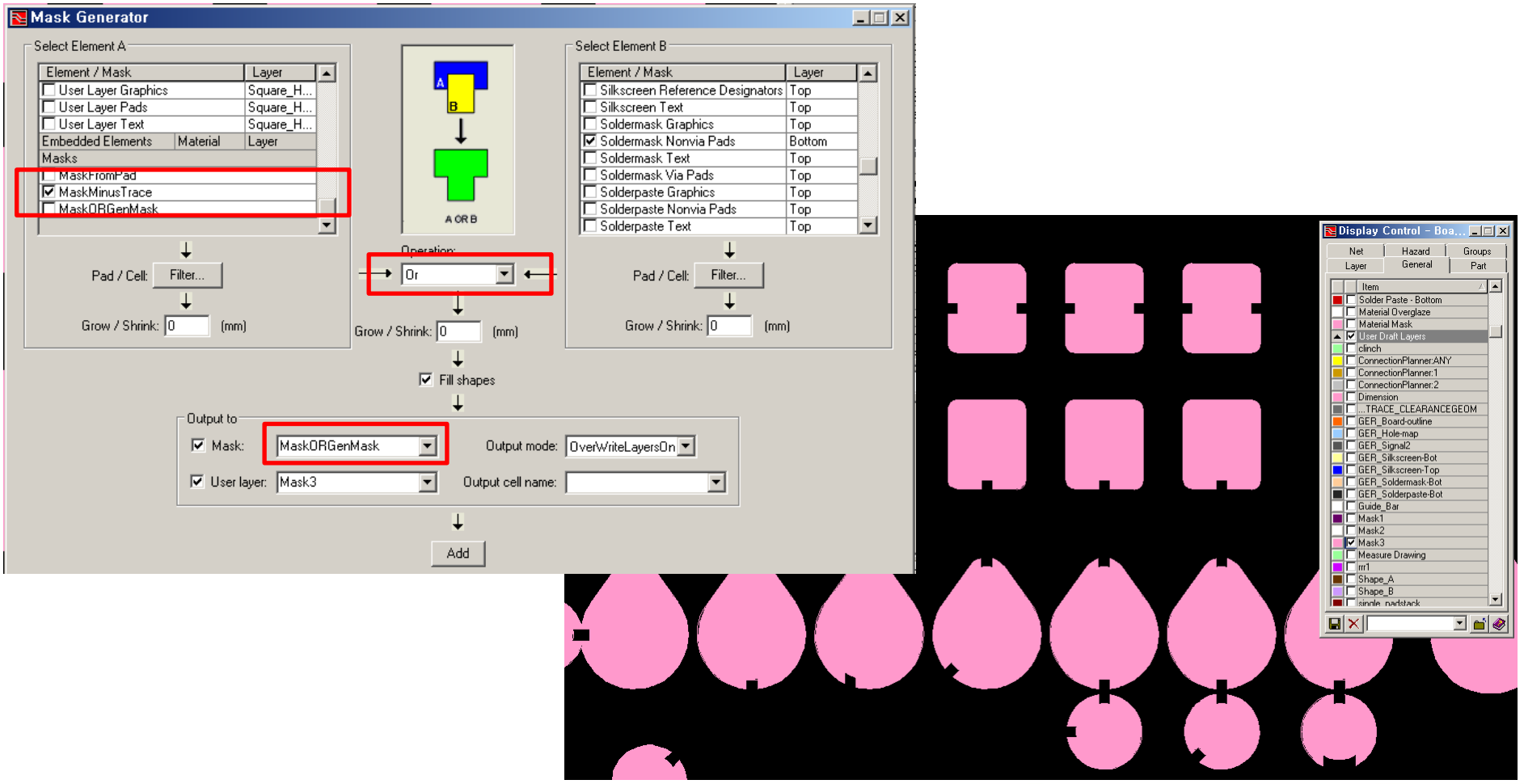
Example

2. 첫 번째 결과에서 Trace만큼 빼기



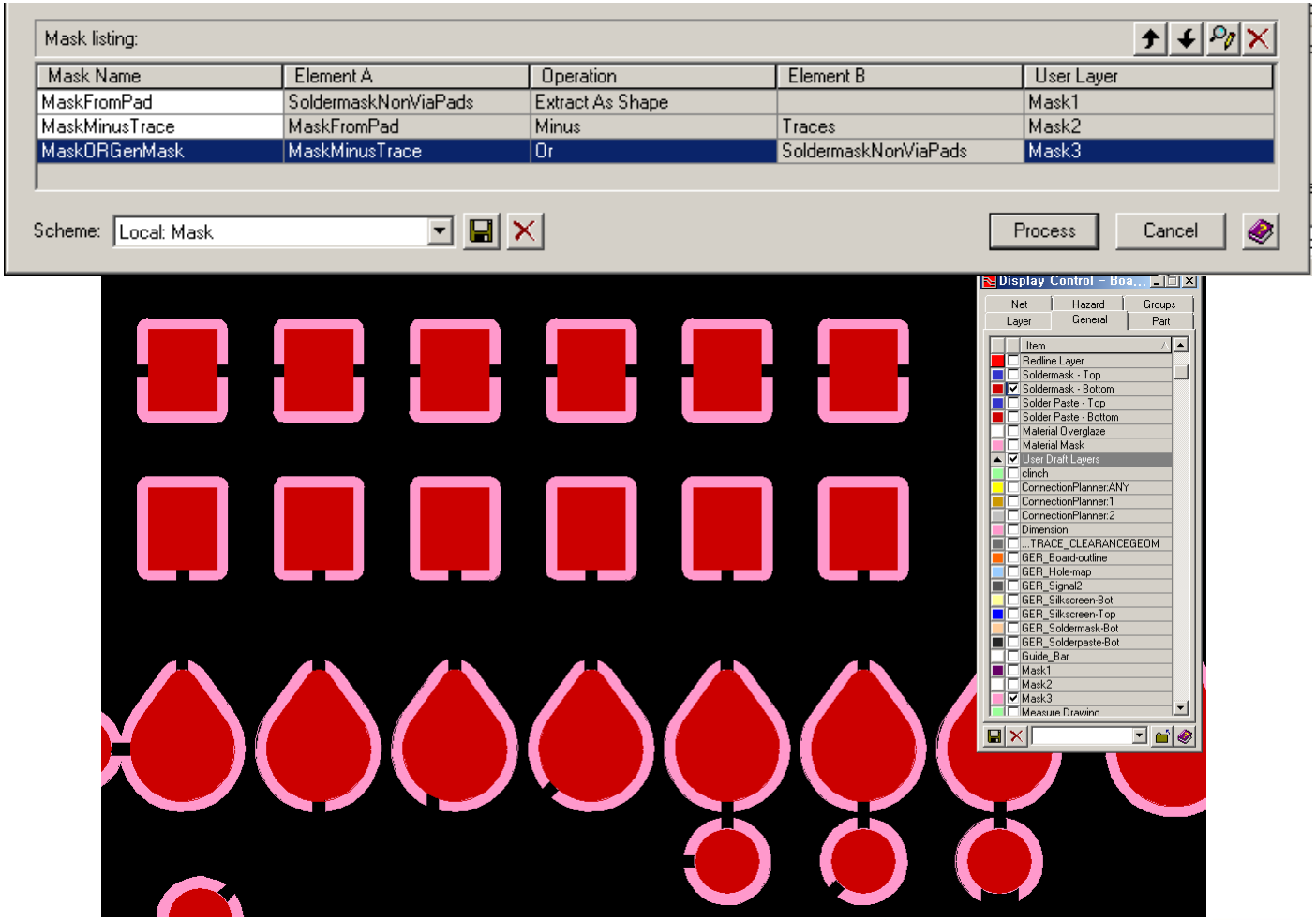
Example

3. 두 번째 결과에서 원래의 Soldermask를 더하기

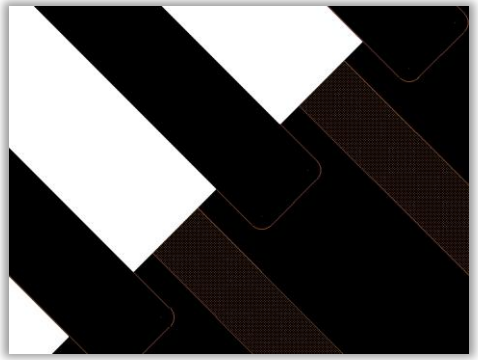
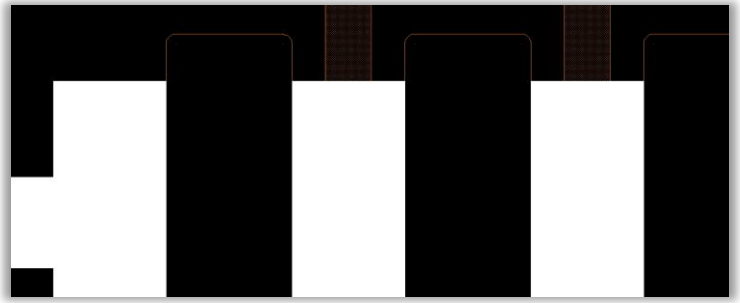
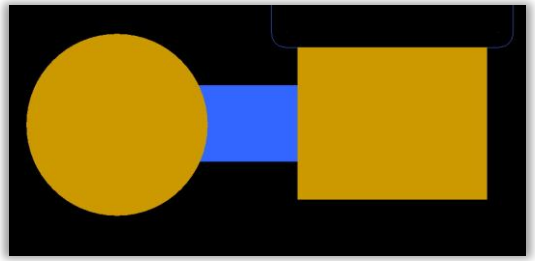


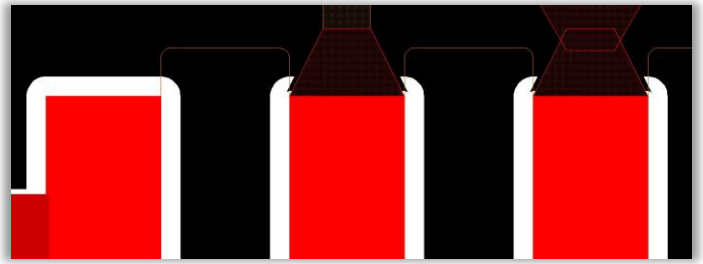
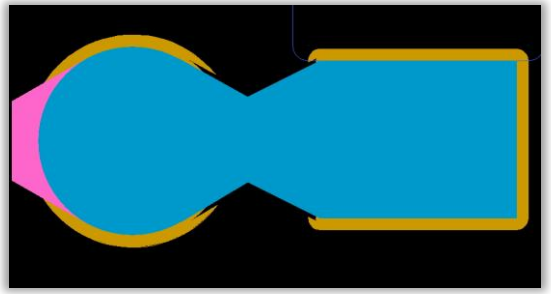
Example

4. 결과



현업 적용 사례

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