Hot Tapping
Pretect
Pipeline Intervention.

Hot Tapping
## What is Hot Tapping

### Definition
Hot Tapping is a method of making a connection into an existing pipe or vessel which is still under pressure or live.

### What is it used for?
- Additional branches allowing supply to and from other areas of plant etc.
- Monitoring points for temperature probes etc.
- Entry points for isolation equipment (Stopples)

### What advantages are there?
- Can be performed without the need to shut down the plant.
- No need for loss of production or supply to other areas
Where can it be Used?

Petrochemical Industry
- Hydrocarbons – crude & heavy oils
- Light oils, diesel, kerosene, petroleum, motor oils
- Various chemicals

Power Generating Industry
- Steam & Water

Pharmaceutical & Food Industry:
- Compressed air
- Food products

Water Industry:
- Potable Water & Sewerage
Step 1
Mount the hot tapping machine to the tapping valve.
Step 2
Advance cutter/pilot assembly until it touches the parent pipe, then start the hot tap.
Step 3
When pilot breaks through product fills the void, air is expelled through the tapping machine purge valve and valve is then closed to retain the pressure.
Step 4
When pilot is completely through stop rotation & advance to allow u-wires to drop.
Step 5
When cutter touches top of pipe, restart machine to complete the cut.
Step 6

When the cut is complete, the machine should be stopped and the cutter advanced to confirm tap complete.
Step 7
Coupon and cutter are withdrawn with the coupon or cut out retained by the u-wires.
Step 8
The tapping valve is then closed and the machine can be removed.
Typical Hot Tapping Assembly.
How do we retain the Coupon?

Standard Option - U-wires

Pilot drill has u-wires which prevent the coupon from falling into the line. This method is suitable for the vast majority of hot taps.

- Limits are:-
  - gas velocities of up to 10 m/s (20 mph)
  - liquid velocities of up to 5 m/s (10 mph)
Coupon Catcher in Operation
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Coupon Catcher in Operation
Standard cutter with pilot drill and coupon.
Standard vertical tap - no unusual problems

Angled vertical tap - no problems for angles less than 45 degrees

As the angle of tap rotates around there becomes more chance of the swarf from the tap coming back towards the valve and the tapping machine adapter resulting in problems closing the valve and with drawing the cutter fully.

The measuring rod will tend to fall out. It is also considerably harder to install the drilling machine into position.
Non-standard Hot Taps

Tank Tops
Non-standard Hot Taps

Lateral or Angled Taps

COMPENSATING PAD

45°
Non-standard Hot Taps

Hillside Taps
Non-standard Hot Taps

Elbow Taps

COMPENSATING PAD

45° APPROX
Limitations

Maximum Pressure
- Equipment is rated to 1440 PSI (100 bar) @ 100°F (38°C)
- Pressures above this can be hot tapped, specialist procedures & equipment required (Refer to Kendal Office)

Maximum Temperature
- Equipment is rated to 700°F (371°C) @ 700 PSI (48 Bar)
What information is required?

Line Details
- Nominal size
- Wall thickness
- Design parameters – contents, pressure & temperature
- Operating conditions - if different

Branch Details
- Nominal size
- Wall thickness
- Length
- Flange/interface specification
- Clearance space for hot tapping machine

Valve Details
- Valve type - e.g. ball, gate.
- Valve bore
- Overall length
What information is Required?
Machine Selection

- Size of branch to be hot tapped & cutter to be used
- Size of parent pipe (type of cutter)
- Wall thickness of parent pipe (power required)
- Material of parent pipe (cutting material & form)
- Total combined length of valve & branch (travel)
- Contents, pressure & temperature (seal suitability)
- Clearance space for machine

Machine Preparation

- Valve Adapter
- Cutter type
- Pilot drill
- Cutter Holder
Clearance Required for Hot Tap Machines

NOTE:
Not just X and Y but how to get the machine into position
The End