

**WW3-1**

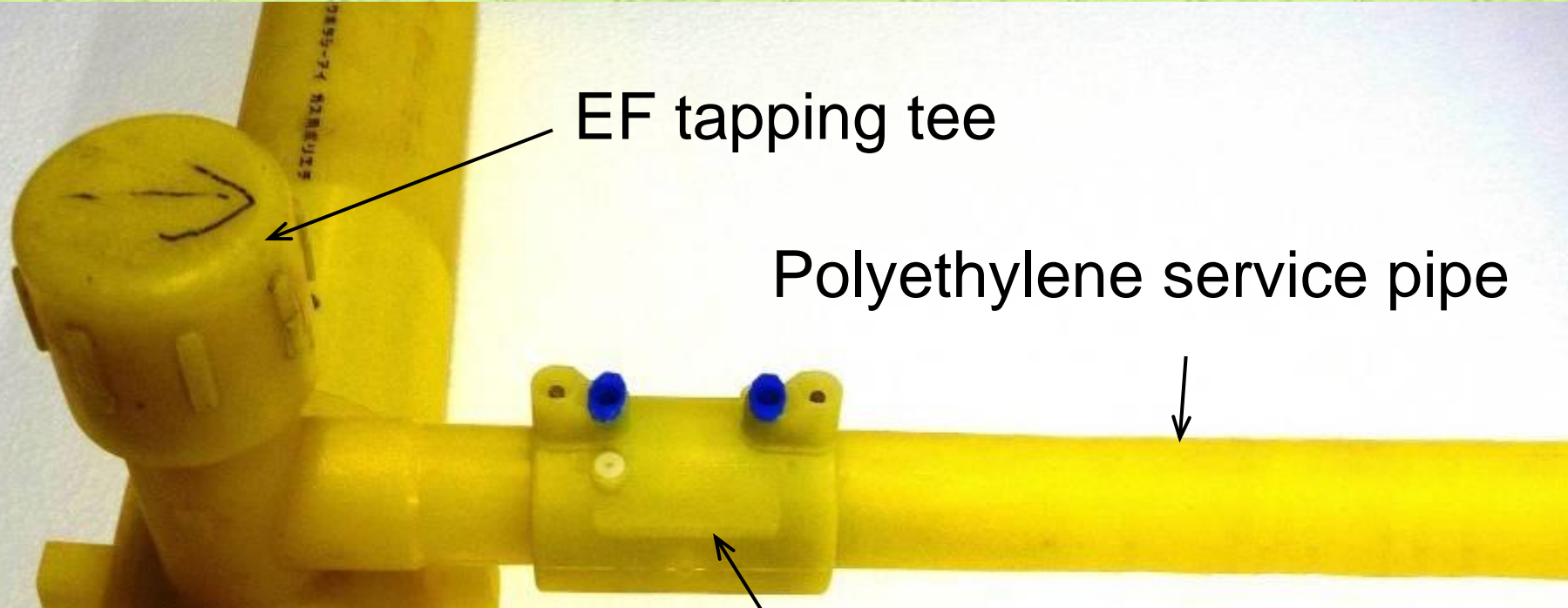
# **Development of Tokkiless Method**

The method to remove  
unnecessary electrofusion(EF) tapping tees

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# The branching part of polyethylene main pipe

The EF tapping tee is used for branches of polyethylene main pipe.

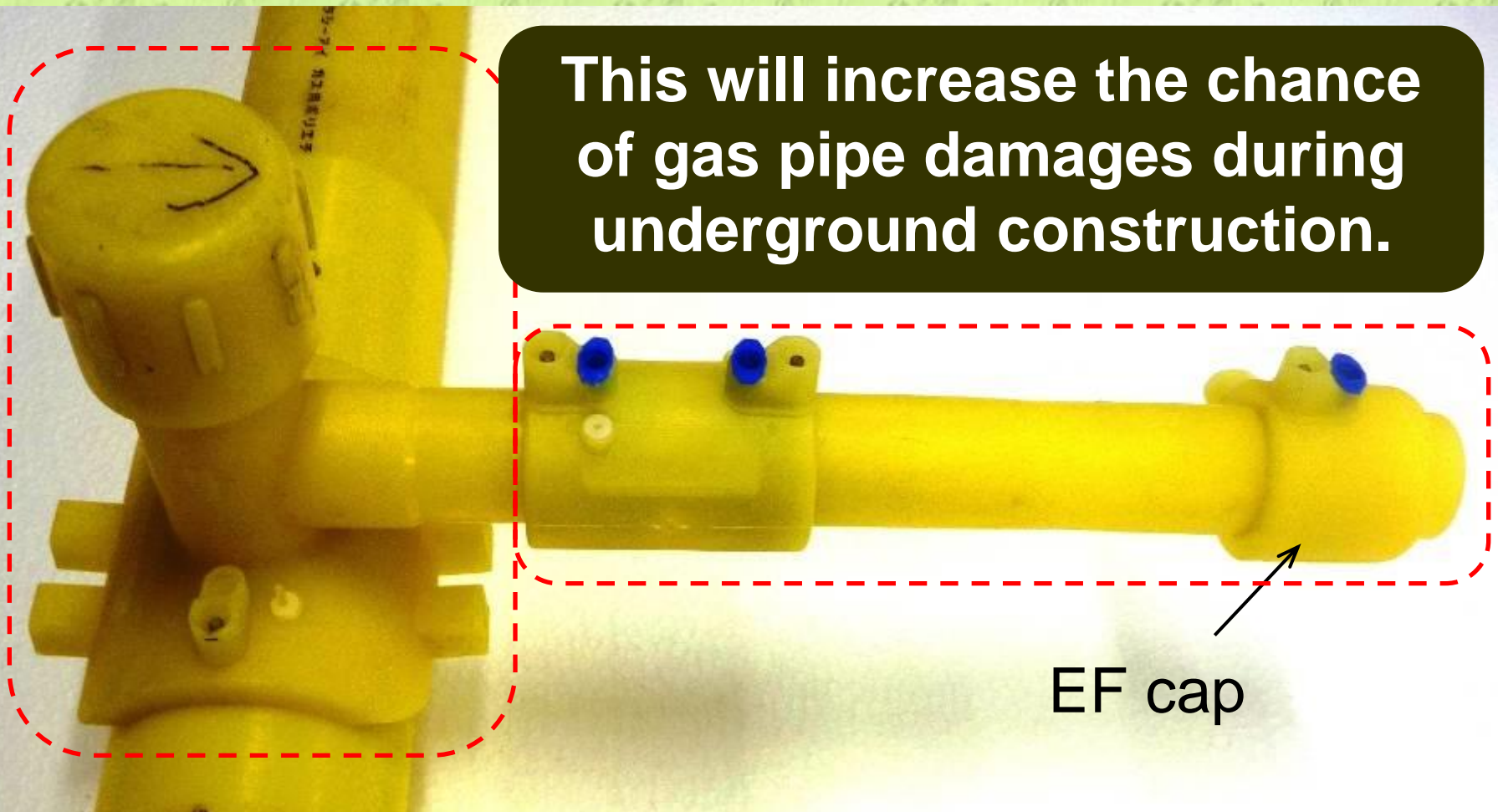


When our customers rebuild their houses, the existing service pipes may need to be removed in order to accommodate a new route.

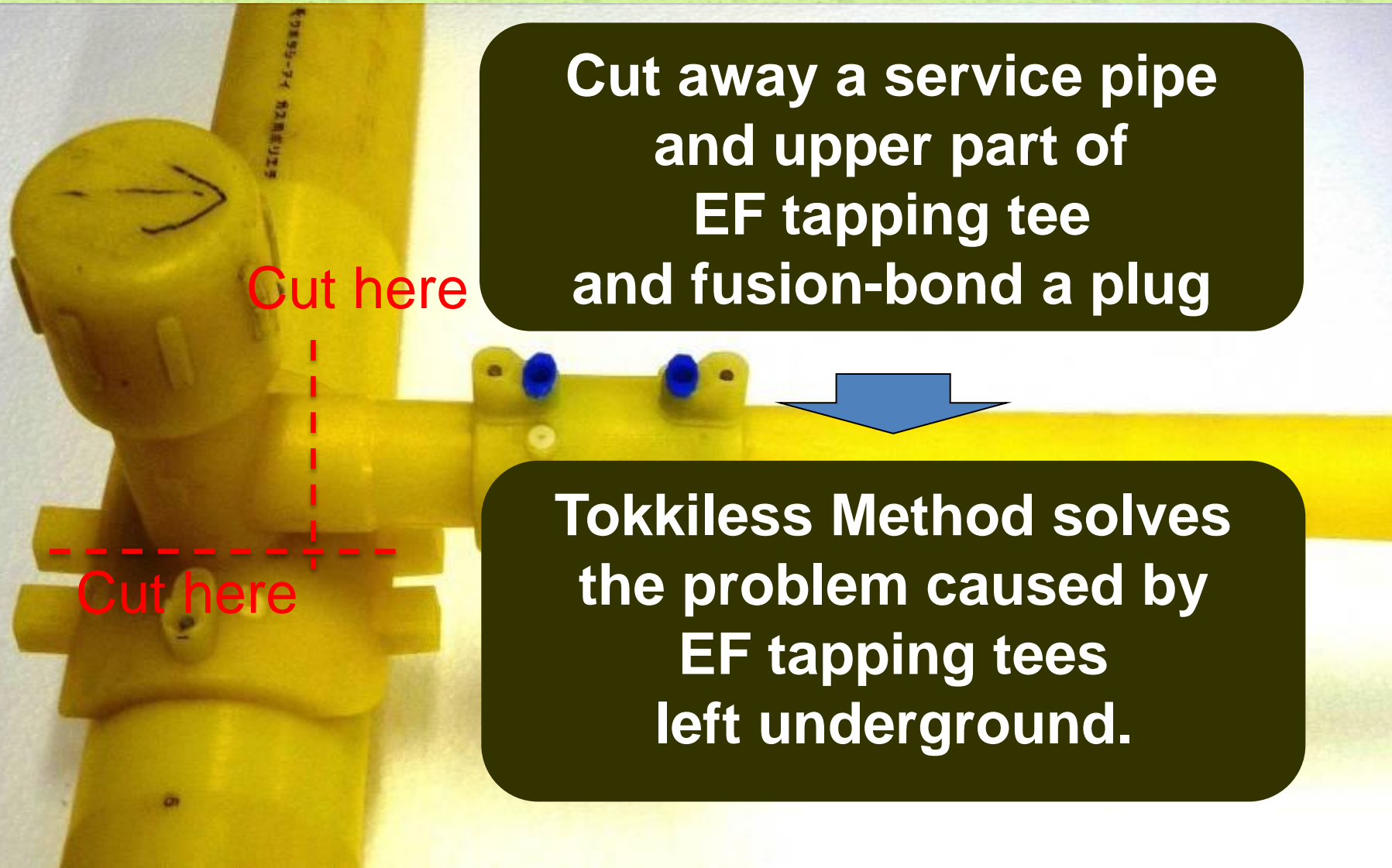
# Conventional removal method of a polyethylene service pipe

The EF tapping tees are left under the ground even after the removal of the service pipes.

This will increase the chance of gas pipe damages during underground construction.



# Removal of the polyethylene service pipe by Tokkiress Method



Cut here

Cut away a service pipe  
and upper part of  
EF tapping tee  
and fusion-bond a plug

Cut here

Tokkiress Method solves  
the problem caused by  
EF tapping tees  
left underground.

# Features of Tokkiress Method

Simple and Quick  
Only 15min

The projecting is 2cm

No-blow work

Main pipe:50A~315A  
Branching pipe:25A~75A

The fusion-bonded plug



Ensuring high  
airtightness by using  
heat fusion

without cutting  
the main pipe

# The actual work

Remove a service pipe 75A branching  
from a main pipe 100A .



**(1) Preparations to set up a rubber stopper**  
remove the screw cap and the hole saw of the tapping tee. Use a no-blow bag to prevent gas leak.



## (2) Set up a rubber stopper

The no-blow bag is removed and the rubber stopper is pushed in by the rubber stopper push tool.



a rubber stopper



# **(3)Cut the service pipe**

**Cut the service pipe near the tapping tee.**



## **(4) Remove the tapping tee**

**Install the base tool which guides other tools.  
Put a saw on the roller and cut the tapping tee.**



# The tapping tee which was cut

The rubber stopper has a spring-loaded check valve.

It helps the airtight inspection of the plug to fusion-bond last.



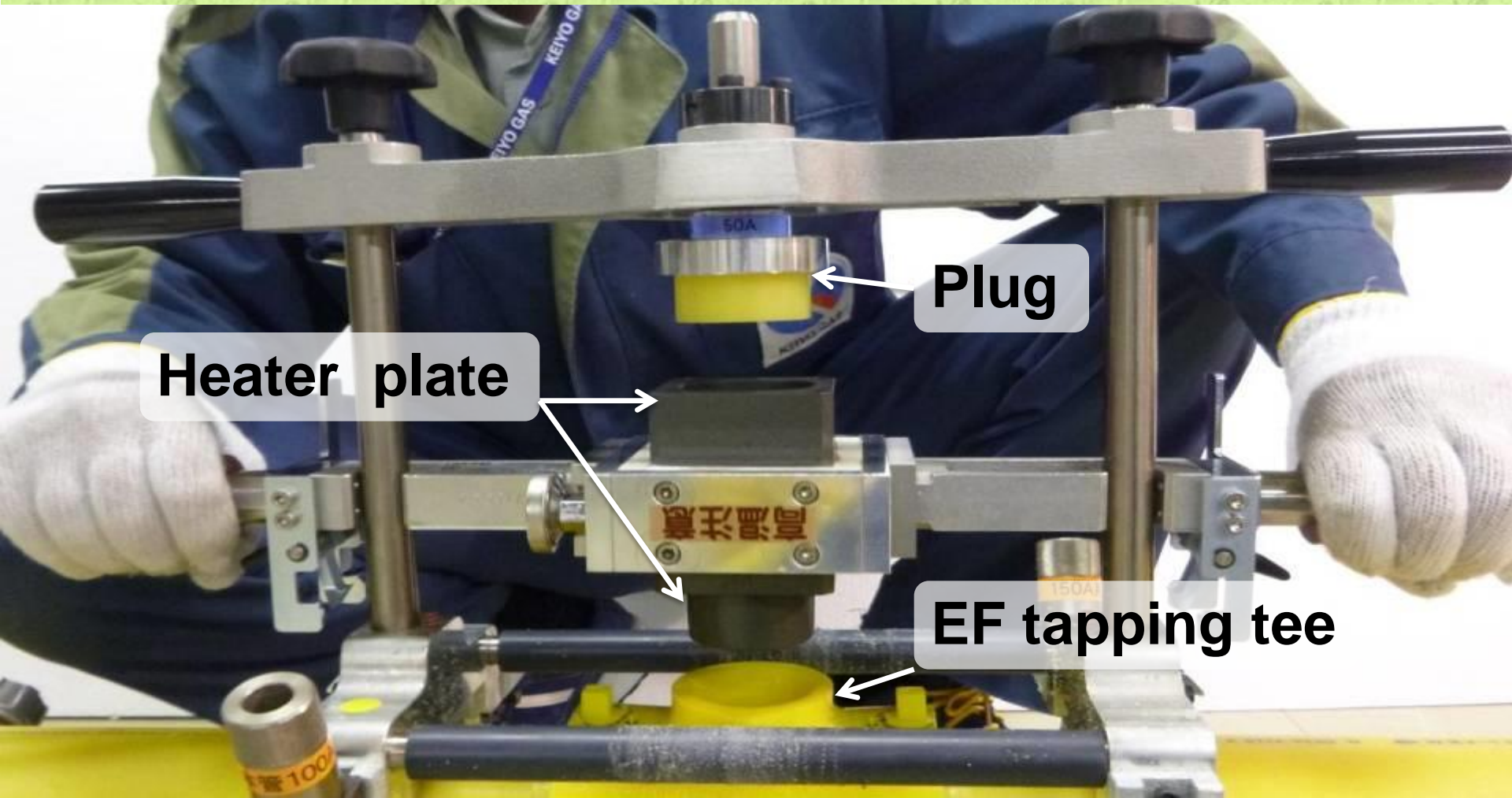
**(5) Smoothing the EF tapping tee which was cut**  
Smoothing the inside and the upper end face at the same time by three pieces of blades.



**Smoothing automatically stops at an appropriate position.**

# (6) Installed the polyethylene plug into the EF tapping tee

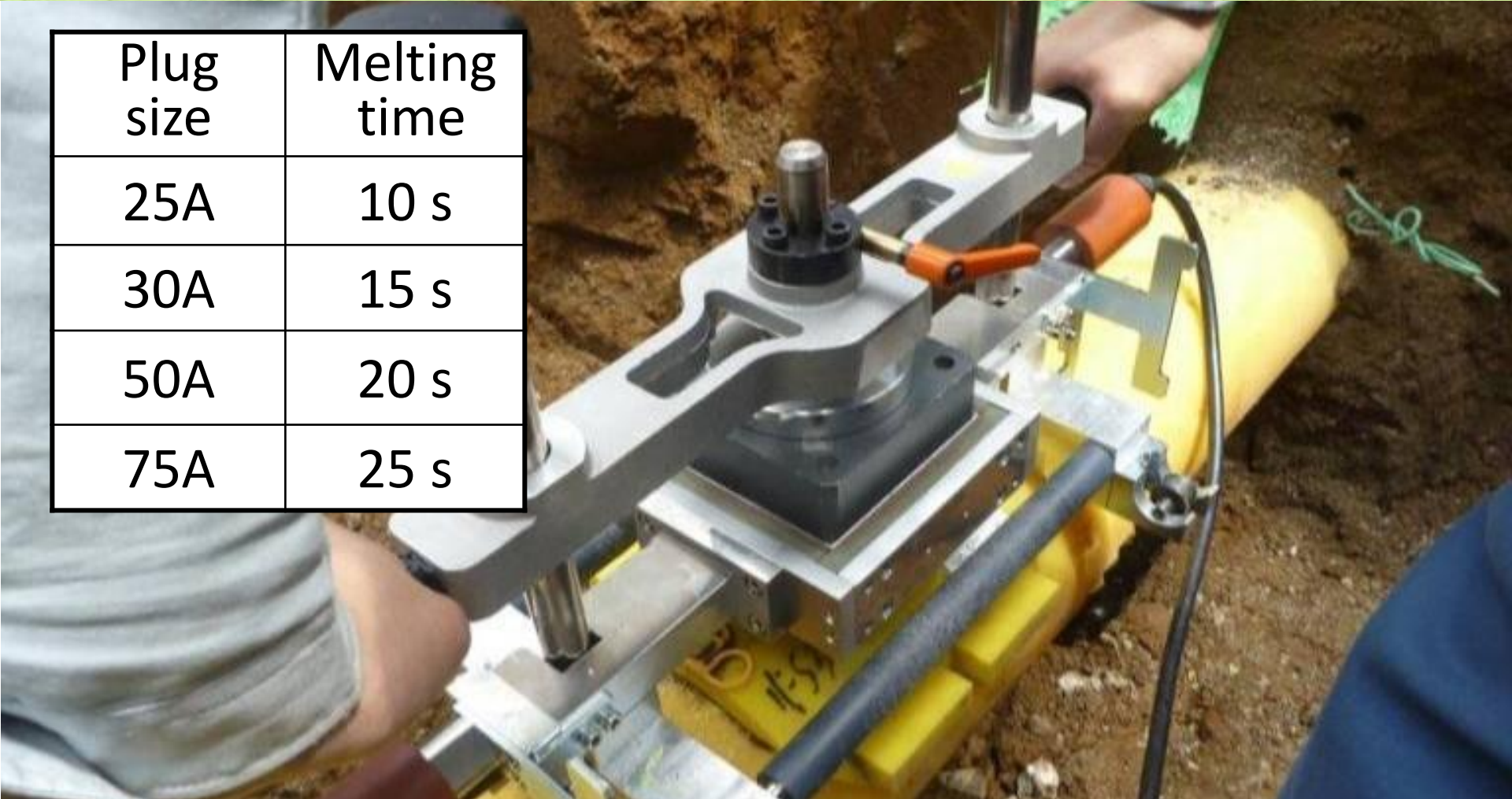
Melt a plug and the inside of EF tapping tee with a heater (260 deg C) at the same time.



# (6) Installed the polyethylene plug into the EF tapping tee

Push down the plug to the tapping tee and install it by hot fusion bonding.

Plug size	Melting time
25A	10 s
30A	15 s
50A	20 s
75A	25 s



# (7)Finished

Check the fusion bead and the airtight of the plug.



# WW3-1 Development of Tokkiless Method

**Thank you**

**Technical Development Section  
Keiyo Gas Co.,Ltd**



# Conventional removal method of a polyethylene service pipe (image)



# Rubber stopper push tool



for 25A~50A



for 75A

# Base tool

Base tool  
guides other tools.



Smoothing and fusion-bond in the same part.

## Base tool



The EF tapping tee locates on the center of the base tool.

# Rubber stopper which was pushed in



# Rubber stopper



Rubber stopper

The rubber stopper does not stick out to inside of the pipe.

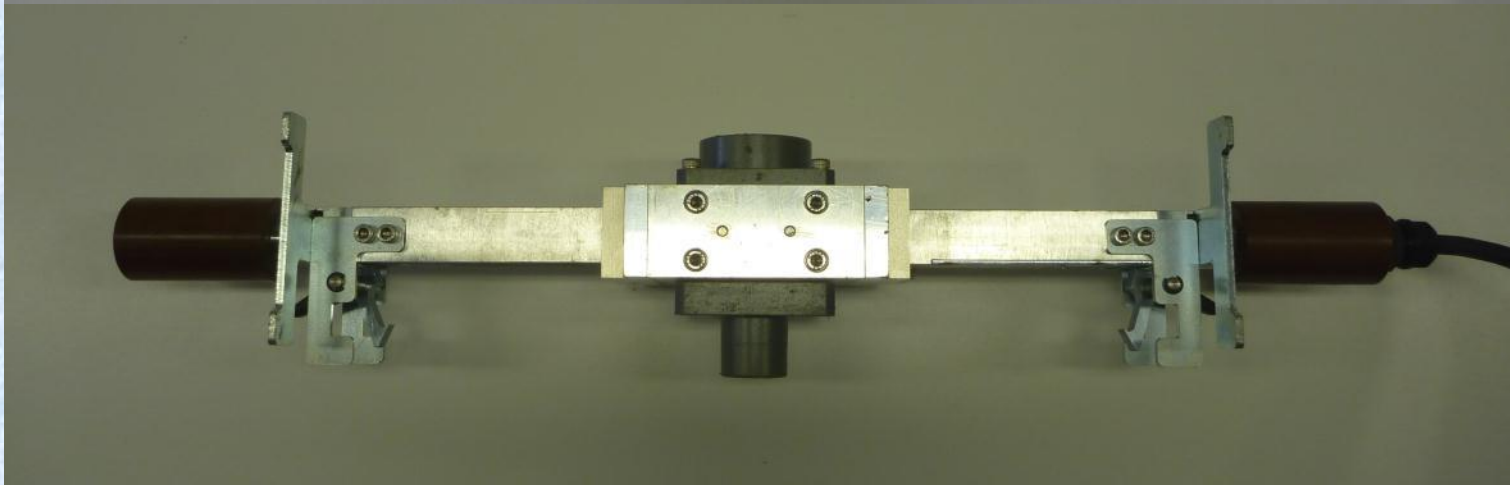
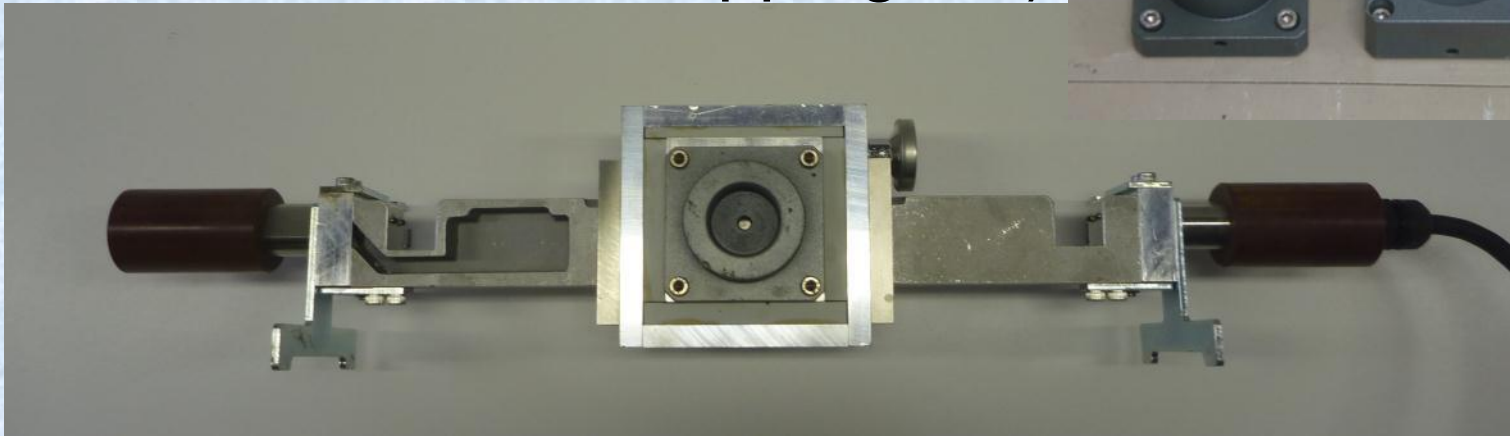
# Smoothing tool



Scrape off the inside grease  
of the EF tapping tee

# Heater for fusion-bonding

Heater face(for the plug  
and the tapping tee)





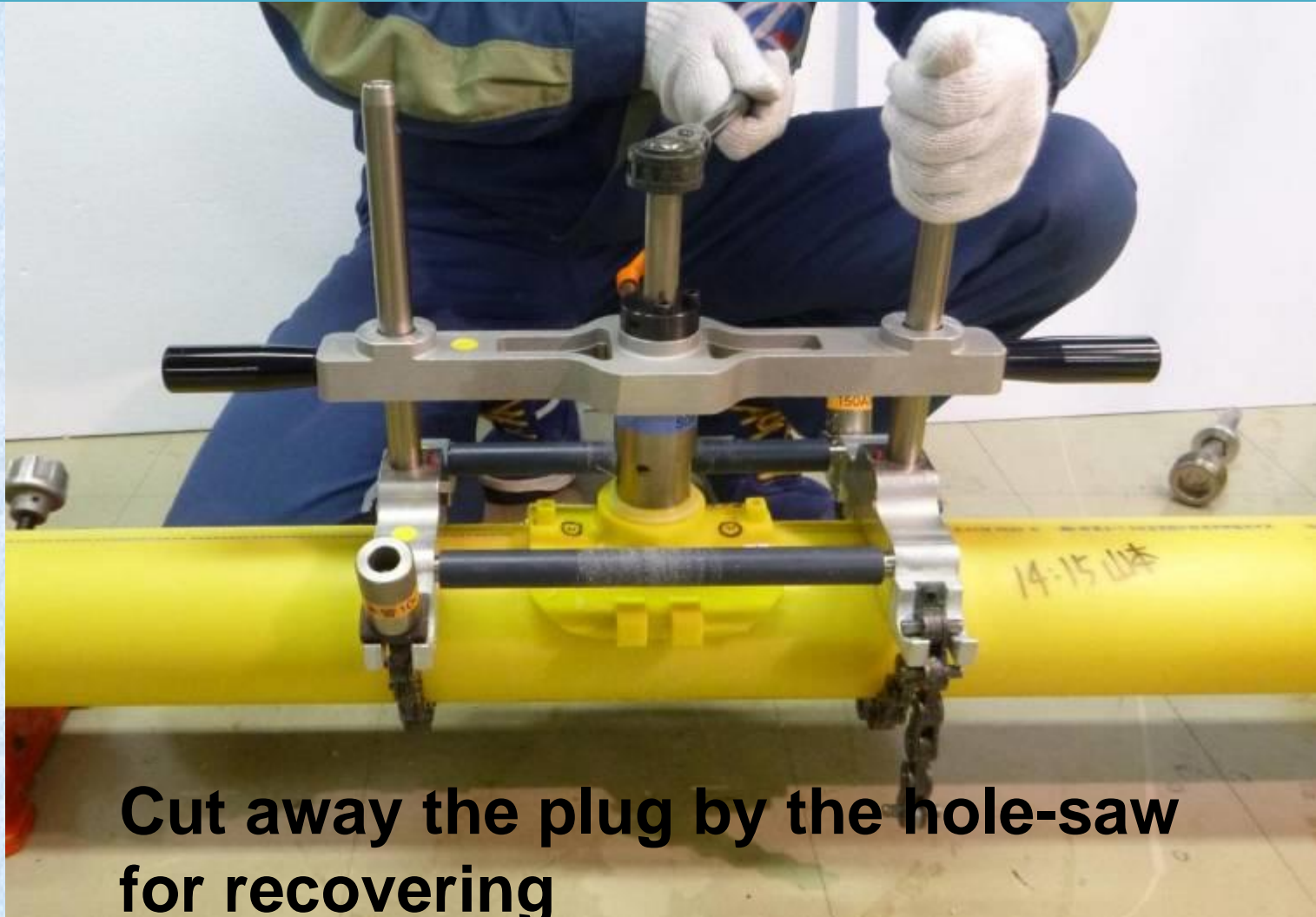
**If fail in fusion-bonding the cap.**

**It's easy to recover.**



**The hole saw for recovering**

## Bond the polyethylene plug again



Cut away the plug by the hole-saw  
for recovering

## Bond the polyethylene plug again



**Cut away the plug and start it again from smoothing part.**