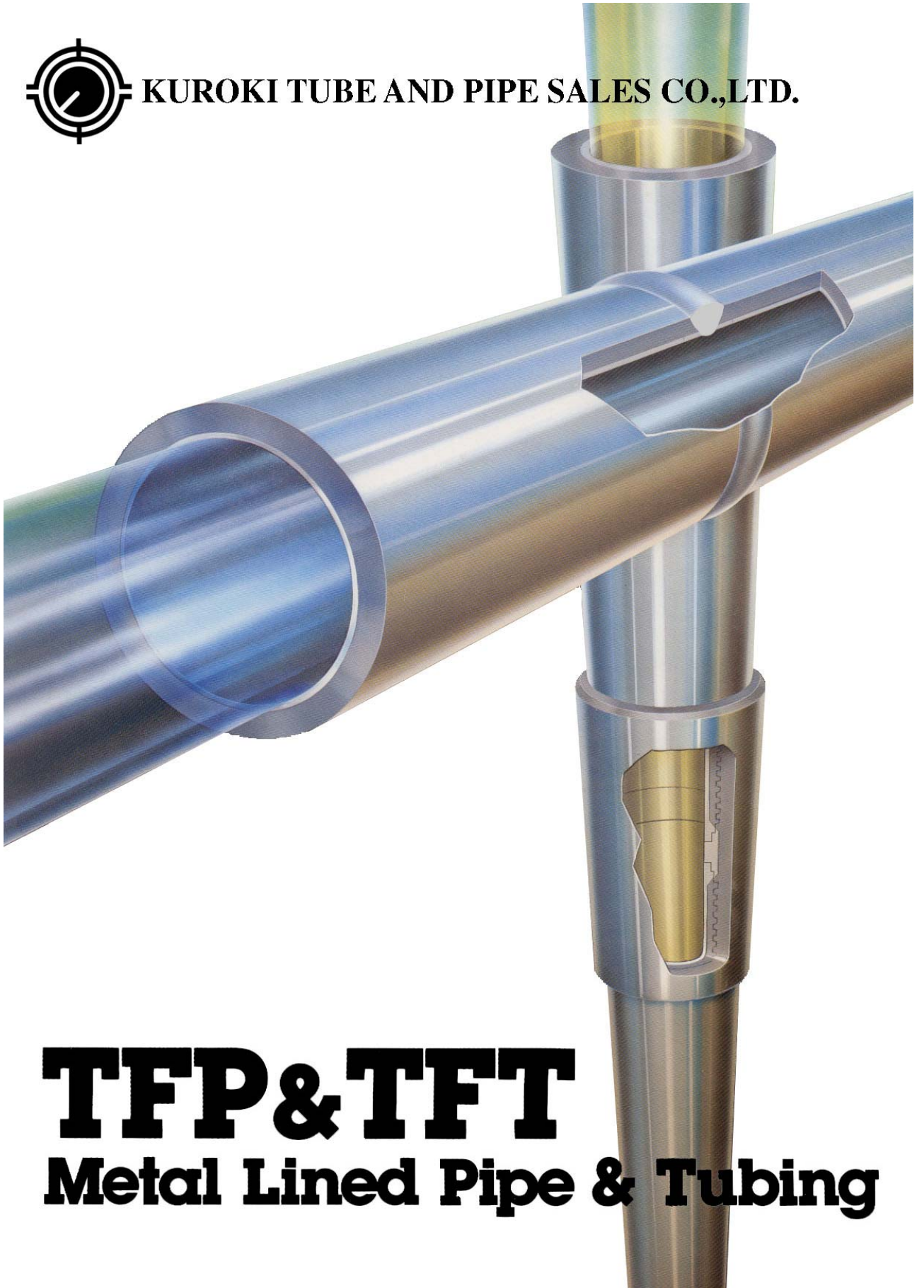




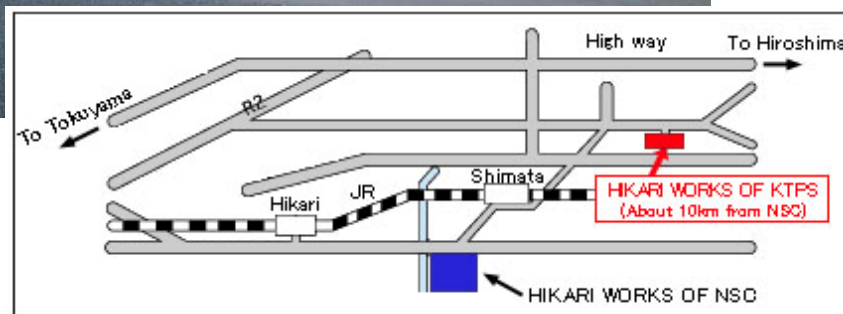
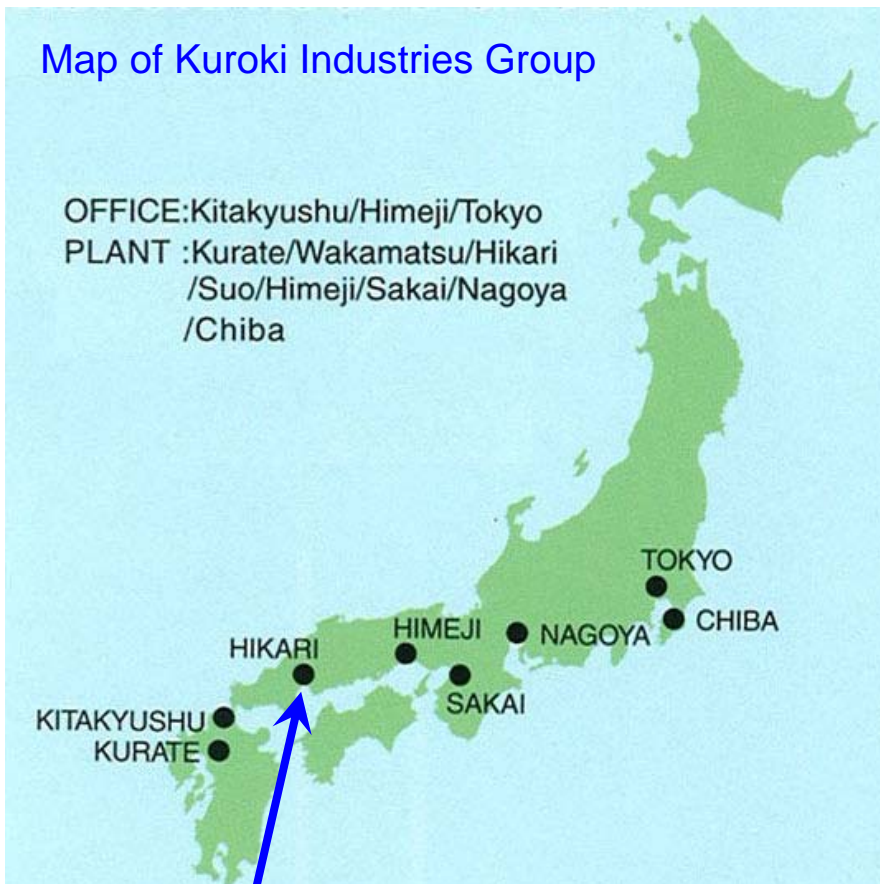
KUROKI TUBE AND PIPE SALES CO.,LTD.



TFP&TFT

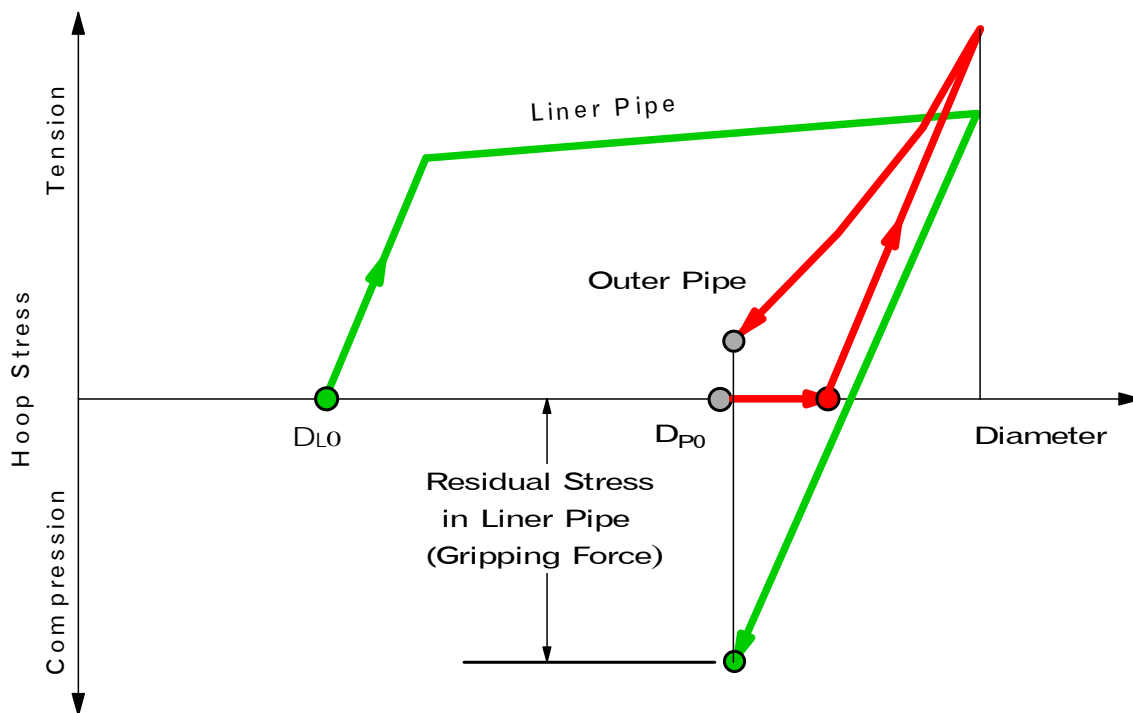
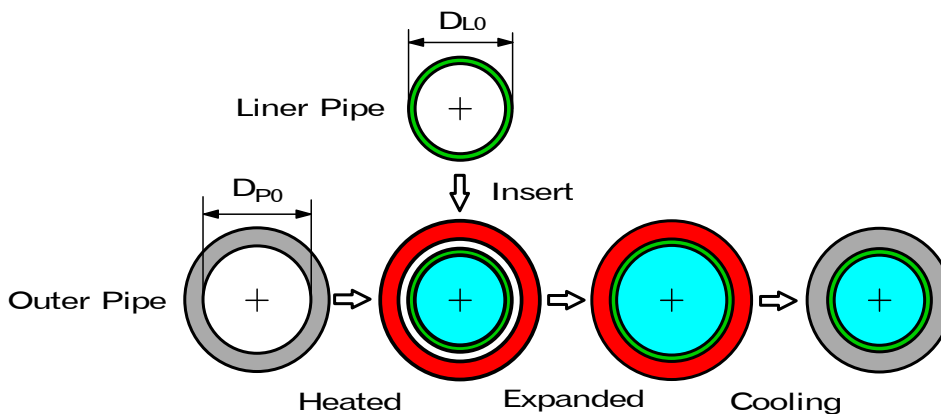
Metal Lined Pipe & Tubing

Location of Hikari Pipe Works of KTPS



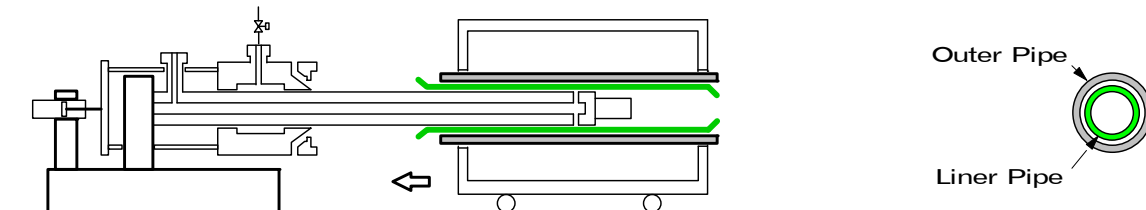
Thermo-Hydraulic Fitting Method for TFP & TFT

TFP: Tight Fit Pipe
 TFT: Tight Fit Tubing

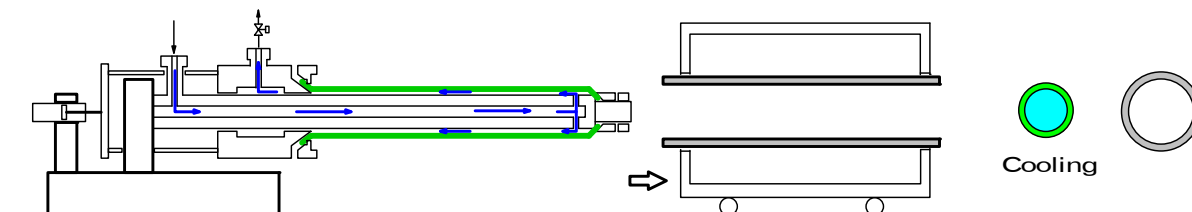


Thermo-Hydraulic Fitting Process

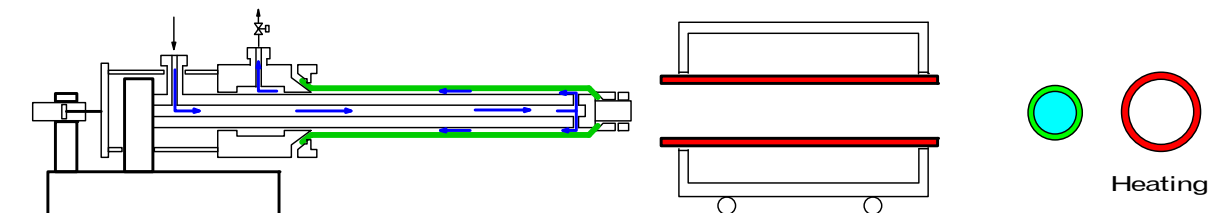
1. Set of Liner Pipe



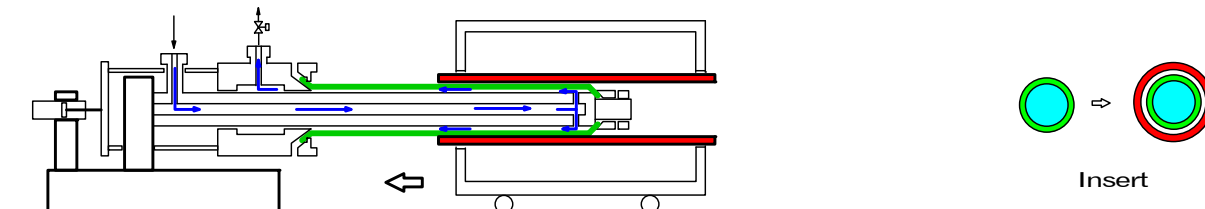
2. Liner Pipe Cooling



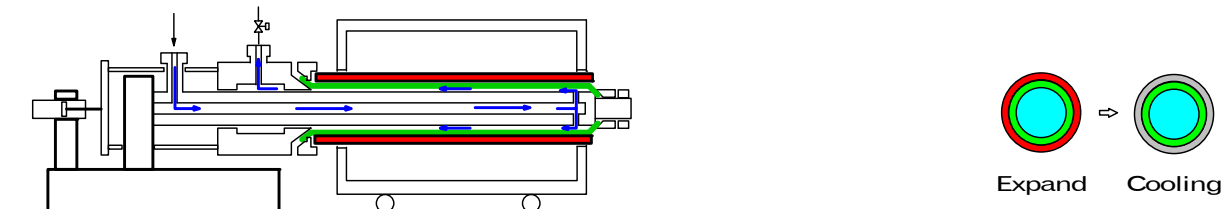
3. Outer Pipe Heating



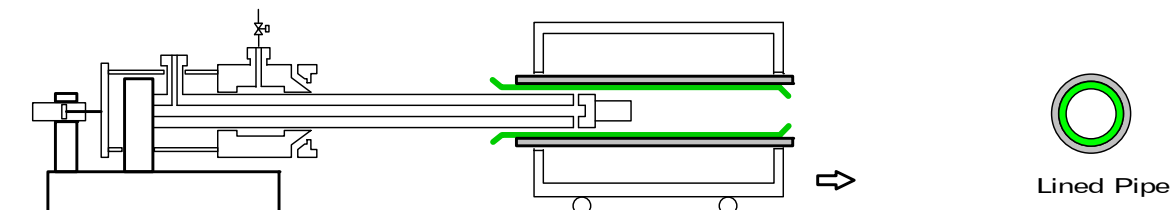
4. Insert of Liner Pipe



5. Hydraulic Expand and Cooling



6. Carry out of Lined Pipe

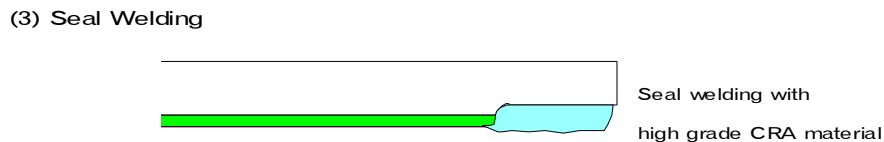


Thermo-Hydraulic Fitting Apparatus

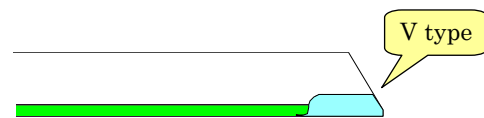


Manufacturing of TFP (CRA lined flow-line)

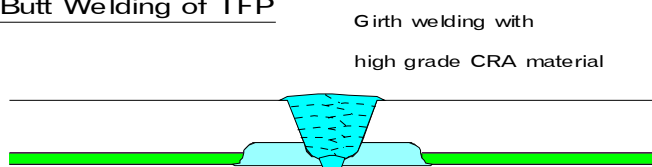
End Preparation of TFP



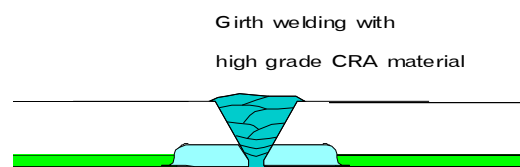
or



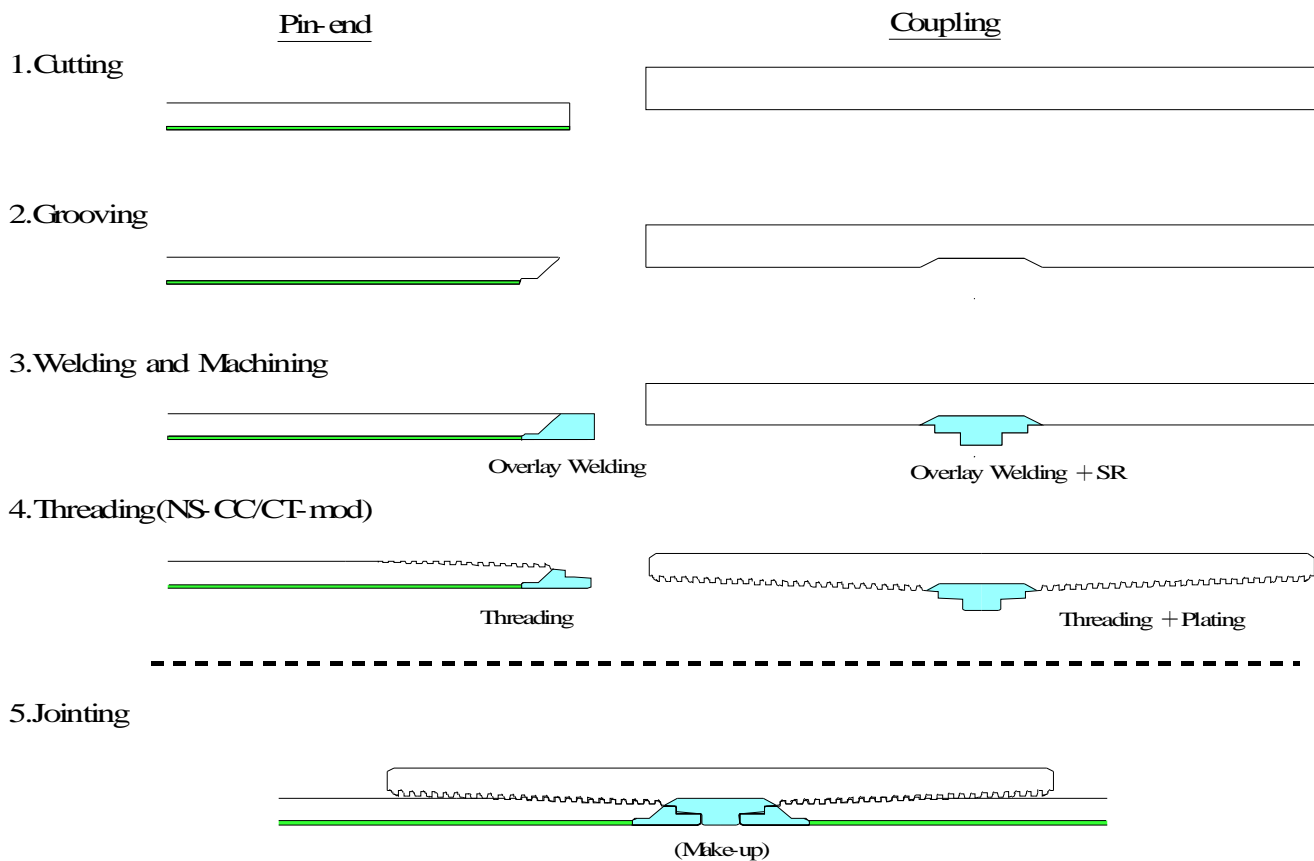
Butt Welding of TFP



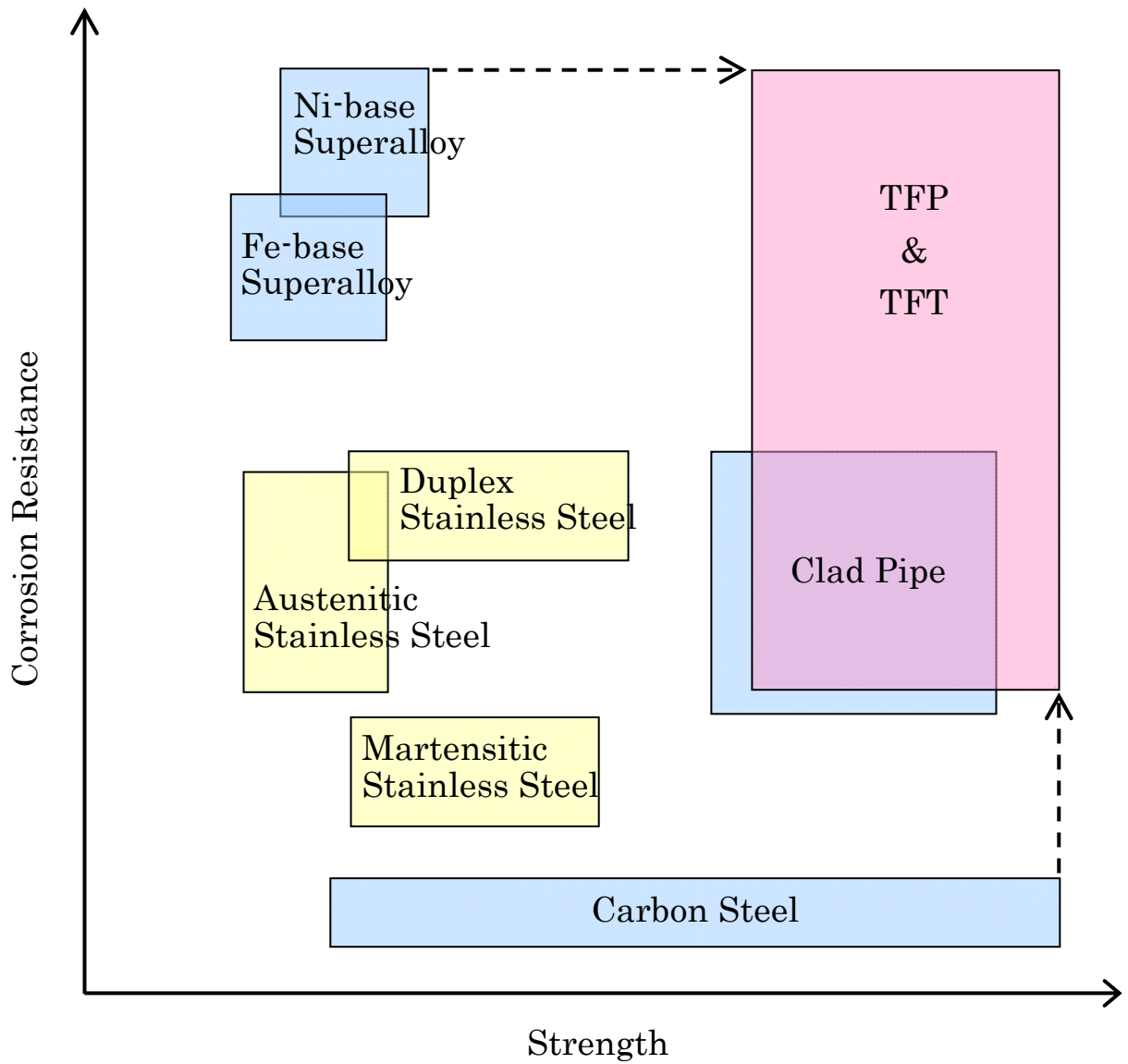
or



Manufacturing of TFT (CRA lined tubing)



Strength and Corrosion Resistance of TFP & TFT



HISTORY OF TFP(CRA lined flow-line) & TFT (CRA lined tubing)

1980-90 Kawasaki Heavy Industries, Ltd.(KHI) developed the production method with cooperation of NAM in the Netherlands (a subsidiary of Royal Dutch Shell)

The products contain an anti-corrosion high alloy liner which is mechanically fitted inside a carbon steel pipe by a thermal-hydraulic shrink-fit method. Trade names were TFP(Tight Fit Pipe) for flow line use and TFT(Tight Fit Tubing) for down hole tubing respectively in corrosive environments.

1985-95 The technology of TFP and TFT was licensed to Nippon Steel Corp.(NSC) . A plant of CRA lined products at NSC started to operate in 1990 and their products were marketed under their own brand name C-II pipe. Their practical supply of C-II is totally amounted as 1103tons which includes a typical serious corrosive reference at Mobile Bay, USA for Mobil E&P Inc., of 5.5" CRA flow line 1995. Due to low demand in the mid 1990s,NSC, however, decided at that time to stop manufacturing of C-II pipe.

from-2002 Because of improved market conditions, and strong focus nowadays on reducing maintenance cost as well as life cycle approach Kuroki Tube & Pipe Co., Ltd., in Japan (KTP) started manufacturing of the same type of CRA line pipe under exclusive license of KHI. They market their products – flow line pipe and down hole tubing for corrosive environments – under the same trade names used by KHI in the past i.e. TFP for flow line pipe and TFT for down hole tubing. ISO9001 was certified on February 2002. KTP is now developing and testing 7-5/8" CRA lined tubing with a premium joint under cooperation of technical institutes in Europe according to ISO test procedure.

May 2011 Kuroki Tube & Pipe (KTP) is re-organized in Kuroki group companies and Kuroki Industries Co. manufactures TFP and TFT at its Hikari pipe works and Kuroki Tube & Pipe Sales (KTPS) works for sales promotion of TFP and TFT as well.

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