

Ladle and dundish related equipment engineering achievements (As of March 2015)

Chuo Refractory Sales & Engineering Corporation

Delivery Year	Delivery Destination	Equipment Name	Specifications/Outline	Concept	Equipment Design	Instrumentation/Controls	Transport Control	Production Manag	Tracking	Additional Systems	Trial Run	Remarks
2004	GODO STEEL, Ltd. Funabashi Works	Ladle (3 vertical units) and TD preheating device fuel conversion	Kerosene > 13A	⊙	⊙	○					⊙	Gasification grant
	CHIYODA-STEEL CO.,LTD.	Ladle (2 vertical units) and TD preheating device fuel conversion	Kerosene > 13A	⊙	⊙	⊙					⊙	Gasification grant
2008	ITOH IRON & STEEL CO.,LTD. Tsukuba Works	TD preheating device fuel conversion	Kerosene > 13A (Ladle heating device new installation)	⊙	⊙	⊙					⊙	Gasification grant
		Vertical high efficiency ladle heating device (2 units)				⊙(PLC)	⊙					
	OSAKA STEEL CO., LTD. Osaka Okajima Works	TD preheating device fuel conversion	Kerosene > 13A	⊙	⊙	⊙					⊙	Gasification grant
		Horizontal ladle heating device (3 units)				⊙(PLC)	⊙					
2010	ASAHI INDUSTRIES CO., LTD.	TD preheating device fuel conversion	Reclaimed oil > 13A	⊙	⊙	⊙					⊙	
		Ladle preheating device (2 horizontal units, 1 vertical unit)				⊙(PLC)						
2011	CHIYODA-STEEL CO.,LTD.	Vertical ladle preheating device DOC installation (2 units)	(Development) 13A & PSA	⊙	⊙	⊙(PLC)					⊙	Ladle steel insertion capacity 50t
	KYOEI STEEL LTD. Nagoya Division	Vertical ladle preheating device DOC installation (1 unit)	13A & PSA	⊙	⊙	⊙(PLC)					⊙	Ladle steel insertion capacity 110t
2012	KYOEI STEEL LTD. Nagoya Division	Horizontal ladle heating device DOC installation (1 unit)	13A & PSA	⊙	⊙	⊙(PLC)					⊙	Ladle steel insertion capacity 110t
2013	TOKYO STEEL CO.,LTD. Utsunomiya Plant	Vertical ladle preheating device DOC installation (2 units)	13A & liquid oxygen	⊙	⊙	⊙(PLC)					⊙	(Subsidy business) Ladle steel insertion capacity 140t
	Chubu Steel Plate Co., Ltd.	Vertical ladle preheating device DOC installation (1 unit)	13A & PSA	⊙	⊙	⊙(PLC)					⊙	Ladle steel insertion capacity 200t
	OTANI STEEL CORPORATION	LD preheating device fuel conversion	Kerosene > 13A	⊙	⊙	⊙				Oxygen enrichment	⊙	Gasification grant
		TD preheating device fuel conversion										
	SHINKANSAI STEEL CORPORATION Sakai Works	Vertical ladle preheating device DOC installation (1 unit)	13A & liquid oxygen	⊙	⊙	⊙(PLC)					⊙	Ladle steel insertion capacity 140t
	KYOEI STEEL LTD. Yamaguchi Division	Vertical ladle preheating device DOC installation (2 units)	LSIHA & PSA	⊙	⊙	⊙(PLC)					⊙	(Subsidy business) Ladle steel insertion capacity 80t

2014	MUKOYAMA STEEL WORKS CO.,LTD.	Horizontal ladle heating device DOC installation (2 units)	13A & PSA	◎	◎	◎(PLC)					◎	(Subsidy business) Ladle steel insertion capacity 80t
	KANTO STEEL LTD.	Vertical ladle preheating device DOC installation (1 unit)	Kerosene & PSA	◎	◎	◎(PLC)					◎	(Subsidy business) Ladle steel insertion capacity 70t
		Horizontal ladle heating device DOC installation (1 unit)		◎	◎	◎(PLC)					◎	
	SHINKANSAI STEEL CORPORATION Sakai Works	Vertical ladle preheating device DOC installation (2 units)	13A & liquid oxygen	◎	◎	◎(PLC)					◎	(Subsidy business) Ladle steel insertion capacity 140t
JFE Bars & Shapes Corporation	Ladle preheating device combustion control system modification	Energy saving (fuel 13A)			◎(PLC)					◎		

Colored cells indicate equipment with installed with DOC