Testing of hotun tundishes to determine their maximum cold-water flow capacity

Prepared by:	**Kiwa Limited**
Prepared for:	**RA Tech UK Ltd**
Report Number:	**30913**
Date:	**10 August 2018**

Trust
Quality
Progress

Testing of hotun tundishes to determine their maximum cold-water flow capacity

Report number:	30913
Prepared for:	RA Tech UK Ltd
Date:	28 August 2018
Status:	Final

Prepared by:

T R Dennish	Principal Consultant

Approved by:

Iain Summerfield	Principal Consultant

Commercial in confidence

Kiwa Ltd
Kiwa House
Malvern View Business Park
Bishops Cleeve
Cheltenham
GL52 7DQ

Tel: +44 (0)1242 677877
Fax: +44 (0)1242 676506
E-mail: enquiries@kiwa.co.uk
Web: www.kiwa.co.uk

Executive Summary

A range of tundishes of novel design called ‘hotun’ were supplied by RA Tech UK Ltd. These have been tested to determine their maximum cold-water flow capacity in two different configurations.

The following results were obtained:

			Average Maximum flow (L/min)	
			Configuration	
Product	Inlet	Outlet	1	2
hotun sf	15 mm	22 mm	22.3	12.8
hotun hiflo sf	15 mm	32 mm	45.1	35.2
hotun xlsf	22 mm	32 mm	54.3	38.1

Where configuration 1 is with 300mm vertical pipe at outlet

And configuration 2 is with 90° elbow at outlet

Table of contents

1 Introduction

RA Tech UK Ltd have requested the maximum cold-water flow capacity of their range of hotun tundishes be determined. Kiwa received three tundishes for testing and have tested each of these in two configurations. This report documents this testing and results

2 Testing program

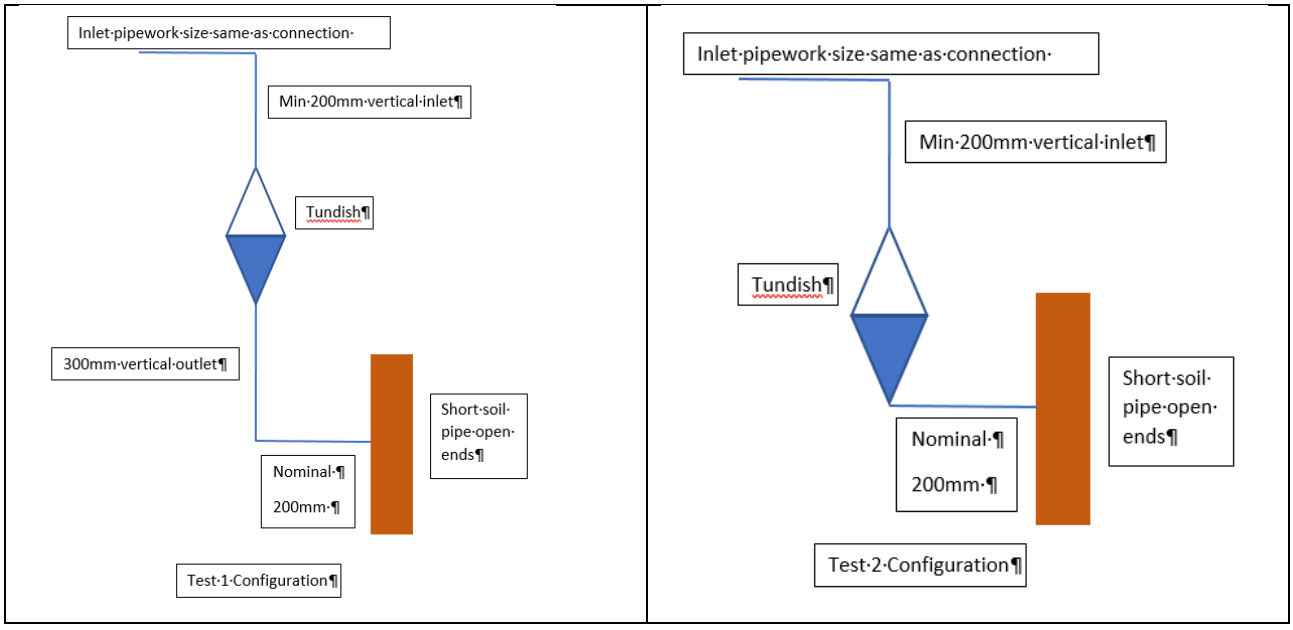
Three products were supplied for testing:

- hotun sf 15 mm inlet – 22 mm outlet
- hotun hiflo sf 15 mm inlet – 32 mm outlet
- hotun xlsf 22 mm inlet – 32 mm outlet

These are tundishes with an automatic closing device on the outlet to prevent odours etc coming back up the discharge pipe.

Each product was to be tested in two configurations:

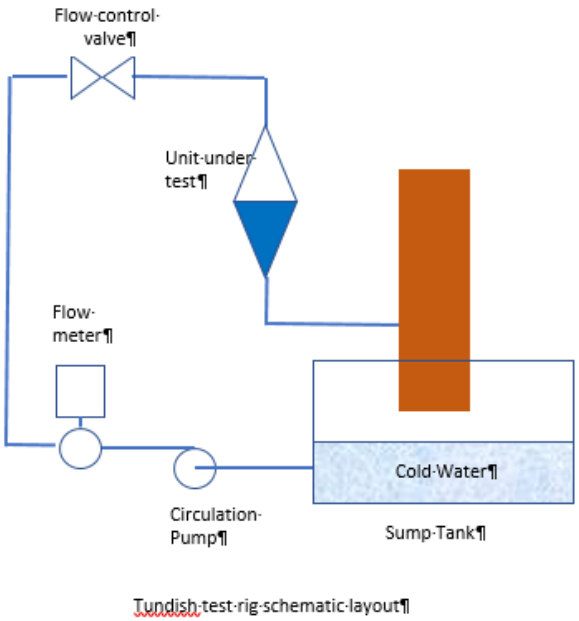
1. Testing with minimum 200 mm straight pipe on inlet and 300 mm vertical discharge to then elbow into nominal 200 mm horizontal into soil stack
2. Testing with minimum 200 mm straight pipe on inlet and close coupled elbow into discharge via nominal 200 mm horizontal into soil stack



Test Method

Each product was tested in each configuration at least two times, with notes and photographs taken of the water flow/level in the tundish.

The test rig is shown below. Cold water was circulated around the rig at a rate controlled using a hand valve and monitored on an accurate flowmeter.



Test rig layout

Each test was started at low flow and it was ensured that the lip and structs of the tundish were dry. The water pump was switched on with water flow set at zero or low flow and the flow was slowly increased stopping occasionally to photograph the state of the flow in the tundish. Notes were taken on the state of water in the tundish and any splashing or overflow occurring.

3 Results

3.1 Results Details

Test	1
Configuration	1
Date	6/8/2018 11:40
Unit under test	hotun hiflo sf
	
Max flow before overflow (L/min)	39.9

Test	2
Configuration	1
Date	6/8/2018 12:07
Unit under test	hotun hiflo sf
Max flow before overflow (L/min)	45.0

Test	3
Configuration	1
Date	6/8/2018 15:11
Unit under test	hotun hiflo sf
Max flow before overflow (L/min)	45.2

Test	4
Configuration	1
Date	6/8/2018 15:43
Unit under test	hotun sf
	
Max flow before overflow (L/min)	22.5

Test	5
Configuration	1
Date	6/8/2018 16:14
Unit under test	hotun sf
Max flow before overflow (L/min)	22.2

Test	6
Configuration	1
Date	6/8/2018 15:43
Unit under test	hotun sf
Max flow before overflow (L/min)	22.2

Test	7
Configuration	1
Date	7/8/2018 15:44
Unit under test	hotun xlsf
	
Max flow before overflow (L/min)	54.2 (occasional small dribbles from >50 L/min)

Test	8
Configuration	1
Date	7/8/2018 16:07
Unit under test	hotun xlsf
Max flow before overflow (L/min)	54.4 (occasional small dribbles from >50 L/min)

Test	9
Configuration	2
Date	8/8/2018 13:55
Unit under test	hotun xlsf
	
Max flow before overflow (L/min)	38.0

Test	10
Configuration	2
Date	8/8/2018 14:08
Unit under test	hotun xlsf
Max flow before overflow (L/min)	38.1

Test	11
Configuration	2
Date	8/8/2018 14:31
Unit under test	hotun hiflo sf
	
Max flow before overflow (L/min)	34.8

Test	12
Configuration	2
Date	8/8/2018 14:46
Unit under test	hotun hiflo sf
Max flow before overflow (L/min)	35.5

Test	13
Configuration	2
Date	8/8/2018 14:31
Unit under test	hotun sf
	
Max flow before overflow (L/min)	12.5

Test	14
Configuration	2
Date	8/8/2018 15:48
Unit under test	hotun sf
Max flow before overflow (L/min)	13.5

Test	15
Configuration	2
Date	8/8/2018 16:01
Unit under test	hotun sf
Max flow before overflow (L/min)	12.5

3.2 Results Summary

			Average Maximum flow (L/min)	
			Configuration	
Product	Inlet	Outlet	1	2
hotun sf	15 mm	22 mm	22.3	12.8
hotun hiflo sf	15 mm	32 mm	45.1	35.2
hotun xlsf	22 mm	32 mm	54.3	38.1

Where configuration 1 is with 300mm vertical pipe at outlet

And configuration 2 is with 90° elbow at outlet

Kiwa Gastec
Kiwa Ltd, Kiwa House,
Malvern View Business Park,
Bishops Cleeve, Cheltenham,
GL52 7DQ, UK

Tel +44 (0)1242 677877
Email enquiries@kiwa.co.uk

www.kiwa.co.uk