Approval Certificate

This is to certify, that the undernoted products have been approved in accordance with the relevant requirements of the GL Approval System.

Certificate No.	**95 078 - 14 HH**
Company	**ONTOP B.V.** **Oude Veerseweg 23** **4332 SH Middelburg, NETHERLANDS**
Product	**SPARK ARRESTER**
Type	**METALOTERM -- SP 80 / 1000**
Technical Data / Application	**TECHNICAL DATA** **Size range:** DN 80 to DN 1000 **Material:** X2CrNi18-10, 1.4301, AISI 304 X2CrNiMo17-12.02, 1.4404, AISI 316L X5CrNiMo17-12.02, 1.4401, AISI 316 X1CrNiMoCuN20-18-7, 1.4547, 254 SMO X1CrNiMoCu, 1.4539, AISI 904L **Temperature range:** -20°C up to 700°C* * Material selection dependent on the temperature and level of corrosiveness of flue gas and environment. **Finish:** 2B, 2R RANGE OF APPLICATION The above mentioned spark arrester may be used in the following piping systems: Exhaust systems
Approval Standard	Acc. to EN 1834-1: 2000 -Part1: Group II engines for use in flammable gas and vapour atmospheres.
Documents	Drawing-No.: AP 141156, dated. 05-11-2013 Test Report:Test Spark Arrester DN 150, dated 2014-03-27 ISO 9001.2008, Cert. No.: 103097-2011-AQ-NLD-RvA DNVGL-Ref.-No.: 13-030663
Remarks	PRODUCTION PLACES, MARKING, TECHNICAL DATA and REMARKS see Page 2.
Valid until	2019-05-19
File No.	XI.B.06

Germanischer Lloyd

Hamburg, 2014-05-19

i.V.

Olaf Drews

i.A. P. Gierhan

Peter Gierhan

Approval Certificate

Certificate No. **95 078 - 14 HH**

PRODUCTION PLACES

ONTOP B.V.
Oude Veerseweg 23
4332 SH Middelburg
NETHERLANDS

MARKING
Each spark arrester is to be permanently marked as follows:

• Manufacturer`s trade mark • Date of manufacturing • Diameter • Type • DNVGL- certificate no. • Flow direction •

TECHNICAL DATA

System diameter	Max temp	Exhaust gas mass flow ** [kg/h]		Exhaust gas volume flow ** [m3/h]		Flow speed [m/s]	
[mm]	[°C]	min	max	min	max	min	max
80		174	348	362	724	20	40
100		272	544	565	1131	20	40
130		460	919	956	1911	20	40
150		612	1224	1272	2545	20	40
180		881	1763	1832	3664	20	40
200		1088	2176	2262	4524	20	40
250		1700	3400	3534	7069	20	40
300	700	2448	4896	5089	10179	20	40
350		3332	6664	6927	13854	20	40
400		4352	8704	9048	18096	20	40
450		5508	11016	11451	22902	20	40
500		6800	13600	14137	28274	20	40
600		9792	19584	20358	40715	20	40
700		13328	26656	27709	55418	20	40
800		17408	34816	36191	72382	20	40
900		22032	44064	45804	91609	20	40
1000		27200	54400	56549	113097	20	40

**Calculated according to the following data

Density exhaust gas [kg/m3]	0,481
Temperature exhaust gas [°C]	450
Flow speed [m/s]	20 (min.) & 40 (max.)

Other mass- and volume flow calculations are possible due to variations in temperature and density of flow medium.
Temperature and density of flow medium may vary.

REMARKS
The selection of the spark arresters for the corresponding application and the proper assembly are to be in accordance with the instructions of the manufacturer.

Germanischer Lloyd

Hamburg, 2014-05-19

i.V. Olaf Drews

i.A. P. Gierhan Peter Gierhan