

SLUDGE TREATMENT ENGINEERING

Reference List

Siljan RotoMaster



Siljan RotoMaster SF 35

Siljan Allards AB

www.siljanallards.com

Siljan Allards

The rotary drum thickener Siljan RotoMaster (trade name in Sweden “Slasken”) was developed in Sweden in the late 1980-ies;

The first machine was installed in a waste water treatment plant in the town of Smedjebacken in 1989 for the thickening of municipal sludge before a digester.

This machine is still running and is in perfect condition, see picture below, and only the spray nozzles have been replaced due to wear, during these years.



The first Siljan RotoMaster, installed in 1989, in excellent condition and still in operation; The photograph is taken the winter of 2001; Mounted at the far wall a Siljan PolySave control unit, which significantly improves the performance and lowers the polymer consumption with 25-50 %.

A large number of Siljan RotoMaster have since 1989 been installed in Sweden and throughout the world;

The number equals about 150, and they have been installed in different applications such as municipal WWTP, in the pulp and paper industry, in the chemical industry and the food industry; In the following, a summary is made of these deliveries.

Examples of deliveries of the rotary drum thickener Siljan RotoMaster.

Country	Number	Machine Size	Application	
Sweden	6	SF 3	Municipal	
	25	SF 7	Municipal	
	19	SF 17	Municipal	
	3	SF 35	Municipal	
	1	SF 70	Municipal	
	1	SF 60	Municipal	
	14	SF 60	Paper mills	
	2	SF 17	Chemical plants	
	Norway	9	SF 17	Municipal
		3	SF 35	Municipal
2		SF 17	Food industry	
1		SF 3	Food Industry	
Denmark	1	SF 7	Municipal	
	3	SF 17	Municipal	
Finland	1	SF 7	Municipal	
Estonia	1	SF 35	Municipal	
Latvia	2	SF 35	Municipal	
Lithuania	2	SF 60	Municipal	
Germany	2	SF 7	Municipal	
	3	SF 17	Municipal	
	12	SF 35	Municipal	
	10	SF 60	Municipal	
Austria	1	SF 7	Municipal	
Poland	6	SF 60	Municipal	
	1	SF 17	Municipal	
Qatar	1	SF 7	Municipal	
China	3	SF 35	Municipal	
	7	SF 60	Municipal	
	6	SF 120	Municipal	
Great Britain	1	SF 80	Municipal	
	1	SF 60	Municipal	
	1	SF 35	Municipal	
Chile	1	SF 7	Municipal	
	2	SF 17	Food Industry	

Reference list, Examples of drum thickener Siljan RotoMaster installations in Scandinavian countries

Municipal waste water treatment plants in Sweden

<i>Customer</i>	<i>Model</i>	<i>Application</i>	<i>Type of sludge</i>	<i>% DS</i>
Smedjebackens Municipality, Bylandet	1 pc SF 17	Thickening before a digester	Mixed sludge	In: 1%, Out: 6-7%
Smedjebackens Municipality, Bylandet	1 pc SF 17	Thickening after a digester	Digested sludge	In: 3.5%, Out: 13%
Borås Municipality, Bollebygd	1 pc SF 17	Thickening before transport	Mixed sludge	In: 1-2%, Out: 11-12%
Mariestads Municipality	1 pc SF 17	Thickening	Mixed sludge	
Bengtfors Municipality, Gustavsfors	1 pc SF 7	Thickening before transport	Mixed sludge	In: 1%, Out: 7-8%
Halmstads Municipality, Getinge	1 pc SF 7	Thickening before transport to a digester	Mixed sludge	In: 0.6%, Out: ca 7%
Bergs Municipality, Gallhammar	1 pc SF 7	Thickening before transport	Mixed sludge	In: 1-2%, Out: 8-8.5%
Halmstads Municipality, Busör	1 pc SF 7	Thickening before transport to a digester	Surplus sludge	In: 1%, Out: 6-7%
Sollefteå Municipality, Hagesta	1 pc SF 17	Thickening before a digester	Mixed sludge	In: 4-6%, Out: 10-12%
Bengtfors Municipality, Skåpafors	1 pc SF 7	Thickening before transport	Mixed sludge	In: 1%, Out: 7-8%
Bengtfors Municipality, Bäckefors	1 pc SF 7	Thickening before transport	Mixed sludge	In: 0.7%, Out: 7.5-8%
Smedjebackens Municipality, Söderbärke	1 pc SF 7	Thickening before transport to a digester	Mixed sludge	In: 1%, Out: 6-7%
Timrå Municipality	1 pc SF 17	Pre-dewatering, before a centrifuge	Mixed sludge	In: 1.5%, Out: 6-8%
Töreboda Municipality, Torstorp	1 pc SF 17	Pre-dewatering	Primary sludge	In: 0.7%, Out: 5.1%

<i>Customer</i>	<i>Model</i>	<i>Application</i>	<i>Type of sludge</i>	<i>% DS</i>
Eslövs Municipality, Ellinge	1 pc SF 17	Thickening before transport	Digester sludge	In: 1.5 %, Out: 10-11%
Nässjö Municipality, Forserum	1 pc SF 7	Thickening before transport	Mixed sludge	In: 1.2 %, Out: ca 6 %
Uppsala Municipality, Kungsängen	1 pc SF 70	Thickening before a digester	Mixed sludge	In: 2.6 %, Out: 8.4 %
Vara Municipality	1 pc SF 17	Thickening	Mixed sludge	
Alingsås Municipality, Sollebrunn	1 pc SF 7	Thickening before transport	Mixed sludge	
Svenljunga Municipality, Sexdrega	1 pc SF 7	Thickening before transport	Mixed sludge	
Svenljunga Municipality Mobil enhet	1 pc SF 7	Thickening before transport	Mixed sludge	
Gislaveds Municipality	1 pc SF7	Thickening before a digester	Mixed sludge	In: 1 %, Out: 6 %
Varbergs Municipality, Veddige	1 pc SF 7	Thickening before transport	Surplus sludge	In: 1 %, Out: 6 %
Halmstads Municipality, Oskarström	1 pc SF 7	Pre-dewatering before a centrifuge	Mixed sludge	
Smedjebackens Municipality, Bylandet	1 pc SF 17	Separation of solid particles in septic sludge.	Septic sludge	In: ca 1 %; Out: ca 5 %; No polymer addition
Kalmar Municipality	1 pc SF 35	Thickening	Mixed sludge	
Kristianstads Municipality	1 pc SF 35	Thickening before transport	Primary sludge	
Enköpings Municipality, Håbo	1 pc SF 7	Thickening	Mixed sludge	
Degerfors Municipality	1 pc SF 7	Thickening	Mixed sludge	
Rättviks Municipality, Lerdal	1 pc SF 17	Thickening before a digester	Mixed sludge	In: 1 %, Out: 5 %

<i>Customer</i>	<i>Model</i>	<i>Application</i>	<i>Type of sludge</i>	<i>% DS</i>
Vimmerby Municipality	2 pcs SF 17	Thickening before a digester	No 1: Mixed sludge No 2: Primary sludge from brewery	In: 1.5 %; Out: ca 6 %
Lunds Municipality	1 pc SF 35	Thickening before a digester	Mixed sludge	In: 1.5-4.5%, Out: 9-10%
Lunds Municipality	1 pc SF 60	Thickening before a digester	Mixed sludge	In: 1-4%; Out: 8-12%
Oskarshamns Municipality	2 pcs SF 17	Thickening before a digester	1)Primary sludge 2)Surplus sludge	1)In: 2 %; Out: 6-8 % 2)In: 0.5 %; Out: 6-8 %
Falköpings Municipality, Hulesjön	1 pc SF 7	Thickening before transport	Mixed sludge	In: 1 %, Out: > 8 %
Borgholms Municipality, Böda	1 pc SF 7	Thickening before transport	Mixed sludge	
Nässjö Municipality	1 pc SF7	Thickening before transport	Mixed sludge	In: 1-1.5 %; Out: 6-8 %
Vänersborgs Municipality	1 pc SF 17	Thickening before a digester	Mixed sludge	
Lilla Edets Municipality, Lödöse	1 pc SF 7	Thickening before transport	Mixed sludge	In: ca 1 %; Out: ca 6 %
Marks Municipality, Sätla	1 pc SF 7	Thickening before transport	Mixed sludge	
Karlshamns Municipality, Sternö	1 pc SF 17	Thickening before a digester	Primary sludge	
Karlstads Municipality, Väse	1 pc SF 3	Thickening before transport	Primary sludge	
Öland, Grönhögen	1 pc SF 7	Thickening before transport	Primary sludge	
Göteborgs Municipality, Rörö	1 pc SF 7	Thickening before transport	Primary sludge	
Ludvika Municipality	1 pc SF 17	Thickening	Primary sludge	In: ca 1 % Out: ca 6 %
Göteborgs Municipality, Hyppeln ARV, Öckerö	1 pc SF 7	Thickening before transport	Primary sludge	In: 1-1,5% Out: ca 8%

<i>Customer</i>	<i>Model</i>	<i>Application</i>	<i>Type of sludge</i>	<i>% DS</i>
Timmersdala Timmersdala ARV	1 pc SF 3	Thickening/ De-watering	Primary sludge	In: 1-1,5% Out: 6-8%
Stockholm Vatten, Telegrafholmen	1 pc SF 3	Thickening before transport	Primary sludge	In: 0,8-1,5% Out: 6-8%
Nora,	1 pc SF 7	Thickening	Primary sludge	In: 1-2% Out: 6-8%
Norrhult, Småland	1 pc SF 3	Thickening before a centrifuge	Primary sludge	In: Ca 1% Out: Ca 6%
Öland, Mörbylånga ARV	1 pc SF17	Thickening	Primary sludge	In: 1-2% Out: Ca 4%

Paper mills in Sweden:

Holmens Bruk, Bråviken	10 pcs SF 60	Thickening	Fibre containing water	In: 2.4%; Out: 6-7%
Holmens Bruk, Hallstavik	3 pcs SF 60	Pre-dewatering before filter presses	Fibre containing water	In: Ca 1.5%; Out: 5-7%

Chemical industry in Sweden:

Perstorp industrial waste water treatment plant	1 pc SF 17	Thickening	Biological sludge	
Casco Nobel waste water treatment plant	1 pc SF17	Thickening	Biological sludge	

Municipal waste water treatment plants in Norway:

Lillehammers Municipality Norge	2 pcs SF 35	Thickening	Mixed sludge	In: 2.4%; Out: 6-7%
A/S Maarud Norge	2 pcs SF 17	Thickening	Mixed sludge	

Mobile sludge thickening in Norway:

Huwer Norge A/S Norge	1 pc SF 17	Mobile thickening on sewage lorry	Septic sludge	In: 2-3%; Out: 12-13%
ReCo A/S Tynset Norge	2 pcs SF 17	Mobile thickening on sewage lorry	Septic sludge	In: 2-4%; Out: 11-13%
Sandnes Transport Eldså Norge	2 pcs SF 17	Mobile thickening on sewage lorry	Septic sludge	In: 2-4%; Out: 11-13%
Hadeland Bilselskap Norge	2 pcs SF 17	Mobile thickening on sewage lorry	Septic sludge	In: 2-4%; Out: 11-13%
Surnadal Transport A/S Norge	1 pc SF 35	Mobile thickening on sewage lorry	Septic sludge	In: 2-4%; Out: 11-13%

Food processing industry in Norway:

Delikat Fabrikker A/S Norge	1 pc SF17	Thickening/ De-watering	Calcium precipitated bio sludge	In: 4-5%; Out: 12-14%
NAPO A/S Gjøvik Norge	1 pc SF 17	Pre-dewatering Before belt press	Mixed sludge	In: 1%; Out: 5-7%
Tine Meieri, Norge	1 pc SF 3	Straining	Diary residue sludge	

Municipal waste water treatment plants in Denmark:

Rödninge Municipality	1 pc SF17	Thickening before transport	Biological sludge	In: 0.8%; Out: 6-8%
Fredrikshavne Municipality	2 pcs SF 17	Pre-dewatering	Mixed sludge	

Municipal waste water treatment plant in Finland:

Mariehamn, Åland	1 pc SF 7+	Thickening/ dewatering	Primary sludge	In: 0,8-1,5% Out: 6-8%
------------------	------------	------------------------	----------------	---------------------------

Summary of 21 years (1988-2009) of experience with the rotary drum thickener Siljan RotoMaster

- **Siljan RotoMaster has shown to perform in an excellent way when used for sludge thickening, predewatering or dewatering in municipal WWTP:s, in paper mills, in chemical plants and in the food industry.**
- **The Siljan RotoMaster machines perform in a very reliable way, with extremely low frequency of process disturbances; The maintenance required is a weekly cleaning of the filter cloth of the drum, using high pressure water.**
- **Because of the low rotation rate of the drum, about 10 rpm, there is very little wear on the different components; The service life of these components has, by experience, shown to be very long, more than 10 years; It is, however, advisable to have some spare spray nozzles, if some get too clogged; Such spare nozzles can be included in the delivery of a Siljan RotoMaster.**
- **The performance of the materials selected is very good, with no corrosion; This means e.g. that the AISI 304 stainless alloy used for the vessel and the metal parts of the drum performs very well in municipal applications; The same goes for the brass tips of the nozzles; However, in paper mills, where the temperature is higher and some chlorides can be present in the sludge, it is advisable to use AISI 316 for all metal components in contact with the sludge.**

Since the year of 2000, Siljan RotoMaster has to an increasing extent been equipped with the control unit Siljan PolySave. This has further improved the performance of the RotoMaster machine, when it comes to thickening performance, polymer consumption and ease of handling.

Today, Siljan RotoMaster+PolySave constitutes the most efficient system for sludge thickening and pre-dewatering on the market.

Contact us for more technical/economical information or a quotation.

Siljan Allards AB

Brändavägen, SE-79532 Rättvik, Sweden;

Tel: +46 248 12535;

Fax: +46 248 13785

E-mail: info@siljanallards.com; Web site: www.siljanallards.com