



**Comparison of the Impulse Storm-A system  
with the self-expanding foam firefighting system and the traditional tank fire extinguishing.**

**Table based on the NFPA official data.**

<b>DESCRIPTION</b>	<b>FIXED, SEMI-FIXED, MOBILE</b>	<b>SELF-EXPANDING FF SYSTEM</b>	<b>IMPULSE-STORM-A</b>
System type	Single flow-through	One-shot and flow-through	Single flow-through (one-shot possible, but not need)
Foam application device	Foam chamber, foam pourer, monitor	Continuous Linear Nozzle (foam ring)	Any optimum for a tank configuration
Foam application pattern	Point-like	Curtain-like along the inner tank shell under permanently pressure CO <sub>2</sub> 16 bar.	Curtain-like along the inner tank shell. Any pressure and any gas in the mode standby exclude.
Foam blanketing pattern	Radial diverging blanketing	Inward center blanketing	Any optimum for a tank configuration
Fire penetration	Decreasing momentum	Increasing super high momentum	Any level momentum for a tank configuration.
Inner tank shell cooling	n/a	Very effective	Any need level. Probably double cooling of an internal and external wall of the tank at once time.
Wall effect	NFPA 11, A.5.3.4.3: Foam can fail to seal against the tank shell as a result of does not exist prolonged free burning to agent discharge.	Does not exist	Does not exist
Tank types	Cone roof and floating roof	Cone roof and floating roof	Any
Foam application rates	4, 1 l/min/m <sup>2</sup> - 12,2 l/min/m <sup>2</sup>	12,8 l/min/m <sup>2</sup> - 34,3 l/min/m <sup>2</sup>	Any optimum
Recommended application time	Minimum 55 minutes (gasoline)	Maximum 2 minutes up to 60 m Maximum 3 minutes over 60 m	Up to 1 minutes up to any level.
Preparation time from alarm signal	From 10 minutes to several hours	10 seconds	1 second
Extinguishing time	From 10 minutes tq hours/days	Less than 3 minutes	25 seconds
Life and property loss	Severe losses	Minor stored material loss only	Minor stored material loss only
Foam concentrate (3 % ) for 25 m dia tank	Type II 3,3 m <sup>3</sup> , Type III 6,2 m <sup>3</sup>	0,37 m <sup>3</sup>	0,22 m <sup>3</sup>
Reliability	Low	Very high	Up to 100%, reason for refusal is unknown



Maintenance	High	Low to zero	Low to zero
Operation costs	High	Low	Low to zero
Fire water pump, water supply	Need	Not needed, no seawater used	Not need, used any foam and any water.

Table based on own additional analysis.

Parameters	other SEFS	Impulse Storm-A
Size of foam vessel need for the extinguishment of the full surface fire of a 40.000 cubic meters storage oil tank.	120 m <sup>3</sup>	15 m <sup>3</sup>
Delay between the breakout the fire and the actuation of the system	8 – 10 seconds	0,5 – 2 seconds
After the actuation, the extinguishment time is done at all sizes of tanks.	60 – 120 seconds	25 seconds
The foam vessel stay permanently under pressure:	16 bar	zero
Opportunity to dispersion firefighting powder or only water for cooling	not	yes
Type foam use	only one type from produced	any
Time recharge	Unknown, not less some days.	30 minutes
Staff for recharge	Only produced company	Users staff