



LNG business unit

Viafin history in LNG

M7 Offshore AS, est 2006 in Norway

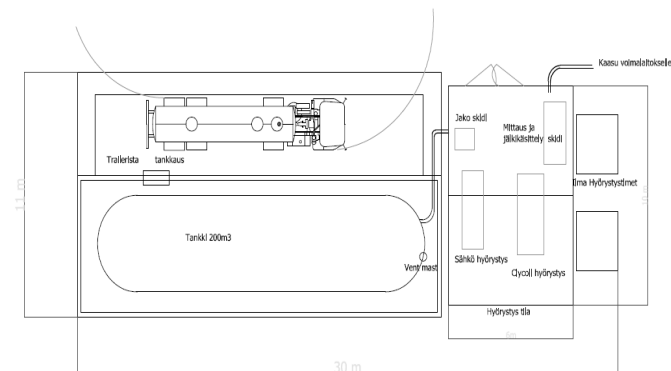
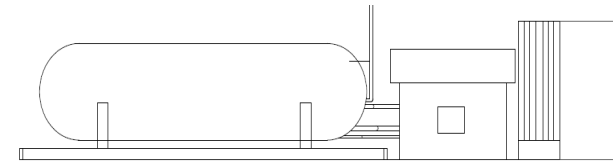
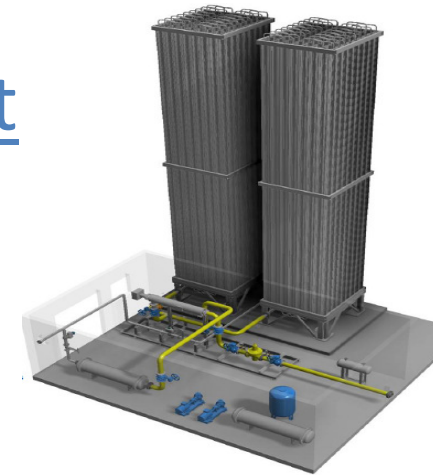
Engineering company for LNG and O&G

- **Viafin M7 starts in 2010 in Norway**
 - **Main business in marine LNG**
 - **Hamworth, Wärtsilä etc.**
 - **M7 sold to Citec 2014**
 - **Viafin continues in LNG from Finland**
 - **Pori, Raahe, Tornio, Pori industry park**
 - **Export's to Holland**
-

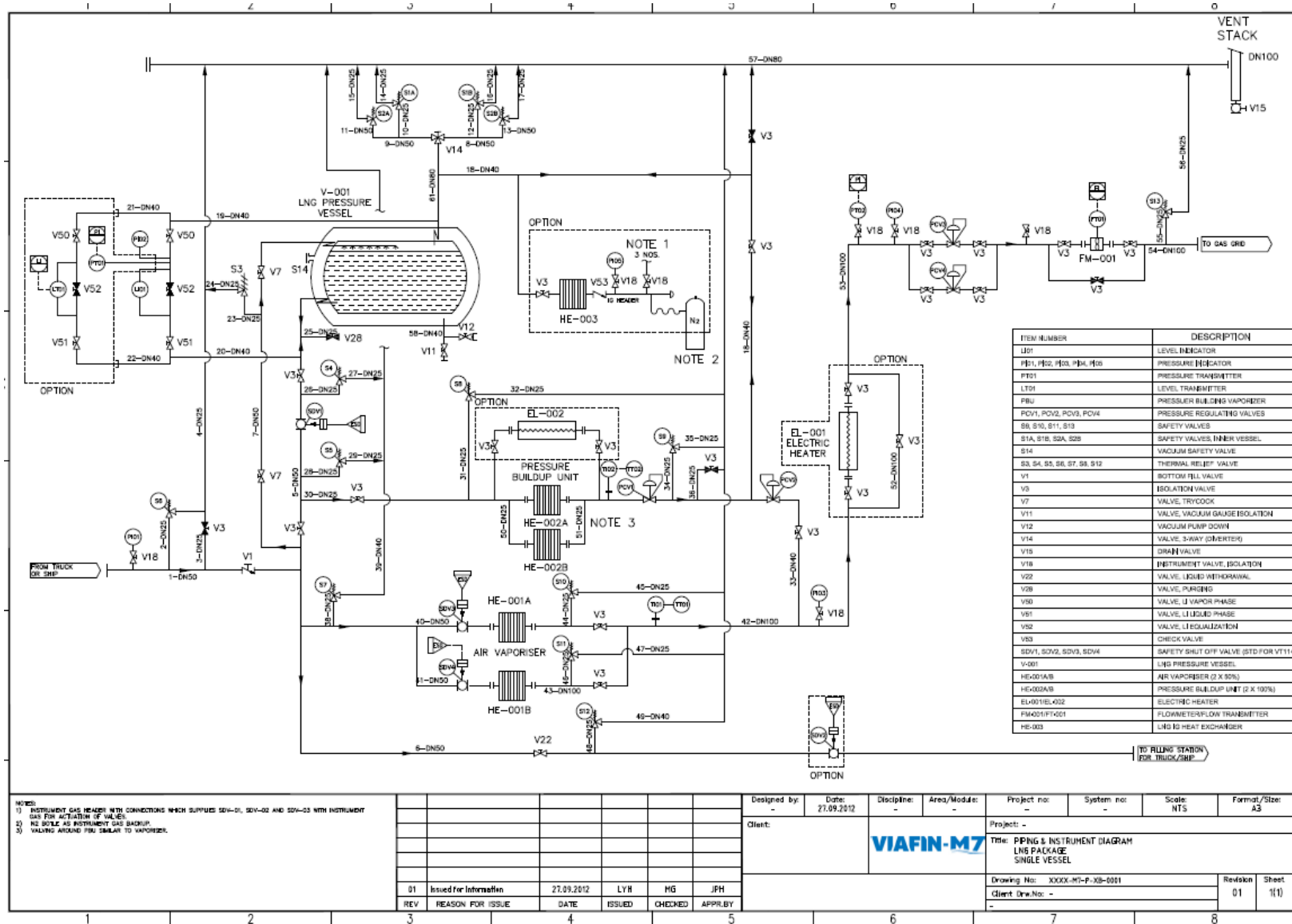


Viafin LNG Business unit

- Pre-feasibility study
 - Consultation for commercing and planning the terminal
- Desing and engineer of the unit (On- and offshore)
 - Full packet of engineering data, "one stop shop"
- Tankit
 - On shore terminaal tanks 50-2000 m3
 - Vertical and horizontal orientation
 - Offshore and Marine tanks on demand
 - Integrated evaporations units
 - Cold boxit for retaining LNG
- Evaporators
 - Ambient, clycoli-cycle, eletrical "buy-in"
- Piping
 - Pipe prefab's
 - Insulation and supports as per engineering data
 - Valves and armatures
- Installation, Comissioning ja After sales
 - In house installation unit
 - Service, upgrade, update sparepart projects
- Automaation from the network (subcontracted)



Flow, Piping & Instrument Diagram



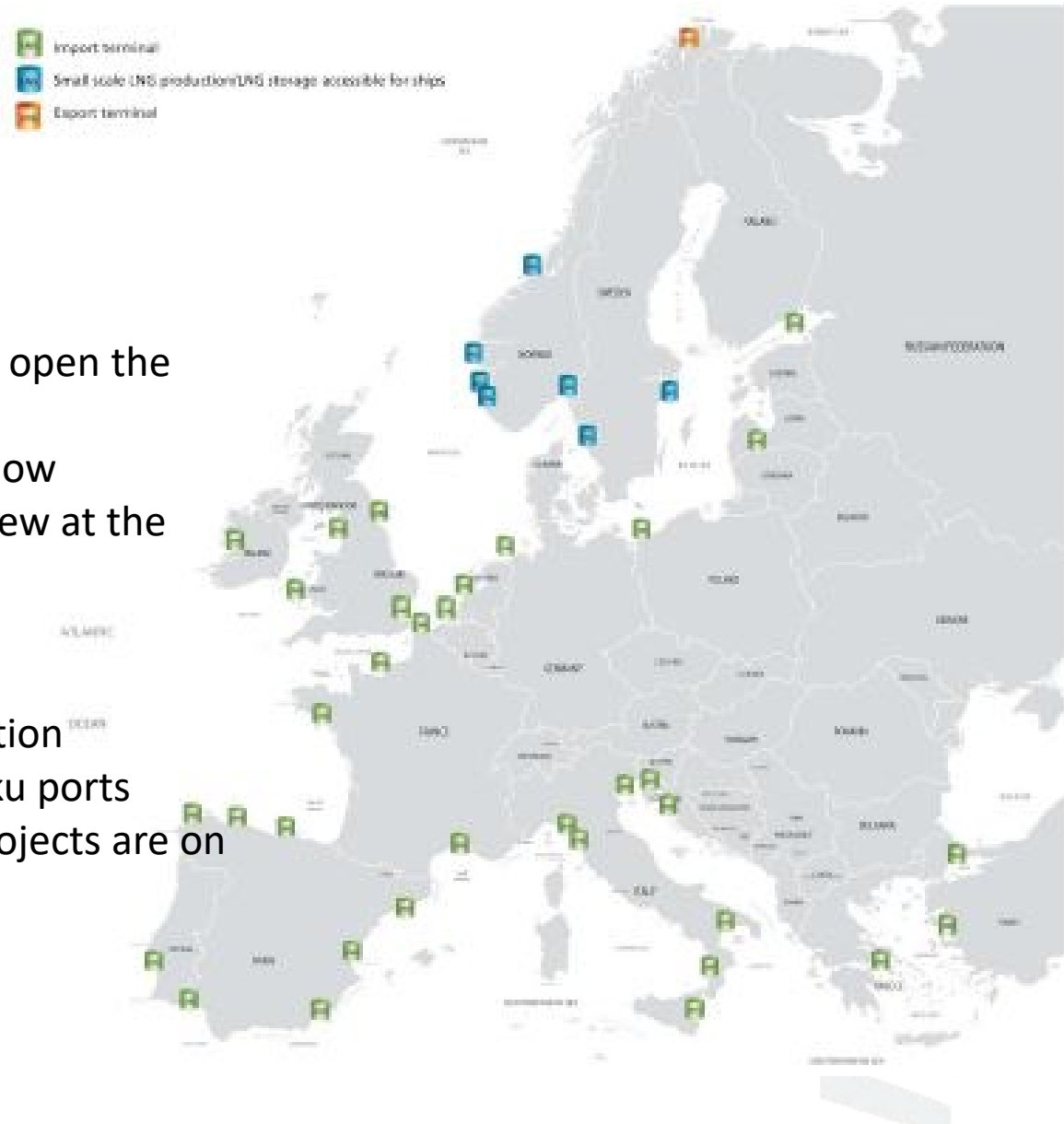
Small Scale LNG regas system



European LNG terminals

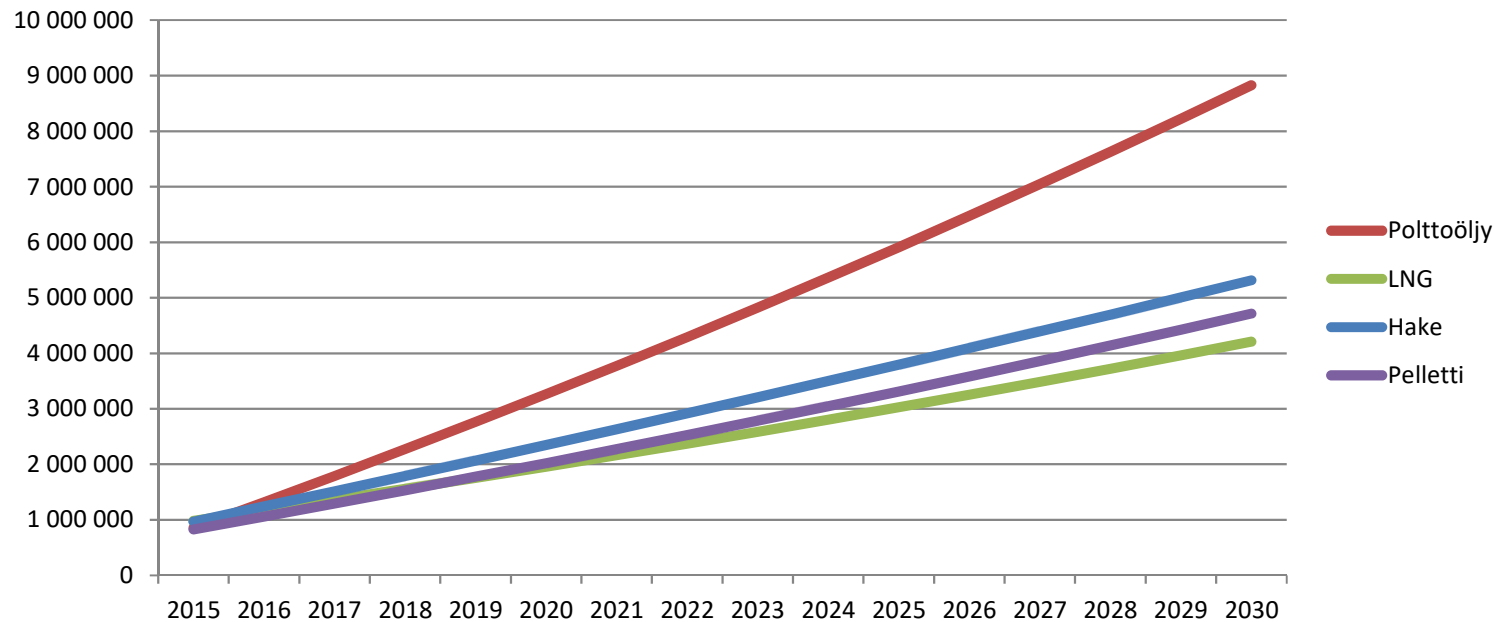
-Terminals in Finland

- Pori 2015
- Tornio 2016
- Raahе 2018
- Pansio 2019?
- Hamina Finland 2020
- Fact is that once terminals are open the consumption follows
- Infrastructures are being built now
- Existing installations are just few at the moment
 - Vaasa + Stormosse
 - Harjavalta 300m³ + evap
 - Porvoo Sköldvik liquidfaction
 - Helinsiki, Vuosaari ja Turku ports
 - Vantaa-Jyväskylä-Oulu projects are on



Feasibility calculation of potential powerplant

Cumulative costs between fuel alternatives for 6MW Power plant 2015-2030



Natural gas price in Russia for industry is max. 7,5 €/MWh (by the law)

- At Siperia at new powerplants pays about ~5€/MWh
- USA, Henry Hub gas is 10€/MWh, at Norway "street price is" ~9€/MWh

LNG transported to Rovaniemi ~ 40€/MWh or Harjavalta ~38 €/MWh

⇒ Basic small scale terminal payback time is ~5v

- LNG street price in Norway ~30€/MWh at power station



Pay back calculation

Investointilaskelma_LNG_Polttoöljy.xlsx - Read-Only - Excel

AutoSave | File | Home | Insert | Page Layout | Formulas | Data | Review | View | Help | Tell me what you want to do

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Taustatiedot																	
Energian kulutus																	
v2015	5 000	MWh															
Kasvu-% / v	2,0 %	%															
Energioiden hyötysuhteet																	
Polttoöljy	0,87																
LNG	0,91																
Riskas																	
Hinta / MWh	64,0	€/MWh															
Käytössä v2015-	2017																
Keyyt																	
Hinta / MWh	87,0	€/MWh															
Käytössä vuodesta	2018																
LNG																	
Polttoöljy	33	€/MWh															
Vero	11,5	€/MWh															
Hinta yhteensä	44,5	€/MWh															
Huoltokulut + lämmitys / jäähdytys																	
Polttoöljy	20 000	€/v															
LNG	8 000	€/v															
LNG-alkuinvestointi	1 100 000	€															
It (LNG) = 15MWh																	
Tarjotut hinnat LNG:lle (veroton)																	
AGA, Pori 2015	50,70																
AGA, Tukholma	57,12																
Gasum	62,67																
Laskelma																	
Kustannuslaskelma - polttoöljy (€)																	
Kulutus (MWh)	5 000		5 100	5 202	5 306	5 412	5 520	5 631	5 743	5 858	5 975	6 095	6 217	6 341	6 468	6 597	6 729
Polttoöljy tarve (MWh)	5 747		5 862	5 979	6 099	6 221	6 345	6 472	6 602	6 734	6 868	7 006	7 146	7 289	7 435	7 583	7 735
LNG tarve (MWh)	5 495		5 604	5 716	5 831	5 947	6 066	6 188	6 311	6 438	6 566	6 698	6 832	6 968	7 108	7 250	7 395
Kustannuslaskelma - LNG (€)																	
Kulutus	244 286		249 171	254 155	259 238	264 423	269 711	275 105	280 607	286 220	291 944	297 783	303 739	309 813	316 010	322 330	328 776
Huoltokulut	8 000		8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000
Yhteensä	252 286		257 171	262 155	267 238	272 423	277 711	283 105	288 607	294 220	299 944	305 783	311 739	317 813	324 010	330 330	336 776
Kassavirta-skenaariot (€)																	
Vuositraittien																	
Polttoöljy	387 816		395 172	402 676	550 604	561 216	572 040	583 081	594 343	605 830	617 546	629 497	641 687	654 121	666 803	679 739	692 934
LNG	1 352 286		257 171	262 155	267 238	272 423	277 711	283 105	288 607	294 220	299 944	305 783	311 739	317 813	324 010	330 330	336 776
Erotus	-964 470		138 001	140 521	283 366	288 793	294 529	299 976	305 735	311 610	317 602	323 714	329 949	336 308	342 794	349 410	356 158
Kumulatiivinen																	
Polttoöljy	387 816		782 989	1 185 664	1 736 268	2 207 484	2 869 525	3 452 606	4 046 040	4 650 270	5 275 325	5 922 112	6 593 739	7 290 210	8 011 521	8 757 760	9 529 034
LNG	1 352 286		1 609 457	1 871 612	2 138 850	2 411 273	2 688 984	2 972 089	3 260 697	3 554 916	3 854 860	4 160 643	4 473 382	4 793 195	5 114 205	5 444 535	5 781 311
Erotus	-964 470		-826 469	-685 948	-402 582	-113 788	180 541	480 517	786 252	1 097 862	1 415 464	1 739 179	2 069 127	2 405 435	2 748 229	3 097 638	3 453 796
Investoinnin takaisinmaksuaika (v)	5,4																
Skenaario II (Viafin investoi laitokseen)																	
Kurikan vuokra investoinnista	10,0 %																
Kurikan kaupunki																	
Kulutus	244 286		249 171	254 155	259 238	264 423	269 711	275 105	280 607	286 220	291 944	297 783	303 739	309 813	316 010	322 330	328 776
Huoltokulut	8 000		8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000	8 000
Vuokra Viafinille	110 000		110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000
Kassavirta	362 286		367 171	372 155	377 238	382 423	387 711	393 105	398 607	404 220	409 944	415 783	421 739	427 813	434 010	440 330	446 776
Kum.	362 286		729 457	1 101 612	1 478 850	1 861 273	2 248 984	2 642 089	3 040 697	3 444 916	3 854 860	4 270 643	4 693 382	5 120 195	5 554 205	5 994 535	6 441 311
Erotus (vs polttoöljy)	25 530		53 531	84 052	257 418	436 212	620 541	810 517	1 006 252	1 207 862	1 415 464	1 629 179	1 849 127	2 075 435	2 308 229	2 547 638	2 793 796
Viafin																	
Investointi	1 100 000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vuokratuotot	110 000		110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000
Kassavirta	-990 000		110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000	110 000
Kum.	-990 000		-880 000	-770 000	-660 000	-550 000	-440 000	-330 000	-220 000	-110 000	0	110 000	220 000	330 000	440 000	550 000	660 000

Kumulatiiviset kustannukset

Plot Area

Few photos form the shop

Key data's:

Weight's up to 320t
Lenght max ~50 m
Diameter max ~9 m

Mechanized welding processes for CS, SS, Ni9 alloys
EN3834-2 and ISO 9001



Recent deliveries

SSAB, Raahe terminal

2 x 750 m³ LNG tanks
Dia 6m L =35m
Weight 180 t / each



Van Der Kamp B.V Eco Delta

M LNG tank 325m³
Dia 7,7m L=13m
Weight 100 t

