

Sellutehtaan energiantuotannon Industrial Internet-ratkaisut

**Beyond Automation: Next Wave of
Digitalization in Power Production**

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Today, our Customers are extensively utilizing our Industrial Internet Capabilities



Global megatrends

Volatile raw material and energy costs

Global industrial competition

Rising labor costs and skills shortages

Increasing environmental and safety requirements

Constant changes in market conditions

Digitalization

Industry challenges

How to keep equipment and processes running reliably

How to optimize the performance of industrial processes to get the most out of the least

How to ensure process competitiveness with latest innovations

How to get the right expertise when needed

How to best utilize the opportunities of digitalization and Industrial Internet

Valmet Industrial Internet



Dialogue
with data

Building blocks

Ecosystem

Applications
and services

Automation
and IT platform

Process
technology

Offering

Reliability services

- Component reliability monitoring and diagnostics
- Sub-process reliability improvement
- Mill and plant reliability optimization

Performance services

- Process performance optimization
- Mill and plant performance optimization
- Fleet performance optimization

Valmet Performance Center

- On-demand expert support
- Remote monitoring and optimization
- Data discovery and analysis



Valmet Industrial Internet offering

Applications and services

Data visualization, reporting and guidance

- Equipment and process performance reporting
- Fleet performance reporting
- Visualization and guidance with augmented and virtual reality

Asset reliability optimization

- Process component tracking and monitoring
- Predictive and prescriptive diagnostics
- Overall equipment efficiency optimization

Operations performance optimization

- Real time analytics to improve quality and reduce variable cost
- Advanced Process Control (APC) and mill or plant- wide optimization
- Fleet performance optimization

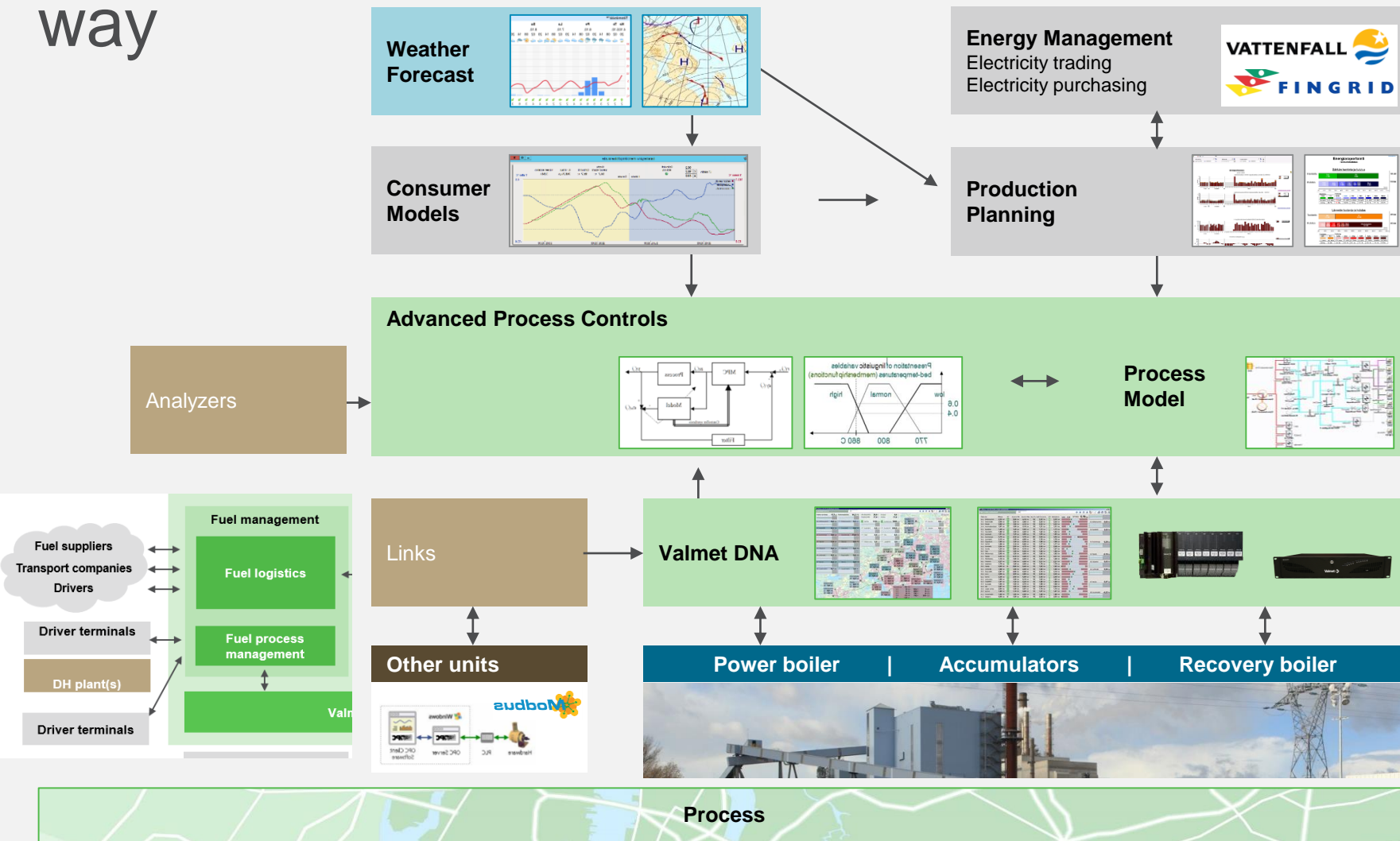
Valmet Performance Center

- On-demand expert support
- Remote analytics, monitoring and optimization
- Data discovery and analysis



Energy Production Management– the Valmet way

way



Process KPI monitoring

Process KPI monitoring

Service description and benefits



- Service description
 - Transparency and efficiency to process performance through industry benchmarking
 - Production, energy, quality and cost KPI's can be followed up
 - Machine performance follow-up and shift performance comparisons
 - Selected KPI's visualized through Valmet Customer Portal
 - KPI dashboards created in Valmet cloud
- Benefits
 - Real-time, holistic view of process performance
 - Visibility to fleet performance
 - A tool to understand and improve operational performance
 - Added productivity with benchmarking
 - Visibility to short and long term performance improvements



BIO Polttoaineen hallinta

Fuel Data Manager

Fuel Chain Management

Raportointi ja Monitorointi

Polttoainetietojärjestelmä

- Keskitetty tiedon talletus ja raportointi samalla serverillä mahdollistaa tietojen yhdistämisen raportoinnissa ja ohjauksessa
 - prosessidata automaatiojärjestelmästä
 - kuormatiedot vaaka-asemalta
 - analyysit laboratorionista
- Toimittaja- ja tuotekohtaisten polttoainemäärien ja energioiden automaattinen raportointi laitoksen omaa seurantaa tai pa-toimittajien laskutusta varten
- Sovellusta voidaan hyödyntää myös muiden toimitusten raportoinnissa ja seurannassa, esim. kemikaalit, tuhka
- Selainkäyttöliittymällä tiedot helposti jaettavissa koko henkilöstölle

Selainkäyttöliittymä

DNA Report

Waybill number	Entry time	Exit time	Product	Supplier	Transporter	License number
1002876	3/20/2018 12:45:18 am	3/20/2018 12:51:23 am	Fuel	Birchape	Transporter2	CAR-002
1002886	3/20/2018 11:42:19 pm	3/20/2018 12:05:13 am	Chips	BCO Factory	Transporter1	CAR-001
1002888	3/20/2018 10:57:47 pm	3/20/2018 10:50:35 pm	Fuel	Birchape	Transporter2	CAR-002
1002897	3/20/2018 8:41:42 pm	3/20/2018 10:00:51 pm	Chips	BCO Factory	Transporter1	CAR-001
1002896	3/20/2018 8:48:24 pm	3/20/2018 8:13:54 pm	Fuel	Birchape	Transporter2	CAR-002
1002898	3/20/2018 7:47:38 pm	3/20/2018 8:06:45 pm	Bioch	Hämeenlinnan saha	Transporter3	CAR-003
1002894	3/20/2018 7:08:02 pm	3/20/2018 7:38:51 pm	Chips	Birchape	Transporter2	CAR-002
1002883	3/20/2018 7:07:44 pm	3/20/2018 7:35:17 pm	Chips	BCO Factory	Transporter1	CAR-001
1002882	3/20/2018 7:06:14 pm	3/20/2018 7:35:53 pm	Oil	BCO Factory	Transporter1	CAR-001

Operaattori näyttö

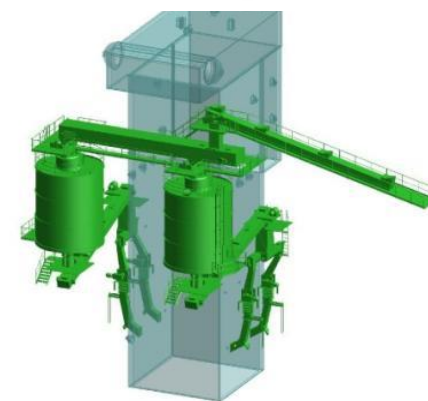
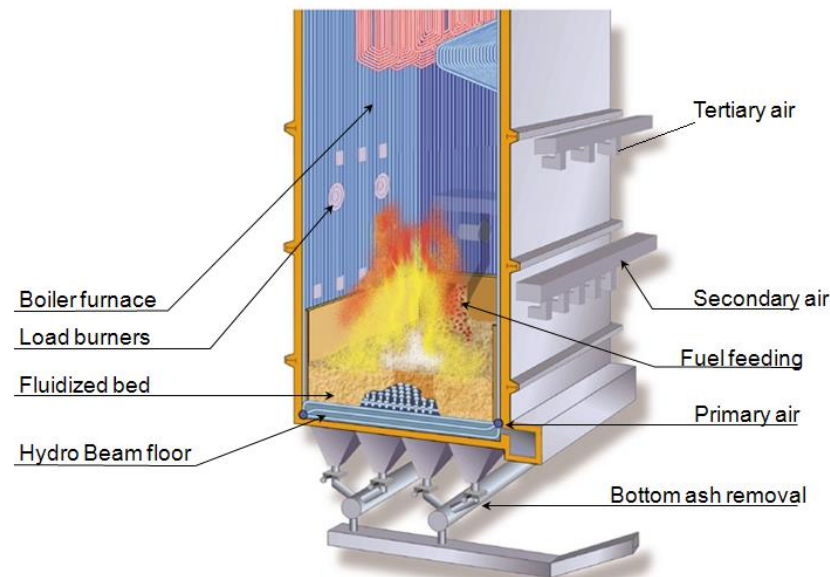
DNA Operate

Seuranta	LFidat	Waybill number	Kuormatiedot	Tuotte	Toimitaja	Tuote	Itimi	Sat	Lause	Valmistus	Pakkaus	Tuot	LFidat	Netto	Netto	Netto	Netto	Kerros	Energ
3/13/17	17:26	3/13/17	17:47	3639	4302	1111	hennon	496	LST Bio	170-05	4	51.75	25.46	26.38	220339670	51.29	60.26		
3/13/17	17:17	3/13/17	18:24	472	4302	1111	hennon	900	SPY Pado 47	P0-01	Furne	61.84	28.12	28.72	220339670	45.86	60.86		
3/13/17	18:46	3/13/17	17:30	45	4302	220	hennon	910	SPY Pado 51	00-099	3	71.1	28.5	42.9	220339670	52	50.12		
3/13/17	18:38	3/13/17	18:27	4735	4303	1111	hennon	2400	UHF pado 302	170-002	Furne	67.1	25.86	25.73	220339670	45.86	60.26		
3/13/17	18:35	3/13/17	18:14	382	4303	1140	hennon	6000	Hoidi Gcs 100	30-487	2	78.78	28.54	51.74	220339670	45.16	65.64		
3/13/17	14:39	3/13/17	15:30	45	4302	1111	hennon	2007	hennon	62-775	1	70.8	28.02	45.88	220339670	45.24	62.67		
3/13/17	14:18	3/13/17	15:30	45	4302	1111	hennon	2400	UHF pado 302	170-002	Furne	70.82	28.02	24.7	220339670	45.78	60.82		
3/13/17	18:38	3/13/17	18:38	37	4302	1111	hennon	600	Vaivaku 402	360-714	2	67.84	26.62	27.52	220339670	45.16	60.26		
3/13/17	18:08	3/13/17	18:47	45	4302	220	hennon	910	SPY Pado 51	00-099	3	71.42	28.44	46.18	220339670	51	50.12		
3/13/17	18:46	3/13/17	18:54	47	4302	1111	hennon	900	SPY Pado 51	00-1	Furne	65.96	28.12	28.82	220339670	52.25	60.26		
3/13/17	18:38	3/13/17	17:30	45	4302	1111	hennon	496	LST Bio	170-05	Furne	68.83	24.5	42.9	220339670	45.89	62.67		
3/13/17	18:38	3/13/17	18:38	3640	4302	1111	hennon	900	SPY Pado 47	P0-01	Furne	62.02	25.82	26.80	220339670	45.86	60.26		
3/13/17	18:08	3/13/17	18:57	45	4302	1111	hennon	2400	UHF pado 302	170-002	1	75.88	27.74	28.40	220339670	55.86	78.88		
3/13/17	18:57	3/13/17	18:58	7130	4303	1111	hennon	900	SPY Pado 51	650-490	Furne	68.1	26.38	42.12	220339670	44.86	60.26		
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Combustion Manager

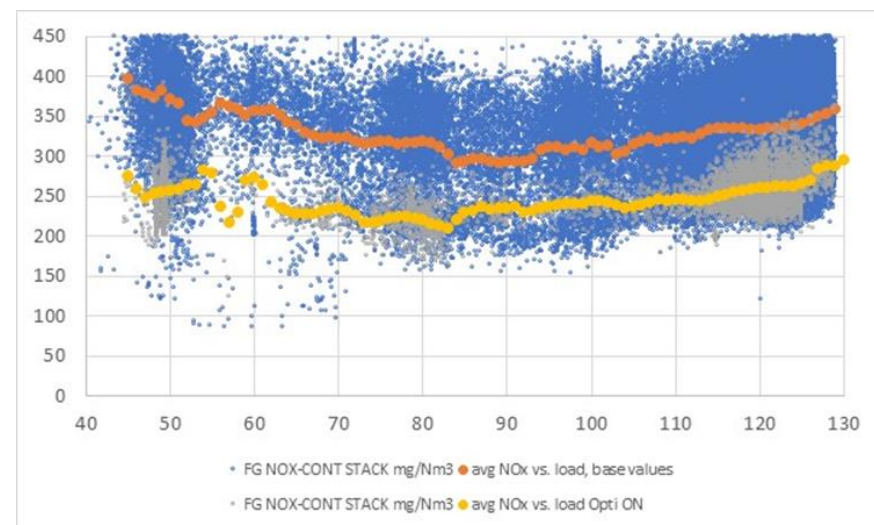
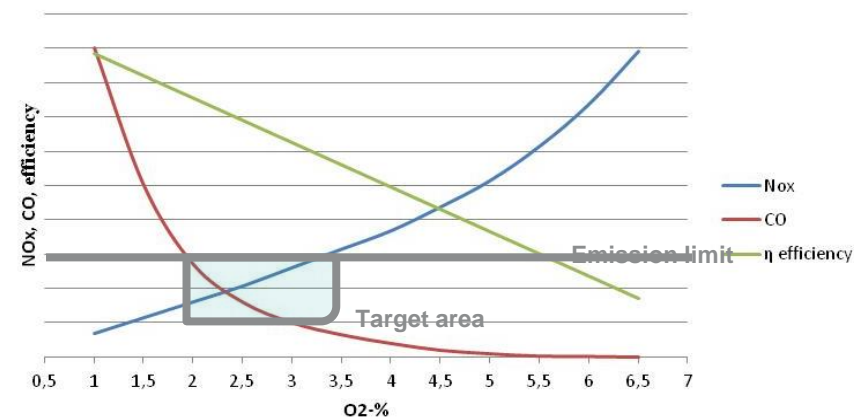
Poltonhallinnan periaatteita


- Sumeaan logiikkaan perustuva säädin ohjaa samanaikaisesti useita poltonhallinnan suureita
 - Pedin lämpötilaa
 - Tulipesän lämpötilaprofiilia
 - Savukaasun happitasoa
 - NOx/CO tasapainoa
- Combustion Manager on suunniteltu
 - kuplaleijuille (BFB)
 - kiertoleijuille (CFB)
- Combustion Manager ohjaa seuraavia kriittisiä palamiseen liittyviä parametrejä
 - Leijutuskaasun määrää sekä kiertokaasu- / primääri-ilma suhdetta
 - Sekundääri- ja tertiääri-ilmavirtauksia
 - Ilman symmetriaa
 - Polttoaineen syötön symmetriaa



Miksi energiakattilaa pitäisi optimoida?

- Polttoaineen laadun vaihdellessa paras mahdollinen ilmanjako muuttuu jatkuvasti. Säädön tehtävä on hakea se oikea.
- NOx:a voidaan helposti alentaa sallimalla korkeampi CO – optimoinnin avulla se saadaan alas *ilman* että CO nousee liikaa
- Onnistuneen optimointiprojektin salaisuus on validoitu lähtötaso – projektin (ns.) tulosten täytyy olla vertailukelpoisia



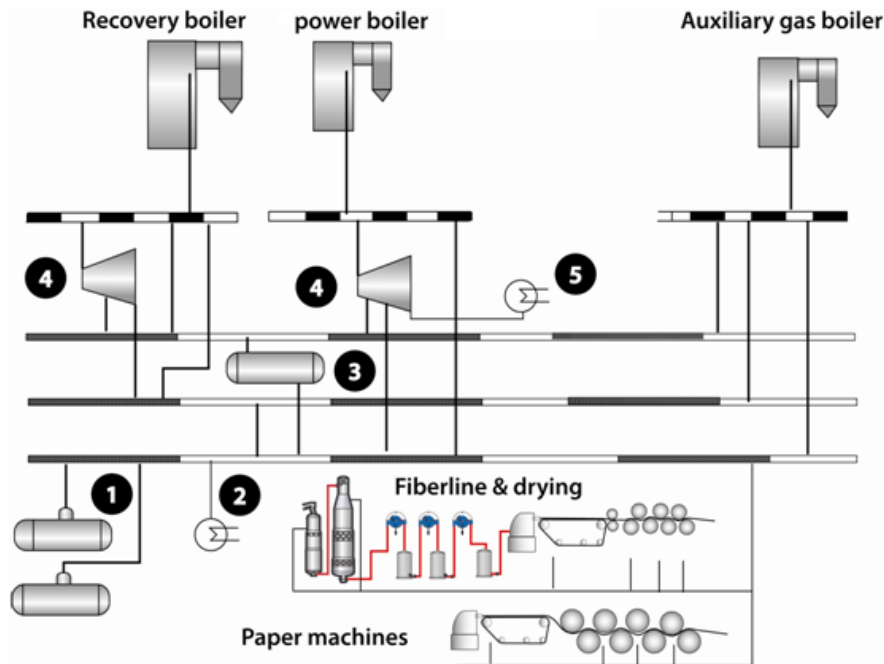


Steam Network Manager

DNA Steam Network Manager

On-line optimization of steam and electricity production

- Secures process steam supply and quality in disturbances
- Compensates load changes as economically as possible
- Optimizes electricity generation



Operates on:

- Feedwater tank / Deaerator
- Balancing or dump condenser
- Steam accumulator
- Steam reduction stations
- Boilers
- Gas turbines
- Steam turbines
- Mill/plant processes

