



WTERT 2008 Bi-annual Meeting at the Columbia University, October 16/17

The „Isséane“ Plant in Paris **Integrating an Energy-for-Waste Plant into a major city**

New York, 2008-10-16, Peter Chromec



Isséane – Integrating an EfW Plant into a major city



- The Owner
- The Pre-conditions for the Project
- The Project – General aspects
- The Project – Design aspects
- The Project – Construction aspects
- Summary

Isséane – The Owner: SYCTOM Paris and Surroundings

SYCTOM:

- Europe's largest cooperation
- Founded 1985/87
- **85** communities participate
- **5,48** Mio. inhabitants in the cooperation area
- **2,67** Mio. t (metric) MSW disposed (2006, without glass recycling)
- Budget 2007: **424** Mio.€



= Paris city

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Isséane – The Pre-conditions 1: Emissions

	EU & French Law	Isséane requirements	11% O ₂ (7% O ₂)
NO _x	200	65 (44.3)	mg/Nm ³ (ppmv)
HCl	10	5 (4.3)	mg/Nm ³ (ppmv)
SO ₂	50	17 (8.3)	mg/Nm ³ (ppmv)
HF	1	0,8 (1.3)	mg/Nm ³ (ppmv)
Particulates	10	3 (2.3)	mg/Nm ³ (mg/scm)
Mercury	50	30 (23)	µg/Nm ³ (µg/scm)
Σ Cadmium and Thallium	50	40 (31)	µg/Nm ³ (µg/scm)
Dioxins and Furans (TE)	0,1	0,07 (0.05)	ng/Nm ³ (ng/scm)
other values according to 2000/76/EC			

Isséane – The Pre-conditions 2: Other Environmental and quality criteria agreed between Owner & Supplier



▪ 8 points included

For example:

- Supervision of nuisances (noise, odor, etc. from construction start)
- Construction- Erection- and Traffic-concept reducing truck traffic (transport by barge)
- Regular and systematic information of the public regarding site activities
- Site construction waste concept with source separation and recycling as possible



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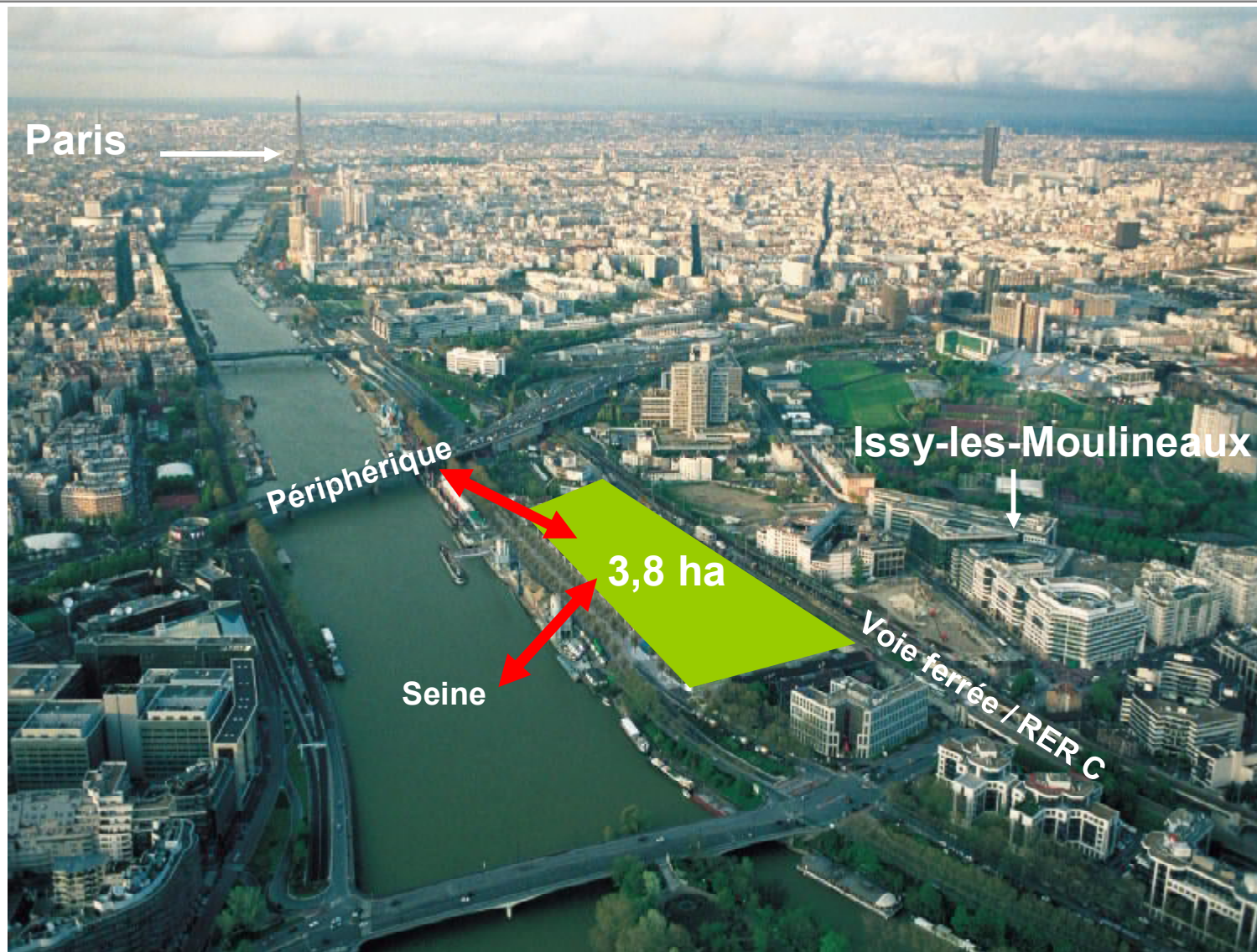
Isséane – The Project: general data



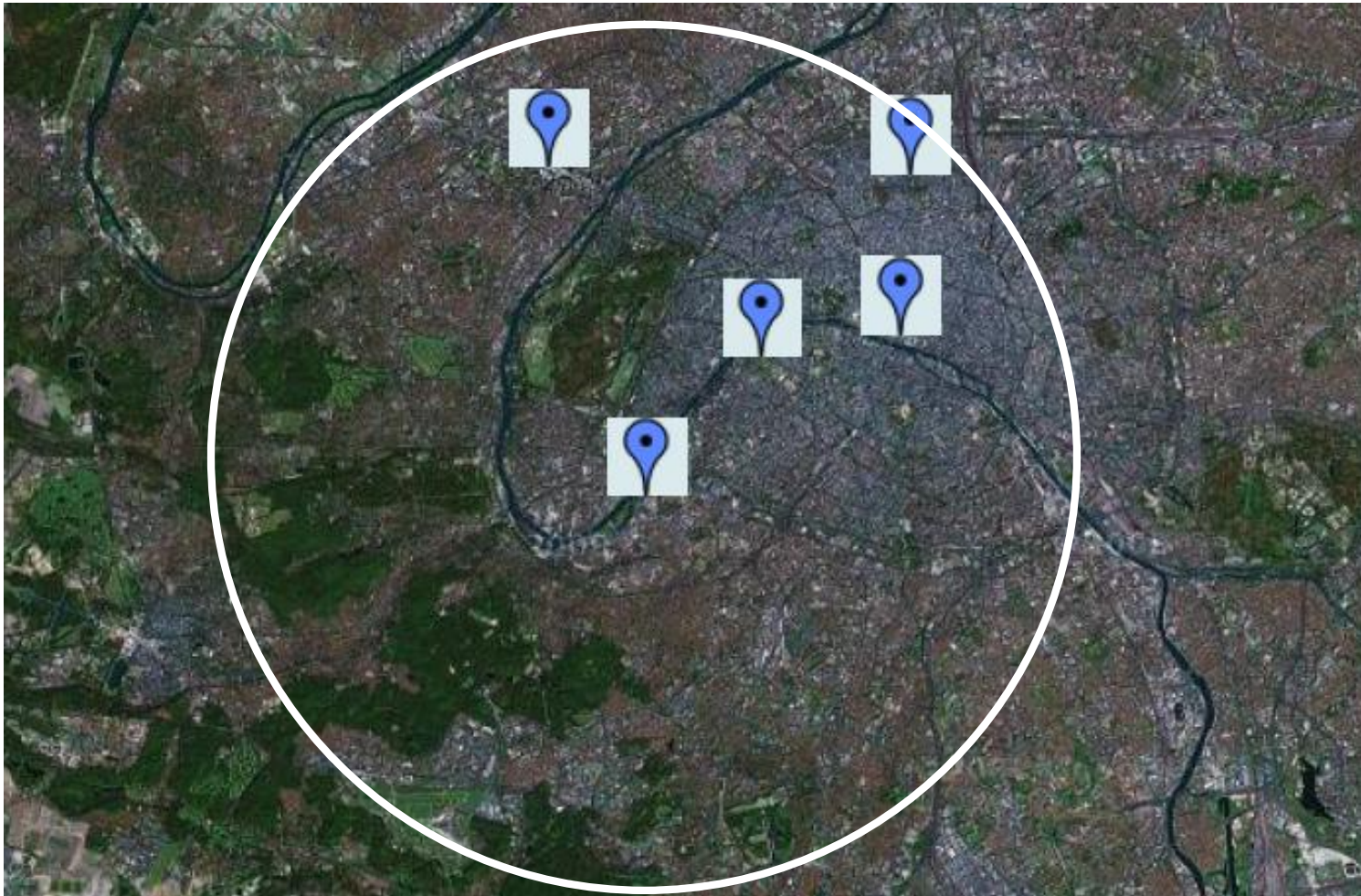
- **Technology:**
 - **2 lines MSWI**, 460'000 tpy (metric)
corresponds to 2 x 800 tpd (short)
Grate, dry flue gas cleaning, SCR
 - **Turbine 52MW** / District heating
 - **Sorting- and Recycling plant**
2 lines for totally 55'000 tpy metric

- **Civil:**
 - Architectural consideration of the location at the Seine river shore
 - Stack/plume not visible from street
 - O&M truck traffic not visible

Isséane – The Project: general – location 1



Isséane – The Project: general - location 2



- Located centrally: max. waste transport distance: 10km
- Location at river avoids 4250 trucks/year due to barge ash transport

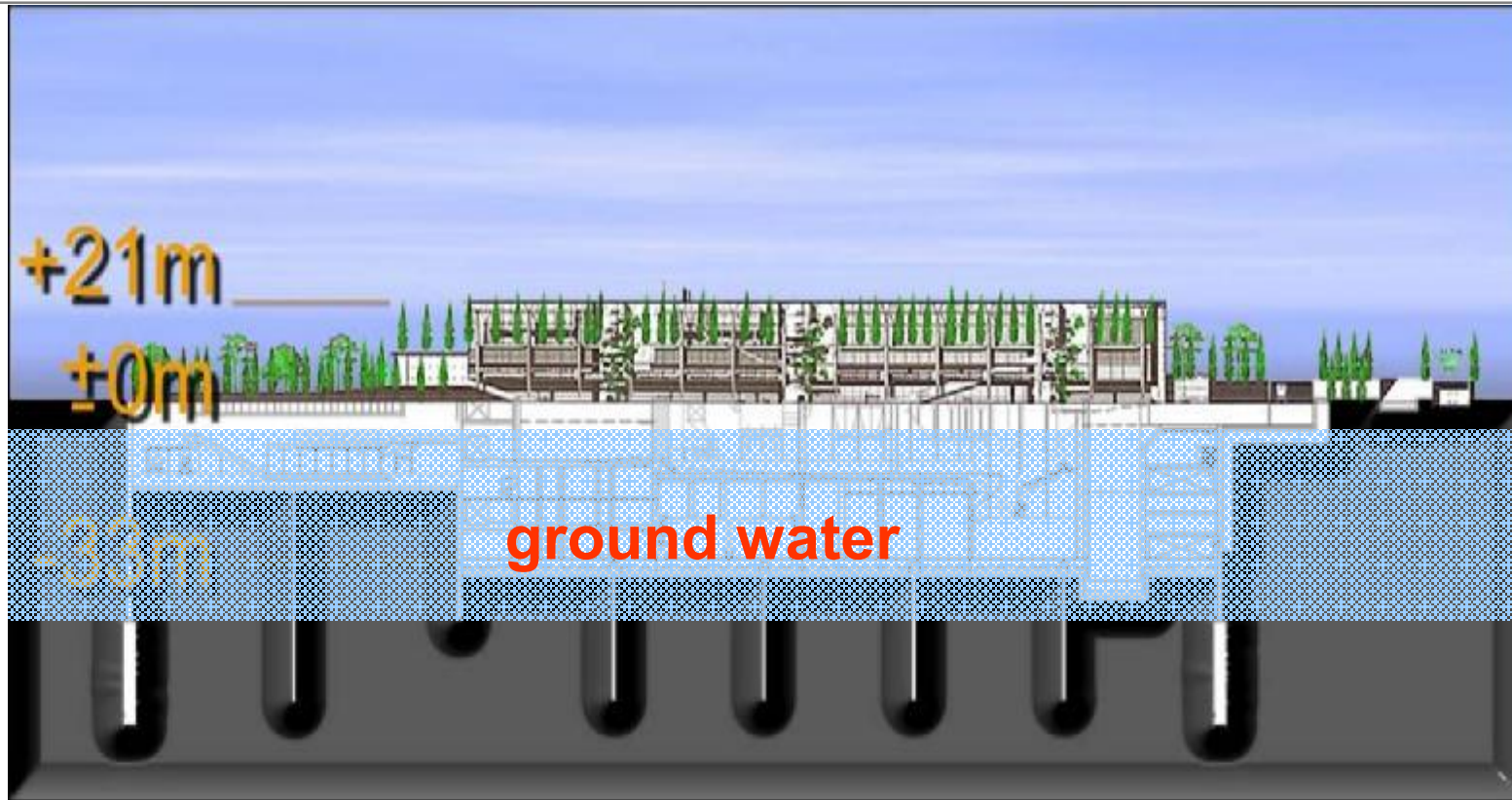
maps.google.ch

Isséane – The Project: general - location 3



- 38'000m² (9.4 acres), former production site of Renault cars/trucks
- Needed rebuilding / remediation in any case (justifies part of cost)

Isséane – The Project: general - location 4



- Total building almost 2/3 in the ground
- Total building height including stacks: 55 m (180 ft)



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Isséane – The Project: design – civil 1

Molded walls: 6.000 tons of armoring iron for 258 molded walls is almost the weight of the Eiffel Tower steel structures!



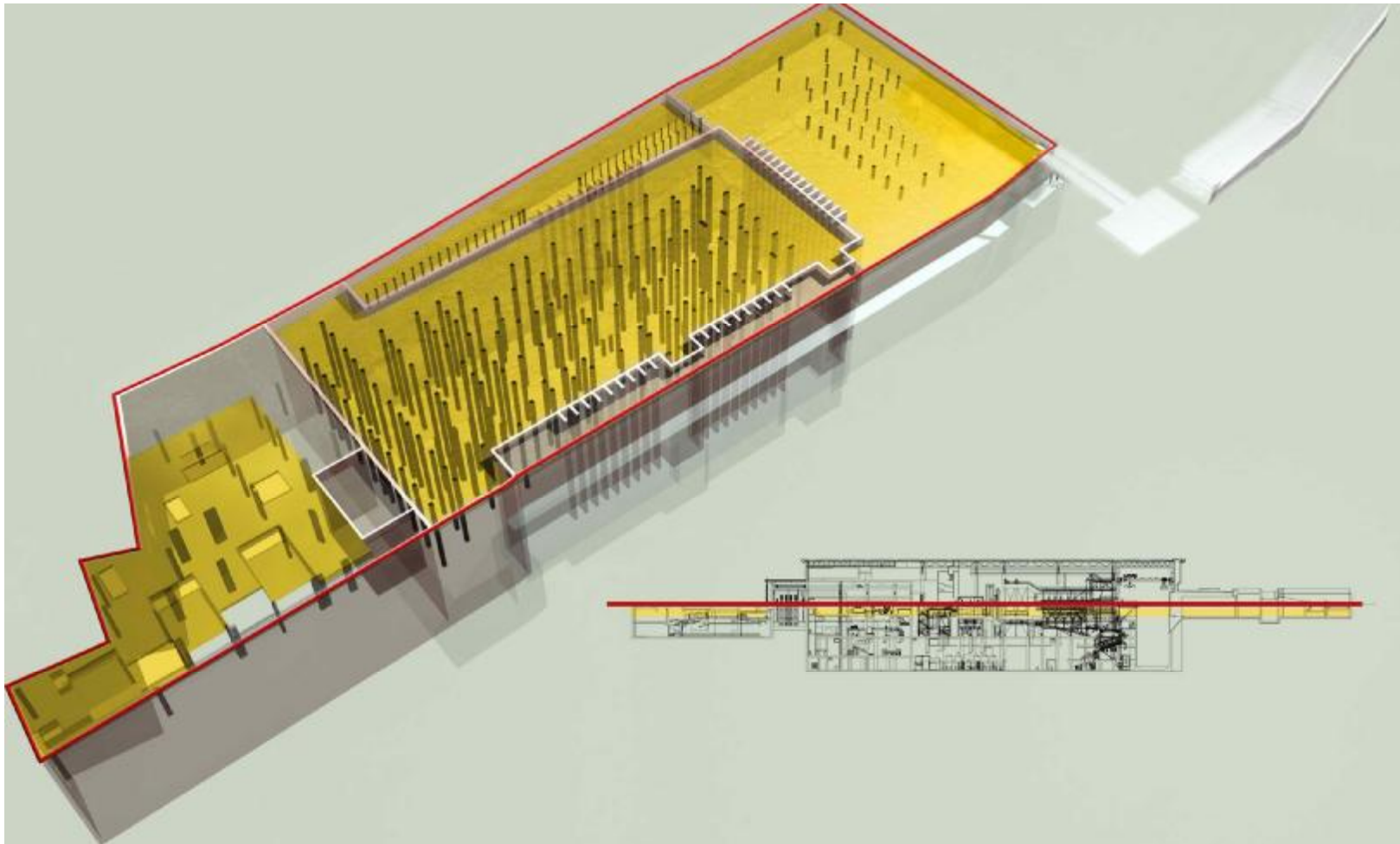
Isséane – The Project: design - civil 2



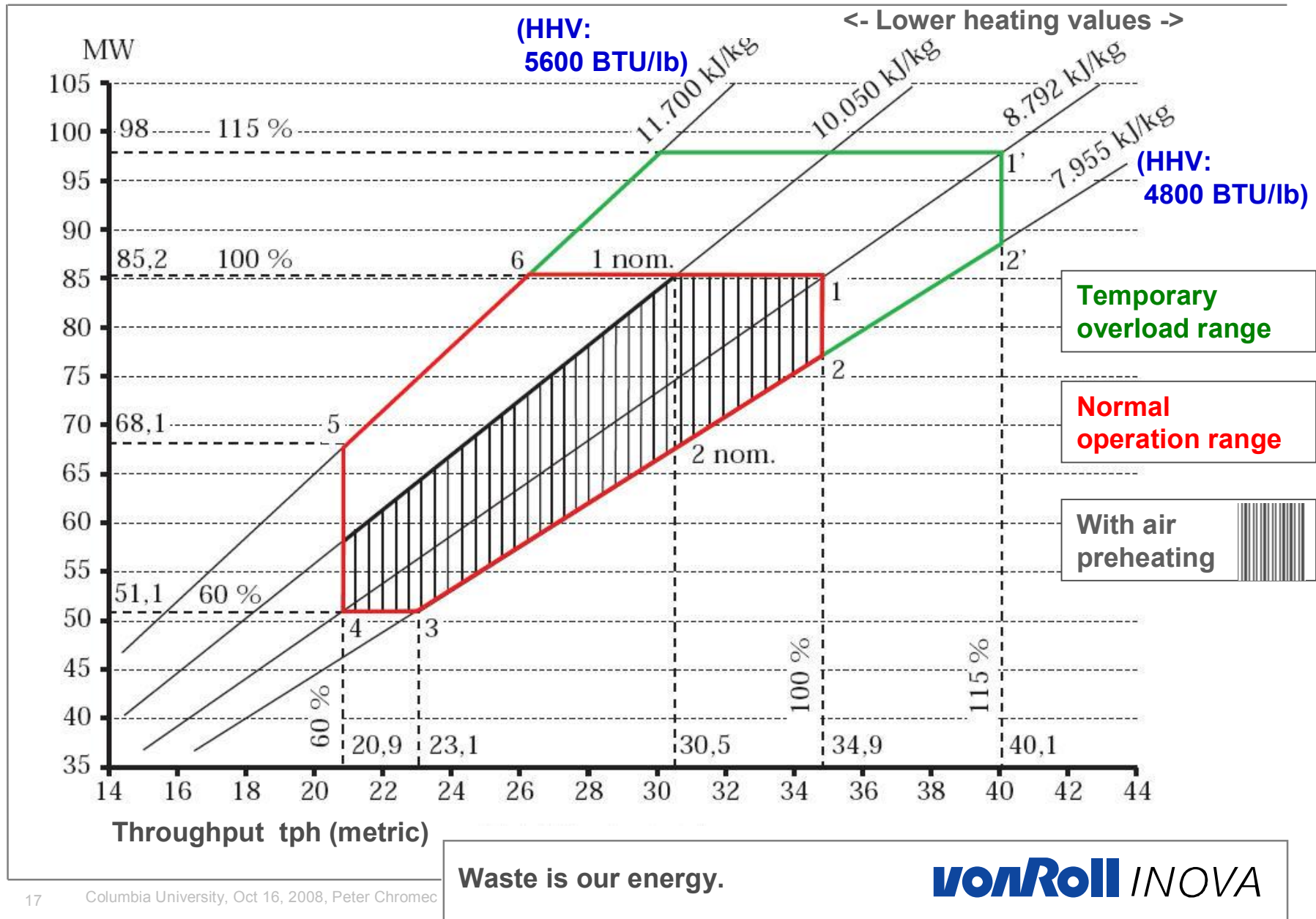
- 132 piles for loads of the plant equipment and structure
- Pile length:
up to 50 m (160 ft)
to assure position of building within the ground water

Isséane – The Project: design - civil 3

Total: 359 piles, 18'000 t building steel;
126'000 m³ (4.4 M ft³) Concrete

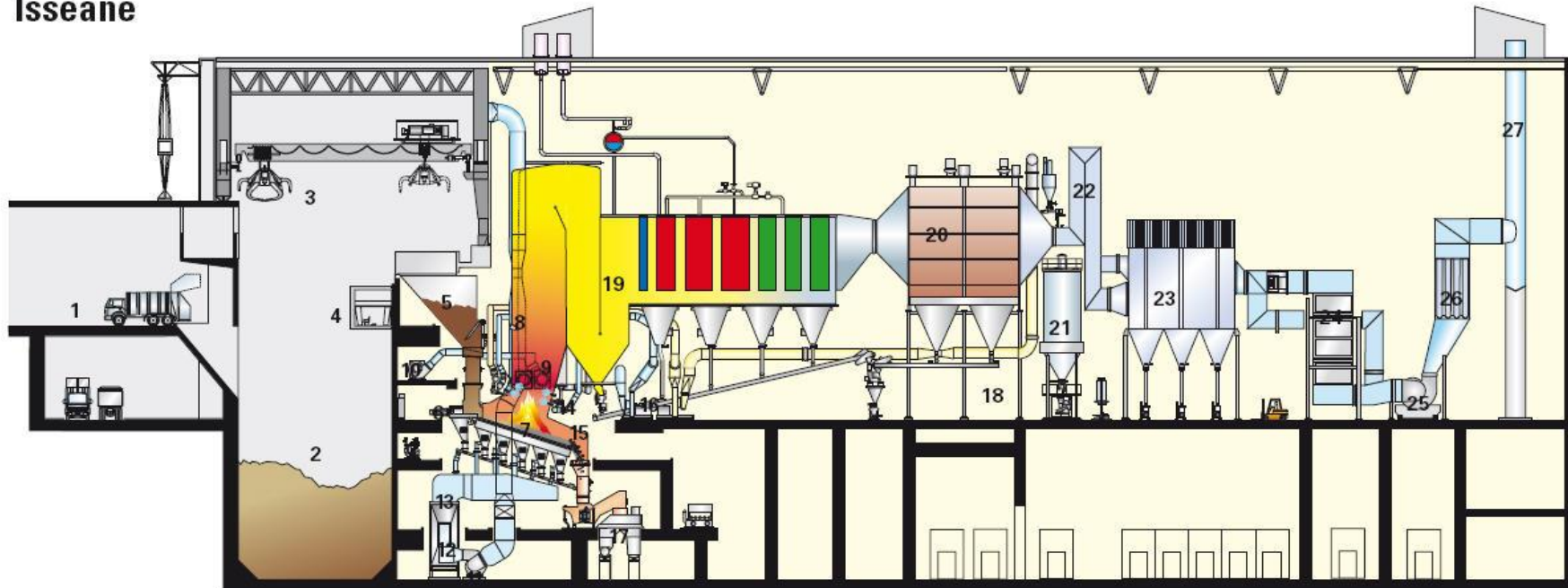


Isséane – The Project: design – process 1



Isséane – The Project: design – process 2

Isséane



4-pass low profile
horizontal boiler

ESP for filter ash
improvement

Dry Bicarbonate
acid gas control

Low temp SCR
DeNOX system

Von Roll Inova scope: „chute-to-stack“

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Isséane – The Project: design – process 3



Grate / Boiler System

- No of lines: **2**
- Throughput per line: **30,5 tph**
- Mechanical maximum: **35 tph**
- Thermal capacity: **85 MW**
- Grate: System Von Roll, 4 lanes, 5 zones, thereof 3 Aquaroll ® water-cooled, area: **108 m2**
- Flue gas recirculation system
- Boiler: **4-draft, hor.**
- Steam production per line: **100 tph**
- Steam paramters: **400°C/50bar**
- Turbine (1 common): **52 MW**

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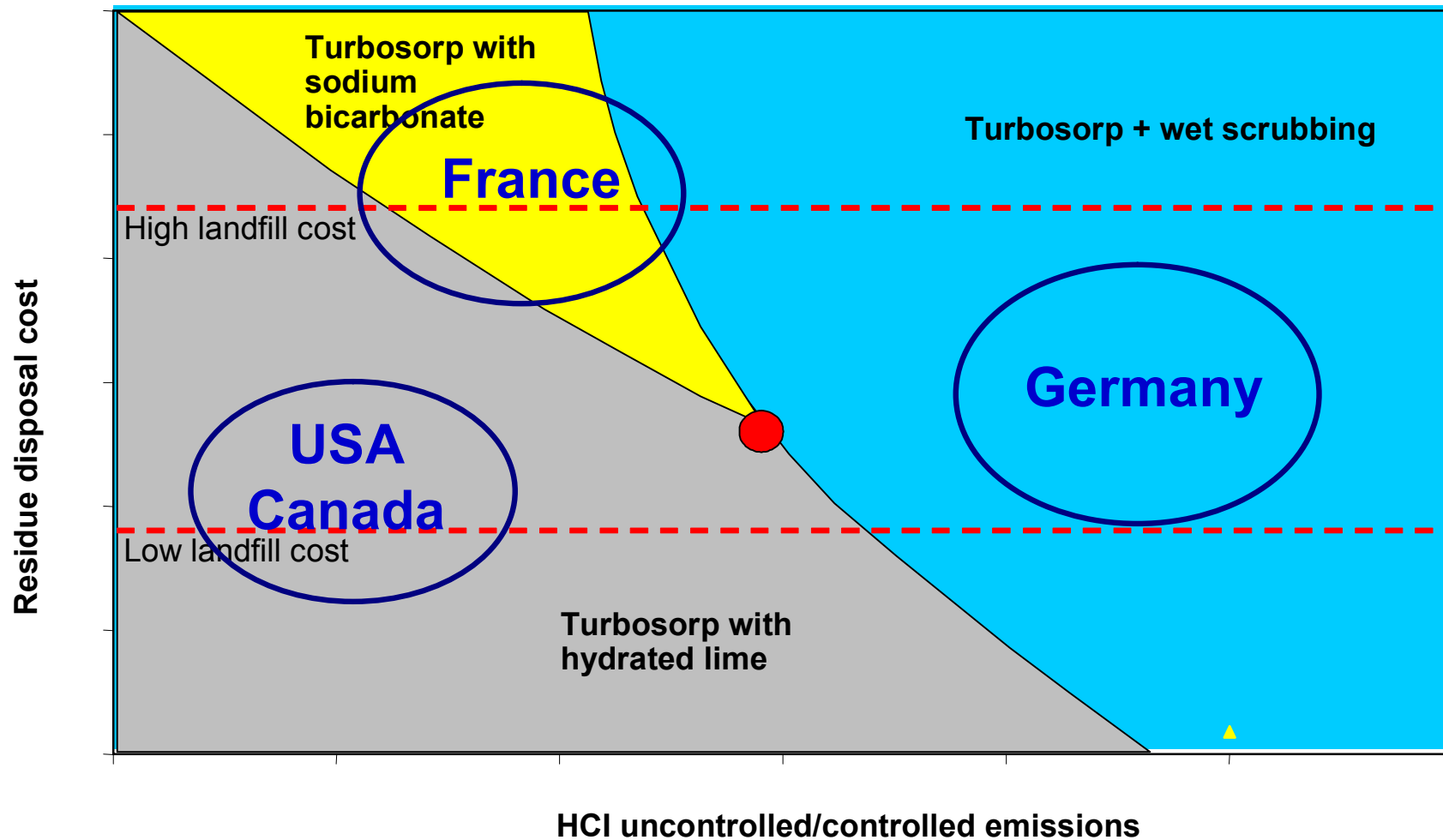
Isséane – The Project: design – process 4



Flue Gas Cleaning System

- Flue gas per line: **145'000 Nm3**
- Pre-de-dusting: **ESP**
Fields: **2**
- Flue gas cleaning: dry
bicarbonate-process & act carbon
- Bag filter compartments: **6**
- NOx-control **SCR catalyst**
(low temp.)
- No of catalyst layers: **3**
- Plume prevention: **Gas burner**
- Burner capacity: **10,5 MW**
- Max. FG-temperature: **290°C (550°F)**

Isséane – The Project: design – process 4



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Isséane – The Project: construction - excavation



Below -15 m (-50 ft),
use of mining methods
1.2 Million tons of earth
was excavated, most of it by barge ► ►

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Isséane – The Project: erection general

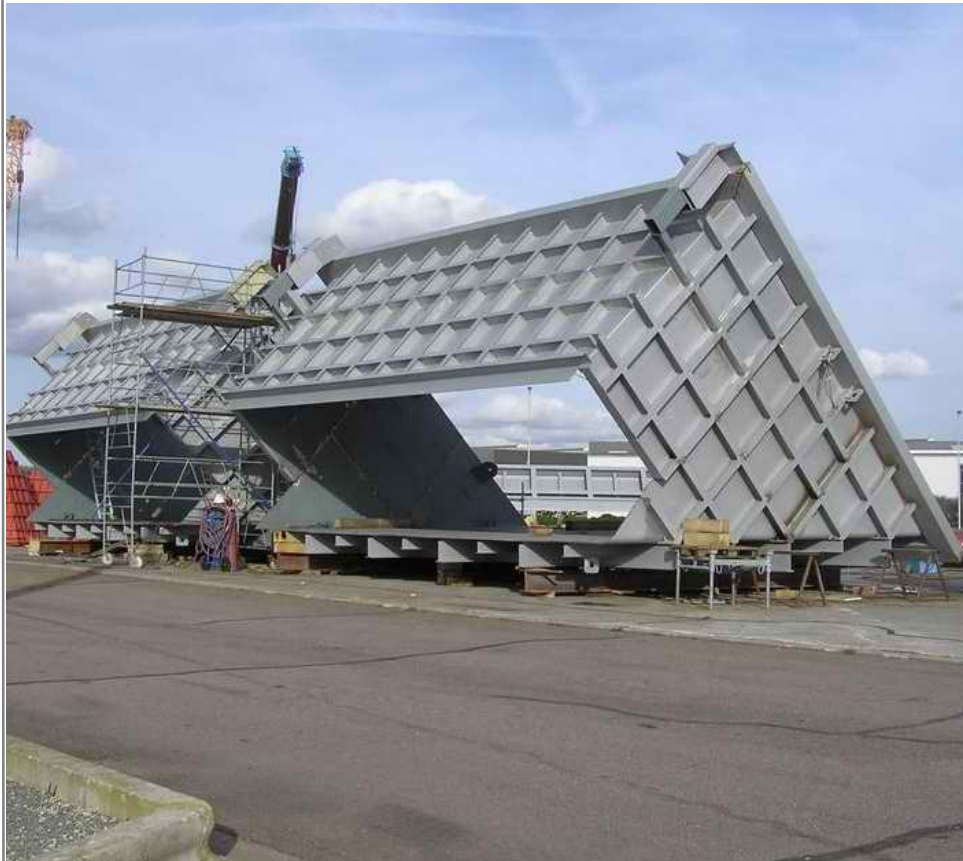


Difficult situation regarding erection and site logistics

- Very little preassembly space
- Truck deliveries (if unavoidable) had to be „just in time“
- Barge delivered goods had to be transported across a main road without interruptions
- Large lifting distances
- Crane capacity had to be shared by various site players

Isséane – The Project: erection – preassembly 1

Preassembly:
took place outside Paris



Isséane – The Project: erection – preassembly 2

Preassembled parts were loaded to barges



Isséane – The Project: erection – barge delivery 1

From the barge, pre-assembled parts were lifted onto a specially constructed jetty...



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Isséane – The Project: erection – barge delivery 2

... on the jetty heavy-load trucks waited only to ...



Isséane – The Project: erection – in-site transport 1

... cross a specially constructed bridge over the river road!



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Isséane – The Project: erection – in-site transport 2

...so the piece arrives to site after 200 meters/yards



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Isséane – The Project: erection – crane coordination

Large lifting distances
Sharing cranes with many others
Multi-level operation (literally)





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Isséane – The Project: operation

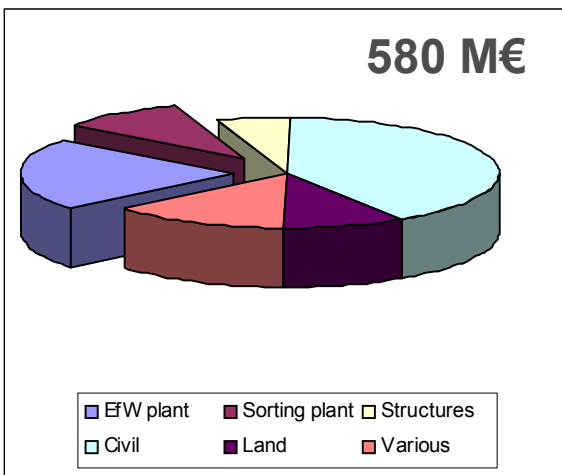


- Permits obtained Sep 2000
- Civil works (2001)-2003/5
- Erection 2005-2007
- Commissioning 2007
- Line 1 in operation since December 2007
- Line 2 in operation since January 2008
- Operated by the Client without supervision since July 2008
- Produces up to 52 MW electricity
- Heats an equivalent of 79'000 houses

Isséane – The Project: summary



1. Dispose of waste where it arises – produce energy where it is needed (expected revenues per year: 8 MEUR steam & 3 MEUR electricity)
2. Set clear standards, assure they are kept and communicate them (communication since 1999, the name “Isséane” was chosen by the public)



3. A good solution may cost something – but it is worth !

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THANK YOU FOR YOUR ATTENTION !

