



Integrated landfill management

Hofstetter Swiss experience and expertise

Alin Schiopu – Head of landfill solutions and ISWA International Waste Manager

Coordinate • Collaborate • Co-create



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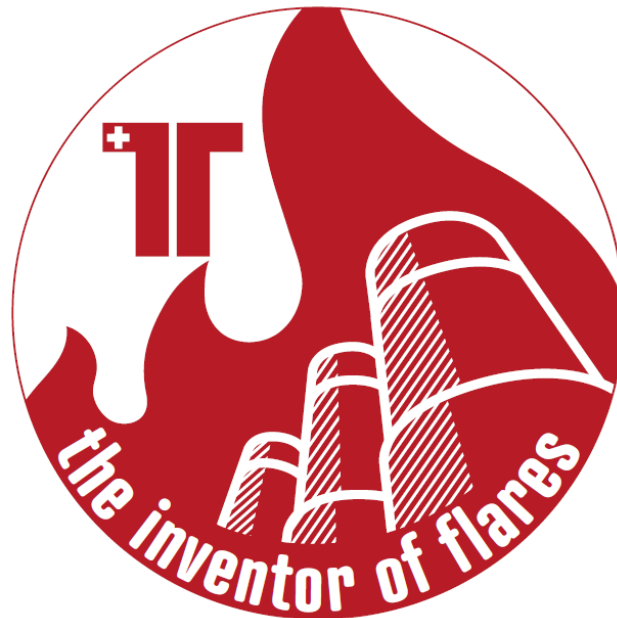


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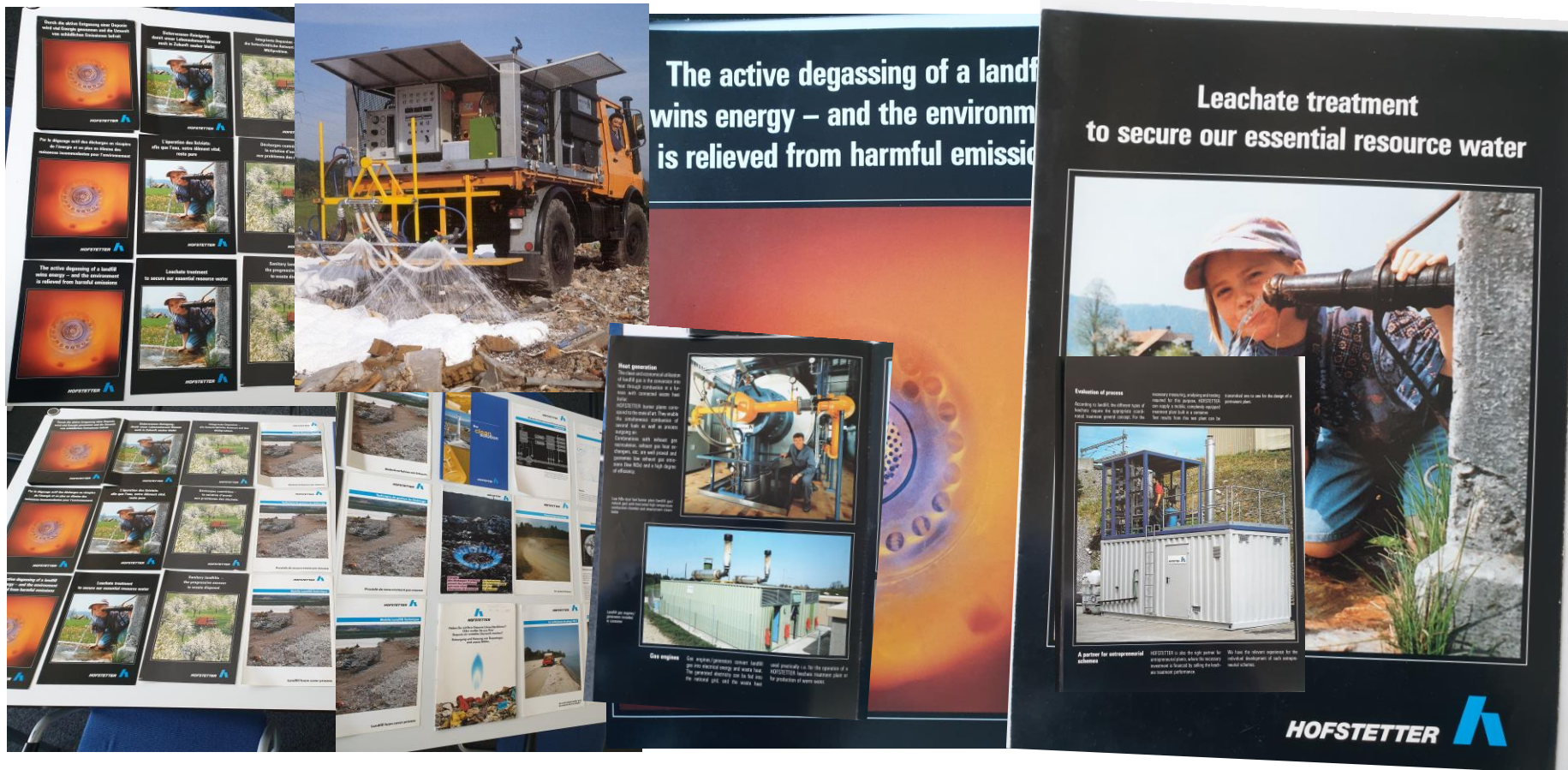
ENVIRONMENTAL SOLUTIONS

Group company Presentation



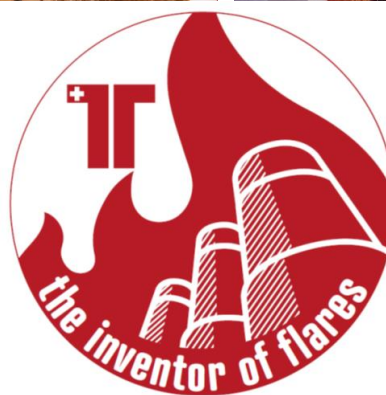
History

The family company K. + U. Hofstetter AG started a new business unit to solve environmental problems at the end of seventies. Pioneers in the field of environmental solutions.



History

In collaboration with talented engineers, this business unit created a new generation of gas treatment systems focused on new technologies applied to gas combustion.



Our locations:

- Main headquarter and engineering offices (and former factory)

Hindelbank:



- Accounting and Human Resources offices in Bern(Ostermundigenstrasse 34)
- Assembly and testing facility in Etzelkofen
- Big metal parts producing and combustion chambers isolation facility in Lyss

New manufacturing location

- Bucharest, Romania as a transition for manufacturing of flares, gas equipments and landfill leachate plants
- CO2 equipments and complex projects still manufactured in Switzerland



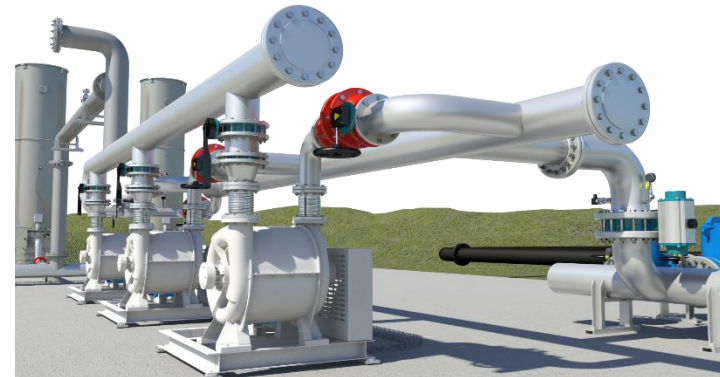
Organization and International structure

1. Main Headquarter in Switzerland
2. All design and engineering in Switzerland
3. Manufacturing in Switzerland, Germany and Romania in 5 locations
4. Network of **active and official** representatives and distributors in:
 - Europe(Serbia, Romania, France, Croatia, Slovenia, Austria, Russia, Denmark, Finland, Sweden, Macedonia)
 - Middle East(Dubai, Saudi and Lebanon)
 - Africa: South Africa and Mauritius



History (Today)

- Biogas upgrade for using in the local grid or as fuel(CNG) for trucks/buses and other machines.
- CO₂ liquefaction and trapping in concrete
- Heat recovery to heat facilities, to use at sludge treatment equipment's or other uses
- Flameless oxidation of gas with low concentration 5-15% of CH₄ and burning with more than 1000 degrees C.
- Landfill leachate treatment and cogeneration solutions



Areas of expertise

Landfill

- Landfill gas
- Low calorific value gas
- Landfill leachate
- Odor control
- Degassing systems

Mine

- All kind of mine gases

Biogas

- Anaerobic digestion
- Sewage
- Biogas upgrade
- Biomethane/CNG
- CO₂ Liquefaction and trapping

Industrial

- Pyrolysis
- Synthesis
- Natural
- Tank farm
- All kind of industrial gases

Areas of expertise landfills

Landfill

- Landfill gas - complete solutions from design to implementation
- Low calorific value gas 1-20% CH₄ and burning over 1000 degrees C
- Heat recovery from flares and other gas burning technologies
- Landfill leachate solutions – RO, MBR, evaporators, electrocoagulation
- Brines/concentrates solutions
- Odor control solutions
- CO₂ trapping in landfills with inert materials cells



Landfill leachate treatment relevant experience

- First leachate treatment plants produced in 1980
With a technology of evaporation and RO(Reverse osmosis)
- Since then, more than 2000 projects worldwide
- Last projects were delivered in:
Lebanon – Beirut, Zahle and Tripoli landfills
Serbia – Belgrade and Trstenik landfill
Romania – Cluj, Timisoara, Valcea and Galati landfill
Croatia: Umag, Dubrovnik landfill
Hungary: Budapest landfill
Africa: Ghana, Ivory Coast, Alger, Tunisia, Liberia, Ethiopia

Our technologies for landfill leachate treatment consists mainly of a combination of technologies like following:

- Coarse filter + sandfilter + cartridge/bagfilter + chemical treatment for pH regulation + 1 or 2 stages of RO(reverse osmosis, **special technology at 80 bars**) + IEX(ion exchanger) + evaporator

Based on leachate analysis from different sources we will finally choose the succession of the above technologies.



Landfill leachate expertise details

Landfill leachate

- First leachate treatment plant manufactured in 1980s(one of the first in the world)
- Only supplier who has combined landfill gas and leachate expertise. Leachate and gas are very deep connected and influence themselves.
- Wide range of solutions from MBR, RO, evaporation, etc
- Possibility to rent, sale or operate any leachate treatment plant
- Dedicated service team and aftersales department
- Special consumables developed for this applications
- Possibility to make piloting before installing full scale solution
- Unique know how for concentrate management(concentrate form RO plants)
- On stock plants almost anytime
- Fast delivery and installation

Typical Solution - landfill

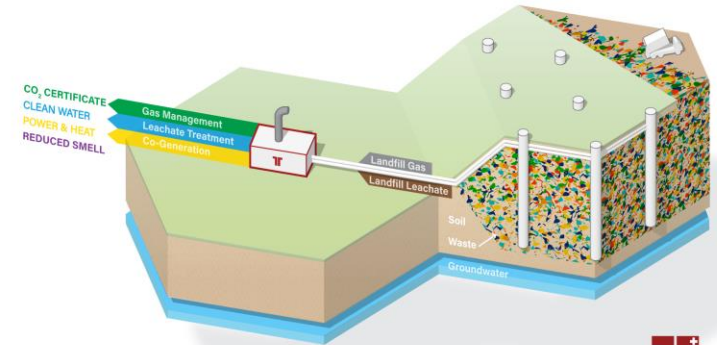
Landfill application, leachate treatment plant, landfill gas flare and cogeneration engine



AuTTONomouS

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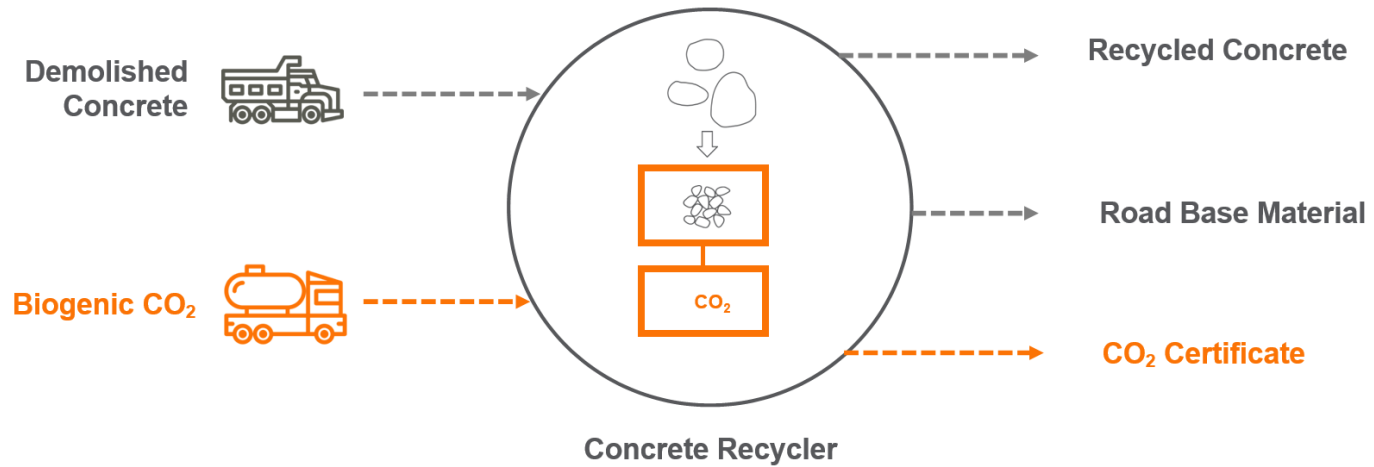
- <https://www.hofstetter-gt.ch/products/autonomous>
- No competition(unique)
- Engine island operation
- Unique design
- Registered TM
- Affordable solution
- Potential to replicate



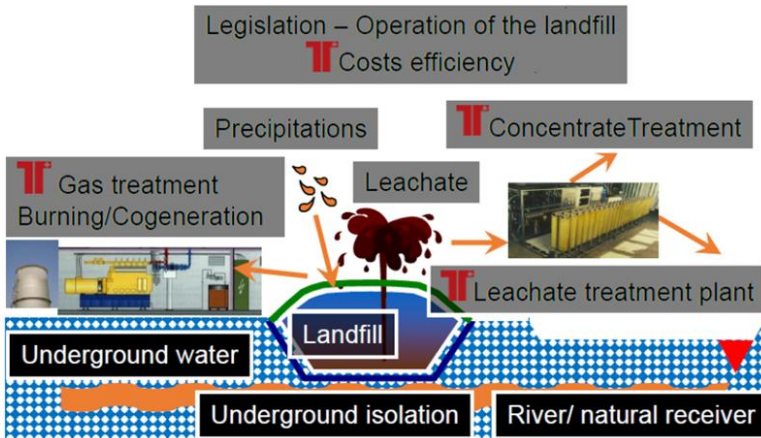
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CO2 Trapping

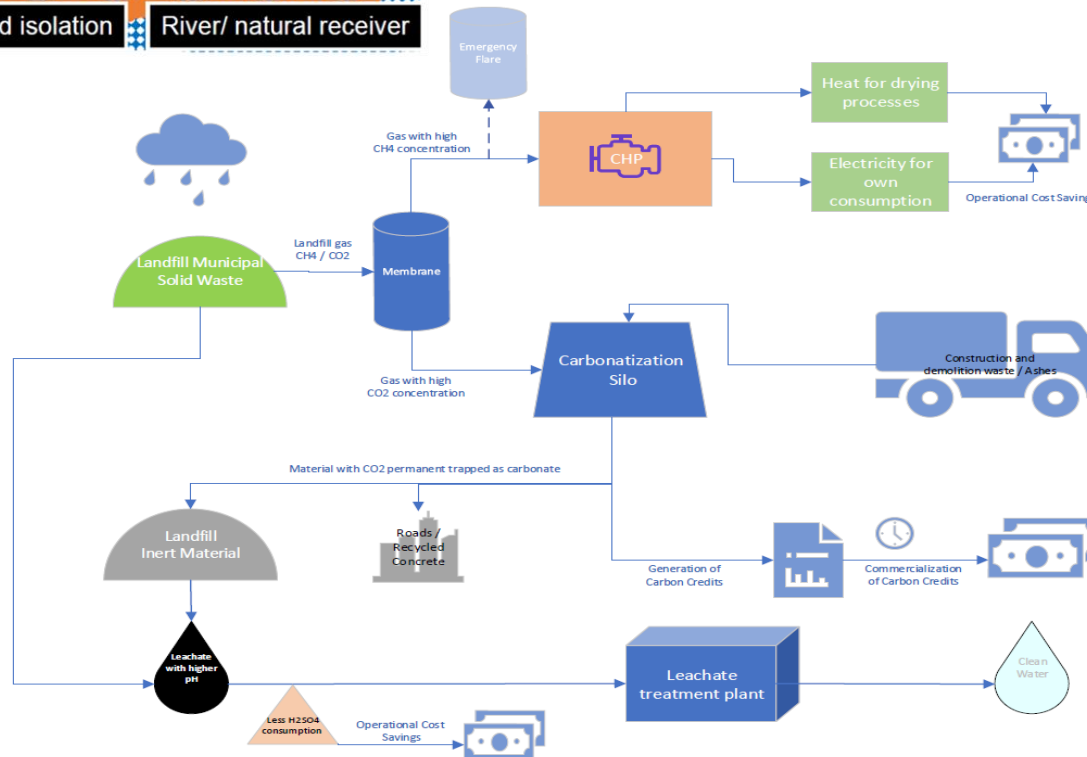


Integrated landfill management

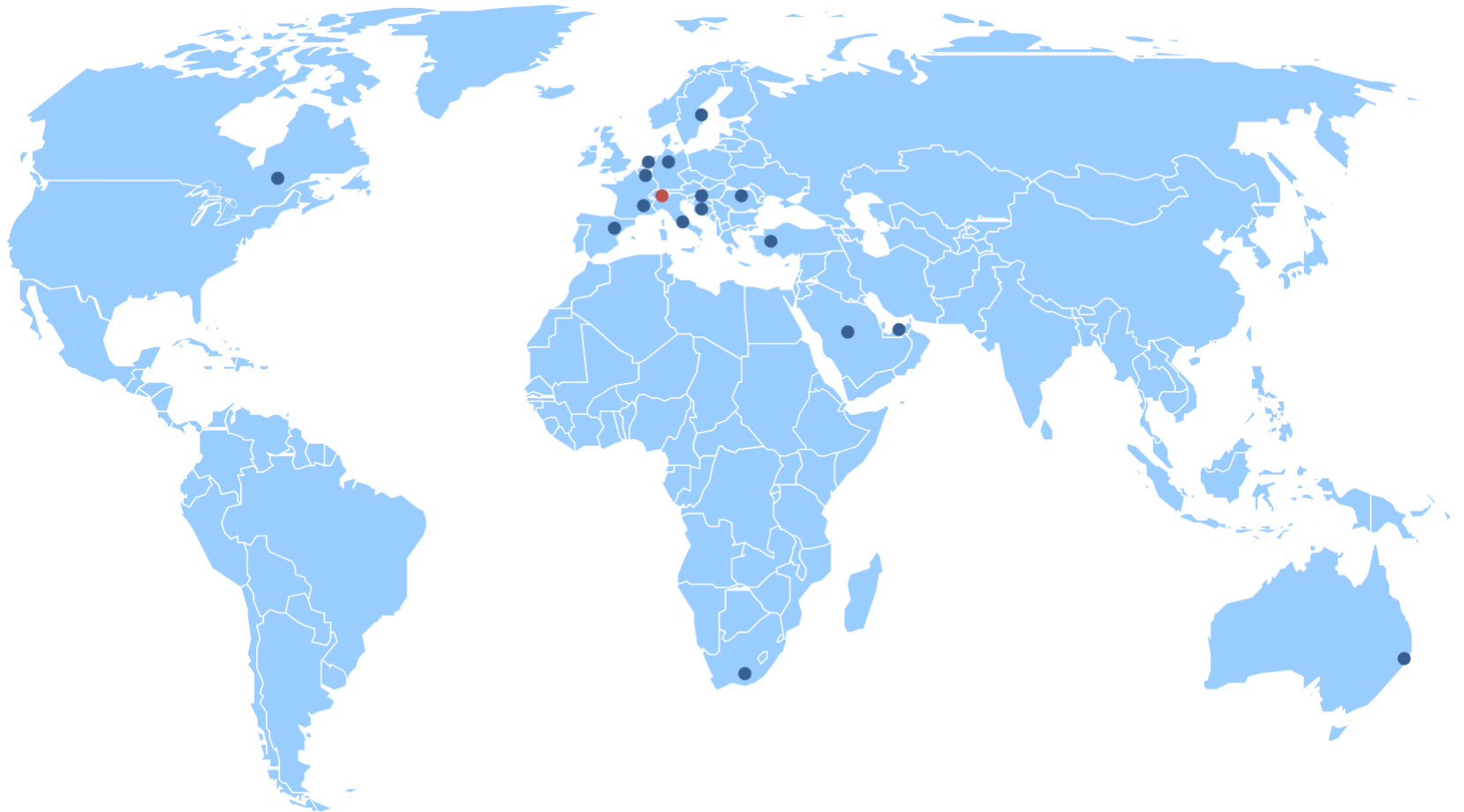


Complete landfill integrated solution:

- leachate management to boost landfill gas(LFG) production and LFG to be used for energy production and CO2 credits generation



International Partners:



- Hofstetter Gasttechnik AG
- Lokale Partner

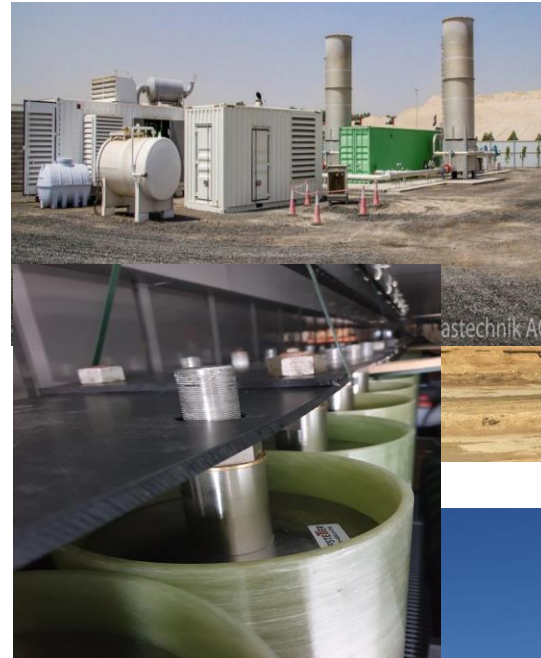
References

Since 1970's more than 2000 equipment's produced in the same factory from Switzerland. More than 250 references only in last 5 years. Now active worldwide, with projects in 20 countries:

- AE – United Arab Emirates (Dubai) and Middle East area
- DACH – Germany, Austria and Switzerland
- East Europe: Hungary, Romania, Greece, ExYu(Serbia, Croatia, Bosnia, Slovenia)
- Canada and USA
- ES – Spain
- FR – France
- IT – Italy
- MU – Mauritius
- North Europe – Netherland, Denmark, Swe
- PO - Portugal
- RU- Russia
- ZA – South Africa
- LB - Lebanon
- IN – Indonesia
- Latin America



References worldwide:

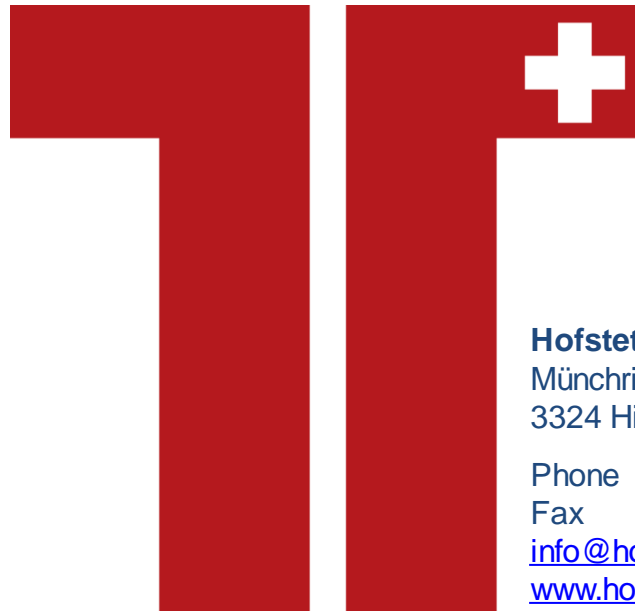


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