SÜLZLE KOPF SynGas

Sewage sludge recycling

Environmentally friendly.

Economical.

Forward-looking.

CONTENT

DECENTRALIZED SEWAGE SLUDGE RECYCLING

SYNTHESIS GAS GENERATION

PHOSPHORUS RECOVERY

ENVIRONMENTALLY FRIENDLY

ECONOMICAL

FORWARD-LOOKING

SUSTAINABLE

SÜLZLE KOPF SynGas

RANGE OF SERVICES

A reliable partner who, as a provider of complete solutions, designs and implements state-of-the-art processes for decentralized and energetic sewage sludge recycling.

FOR A CLEAN ENVIRONMENT

Heinrich Sülzle
SÜLZLE Group

Andreas Sülzle
SÜLZLE Group

Frank Ganssloser
AVAT Automation

The protection of resources requires, on the one hand, sound knowledge of ecological and technological processes in order to be able to act in a targeted manner - on the other hand, economic investments in the present for a clean future.

Due to its numerous problematic constituents, sewage sludge represents a major challenge for the environment that municipalities and industries have to face.

SÜLZLE KOPF SynGas - a joint venture of the two medium-sized company groups SÜLZLE and AVAT Automation - offers ecologically and economically attractive solutions for thermal sewage sludge utilization.

The SÜLZLE KOPF SynGas process: Generation of synthesis gas and its energetic utilization. Separation of material flows for nutrient recovery and pollutant elimination.

CIRCULAR-ECONOMY

SÜLZLE KOPF SynGas thermal sewage sludge utilization is a flexible and future-proof process for the effective generation of energy from sewage sludge. The innovative technology impresses with its particularly compact plant design, which enables economical sewage sludge utilization even with small quantities of sludge directly at the point of generation. SynGas regards sewage sludge as a resource that is valuable in many respects and must be utilized.

1 GENERATE ENERGY

Sewage sludge is rich in energy, which is released in the KOPF SynGas process and made flexibly usable by different technology modules. The fuel gas module enables the energy recovered in the synthesis gas to be used for auxiliary firing in an existing industrial plant. The heat module and CHP module, on the other hand, contain the complete power plant technology for the decentralized generation of heat or electricity.

2 MAKE NUTRIENTS AVAILABLE

The nutrient phosphorus is present in high concentration in the ash produced in the KOPF SynGas process. Phosphorus is an elementary and vital component of all natural organisms and is thus directly responsible for bone and plant growth, for example. Due to limited and dwindling reserves worldwide, a return of phosphorus into the natural material cycle is indispensable. In the Kopf SynGas process, this is made possible by using the ash as a natural raw material for mineral fertilizers.

3 ELIMINATE POLLUTANTS

During wastewater treatment in the sewage treatment plant, a large number of different pollutants remain in the sewage sludge. These include organic substances such as viruses, hormones and worm eggs, as well as industrial toxins, heavy metals, drug residues and microplastics. In the KOPF SynGas process, these pollutants are thermally destroyed and finally separated in the various purification stages. This ensures that they are removed from the material cycle and no longer pose a danger to humans or the environment.

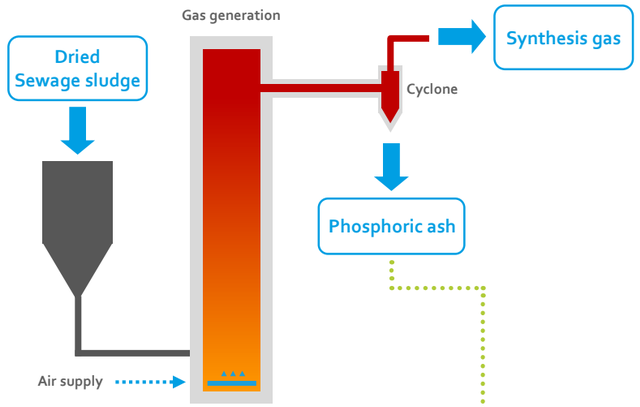
i SUSTAINABLE & ECONOMICAL

KOPF SynGas offers a process for the thermal utilization of sewage sludge which optimally combines the issues of energy generation, material cycle and detoxification. And it does so where the sludge is produced, without environmentally damaging transports and at a calculable price.

INFORMATION	RECYCLING PLANT KOBLENZ	RECOVERY PLANT BALINGEN
Throughput	4000 t/a TS	2000 t/a TS
Gasification medium	Air	Air
Gasification temperature	850 °C – 900 °C	850 °C
Installed power	1,8 MWth	720 kW
Electrical power	–	75 kW
Power to dryer	250 kW @ 90 °C 470 kW @ 140 °C	– 250 kW
Dryer	Belt dryer	Belt dryer
Plant footprint	350 m²	120 m²
Cold gas efficiency	70 %	66 %

MODULAR FUTURE TECHNOLOGY

CORE-MODULE



Why SynGas?

- Energy generation from sewage sludge
- Phosphorus recovery
- Pollutant elimination
- Implementation of legal requirements
- On-site sewage sludge utilization
- Reduction of transport-related CO_2 emissions
- Robust plant technology
- Compact plant layout
- High degree of automation
- Simplified approval procedure
- Complete solution from one source
- Security for sludge disposal and costs

AREAS OF APPLICATION

Ⓐ

FUEL GAS-MODULE

Back-up firing by synthesis gas e.g. for cement plants, waste incineration plants and cogeneration plants.

ADVANTAGES

- Generation of an ignitable gas
- Alternative to fossil fuels
- Phosphorus recovery keeps sewage sludge as fuel usable
- Use of existing infrastructure
- Sewage sludge drying by waste heat
- Proven core technology
- Low investment and operating costs
- Most attractive business case for sewage sludge recycling

Ⓑ

HEAT-MODULE

Combustion of the synthesis gas and heat generation for the operation of a sewage sludge dryer or the feed into an existing heat network.

ADVANTAGES

- Compact plant layout
- Optimized for the operation of a compact sewage sludge dryer
- Complete utilization of the thermal energy
- Flexible two-stage incineration process
- Possible feed into a heating network

Ⓒ

BHKW-MODULE

Low-emission synthesis gas combustion in a CHP unit for the generation of electricity and use of the resulting heat.

ADVANTAGES

- Utilization of the high efficiencies of CHP units
- Patented technology
- Compact exhaust gas cleaning due to small air mass flow during gas generation
- Technological contribution to energy self-sufficient wastewater treatment plant

P +

PHOSPHORUS RECOVERY

Generation of an ash containing phosphorus.

ADVANTAGES

- Possible utilisation of the ash as a natural raw material for mineral fertilizers
- High plant availability proven
- Fulfillment of heavy metal limits according to DüMV
- Phosphorus-recovery from ash is made possible
- Ash is free of organic pollutants
- Organic content in ash due to post-oxidation < 2%

FOR PEOPLE AND THE ENVIRONMENT: INNOVATIVE TECHNOLOGIES FROM SÜLZLE

An intact, clean environment and low energy consumption are elementary expressions of quality and a smart philosophy of life. SÜLZLE KOPF and SÜLZLE KLEIN therefore work hand in hand for environmentally friendly, interdisciplinary concepts that are also economically convincing.

SÜLZLE KOPF: PLANT ENGINEERING

SÜLZLE KOPF: BUILDING TECHNOLOGY

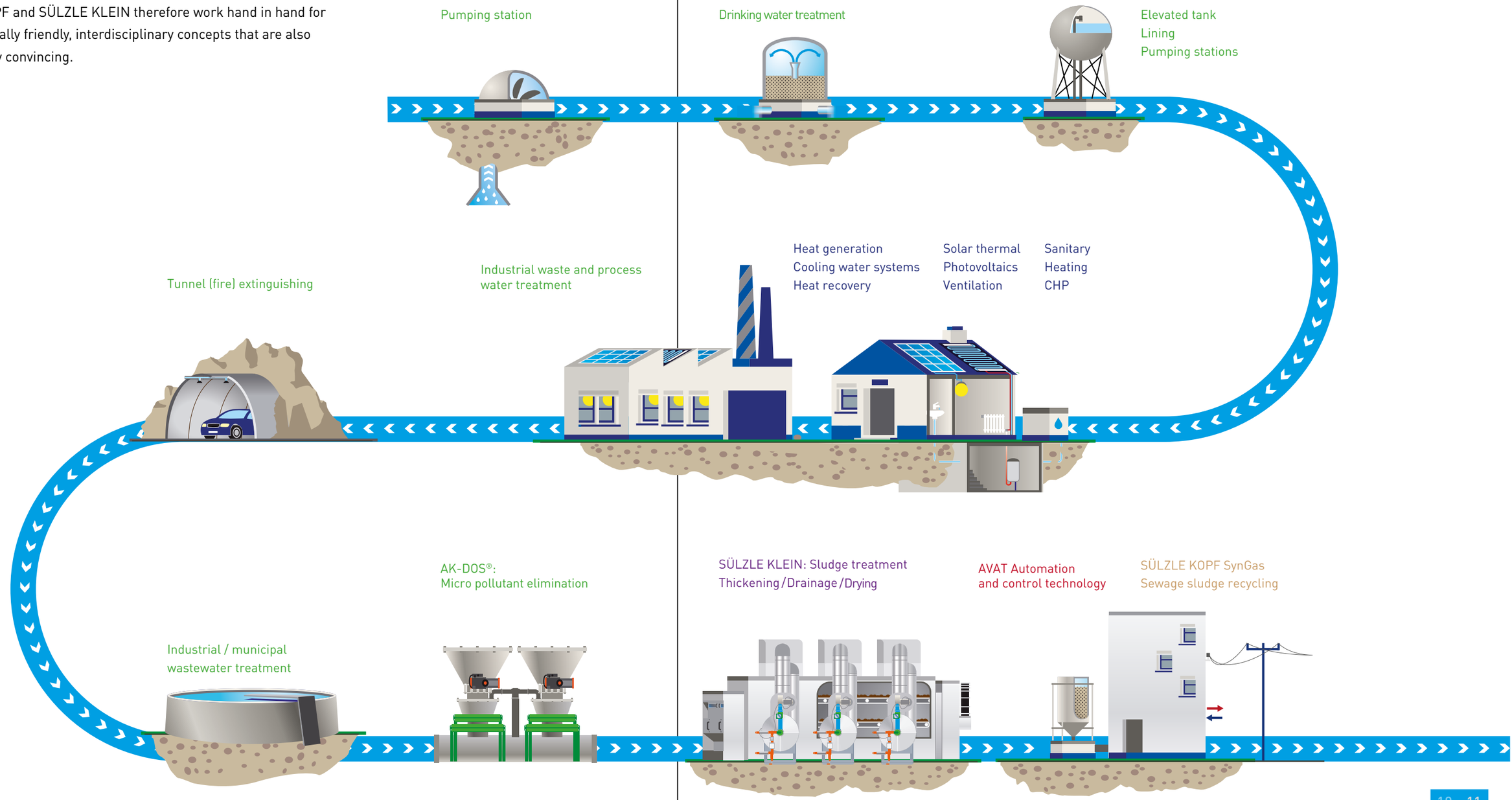
Heating · Ventilation · Solar · A/C · Sanitary · Service

MANUFACTURING IN OWN WELDING TECHNOLOGY

SÜLZLE KLEIN: SLUDGE TREATMENT

AVAT AUTOMATION: MEASUREMENT/CONTROL TECHNOLOGY
PROCESS - CONTROL TECHNOLOGY
(IN COOPERATION WITH AVAT AUTOMATION)

SÜLZLE KOPF SynGas: SEWAGE SLUDGE RECYCLING



SÜLZLE

convincing.sustainable.

STEEL
ENERGY
IDEAS

KOPF SynGas GmbH & Co. KG
Stützenstraße 6
72172 Sulz a. N.
Germany

Office Tübingen
Derendinger Straße 40
72072 Tübingen
Germany

phone +49 7071 54954 - 50
fax +49 7071 54954 - 60
mail info@kopf-syngas.de
web kopf-syngas.de

Part of the SÜLZLE Group.