

■ ENERGY EFFICIENCY IN POOLS: STATE OF THE ART IN GERMANY AND OUTLOOK

IAKS CONFERENCE

ASKER, NORWAY

THURSDAY 8TH 2022

DIPL.-ING. JÜRGEN KANNEWISCHER



1. STATE OF THE ART

2. OUTLOOK

3. SUMMARY

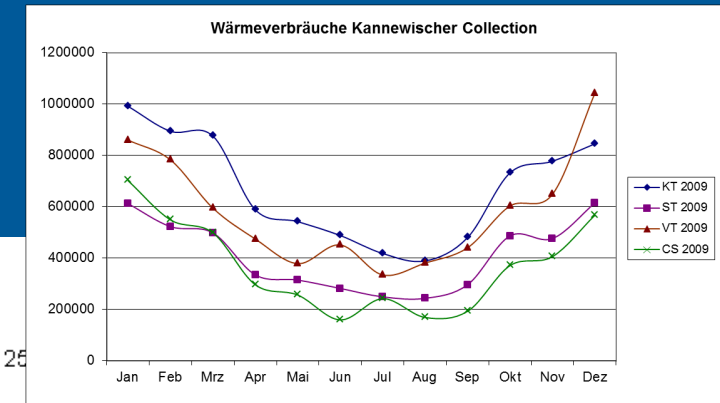
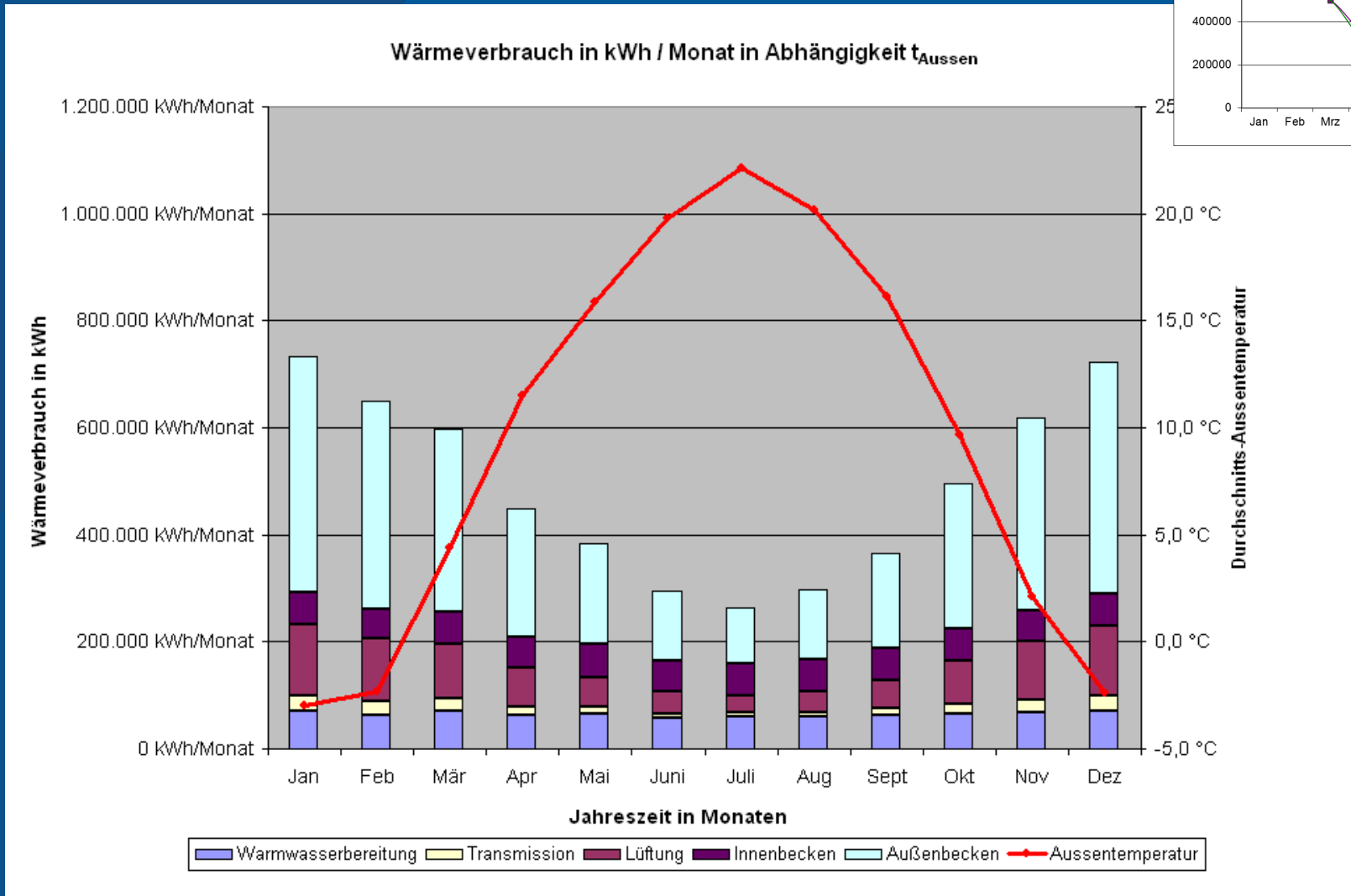


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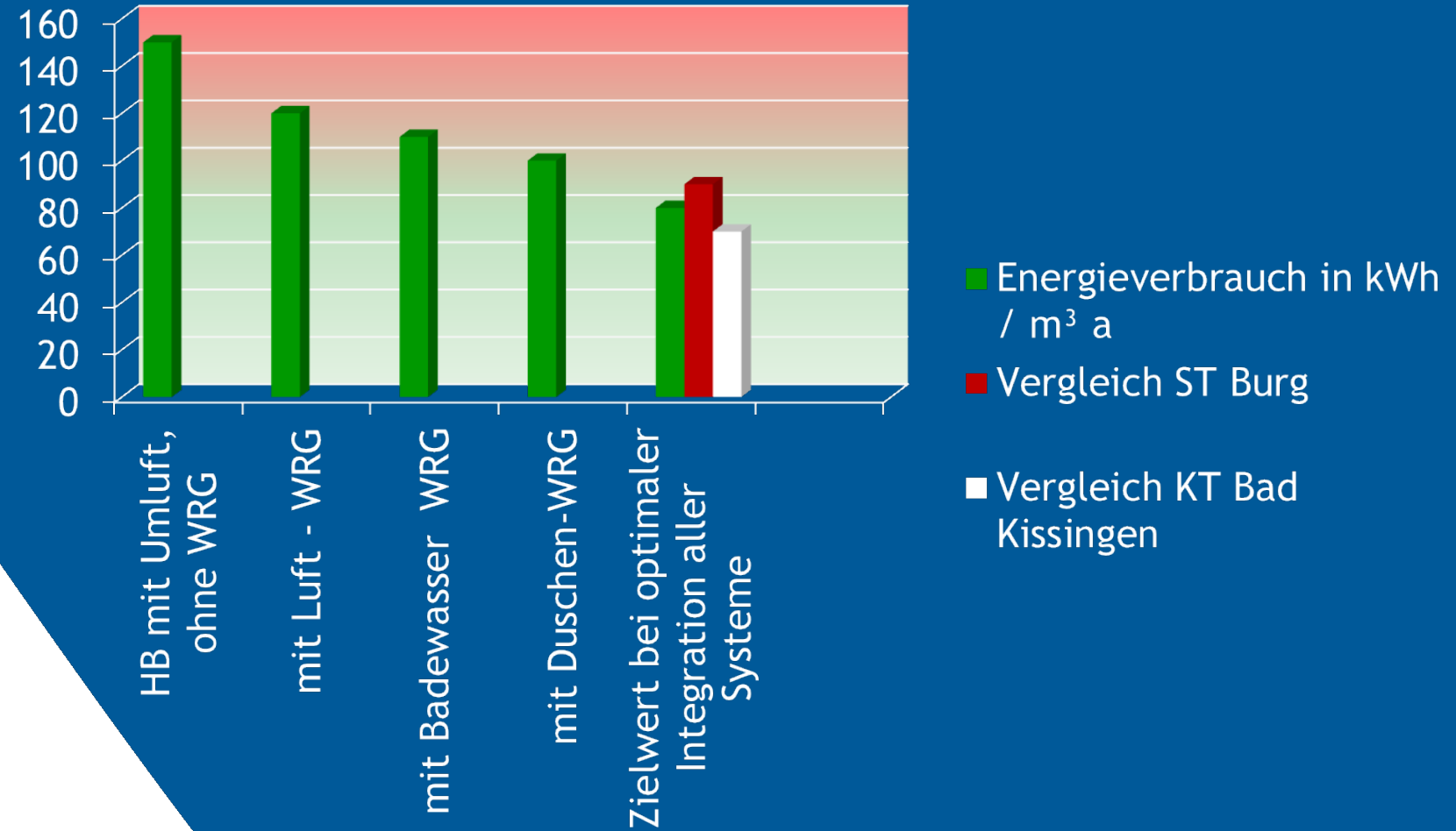
STATE OF THE ART



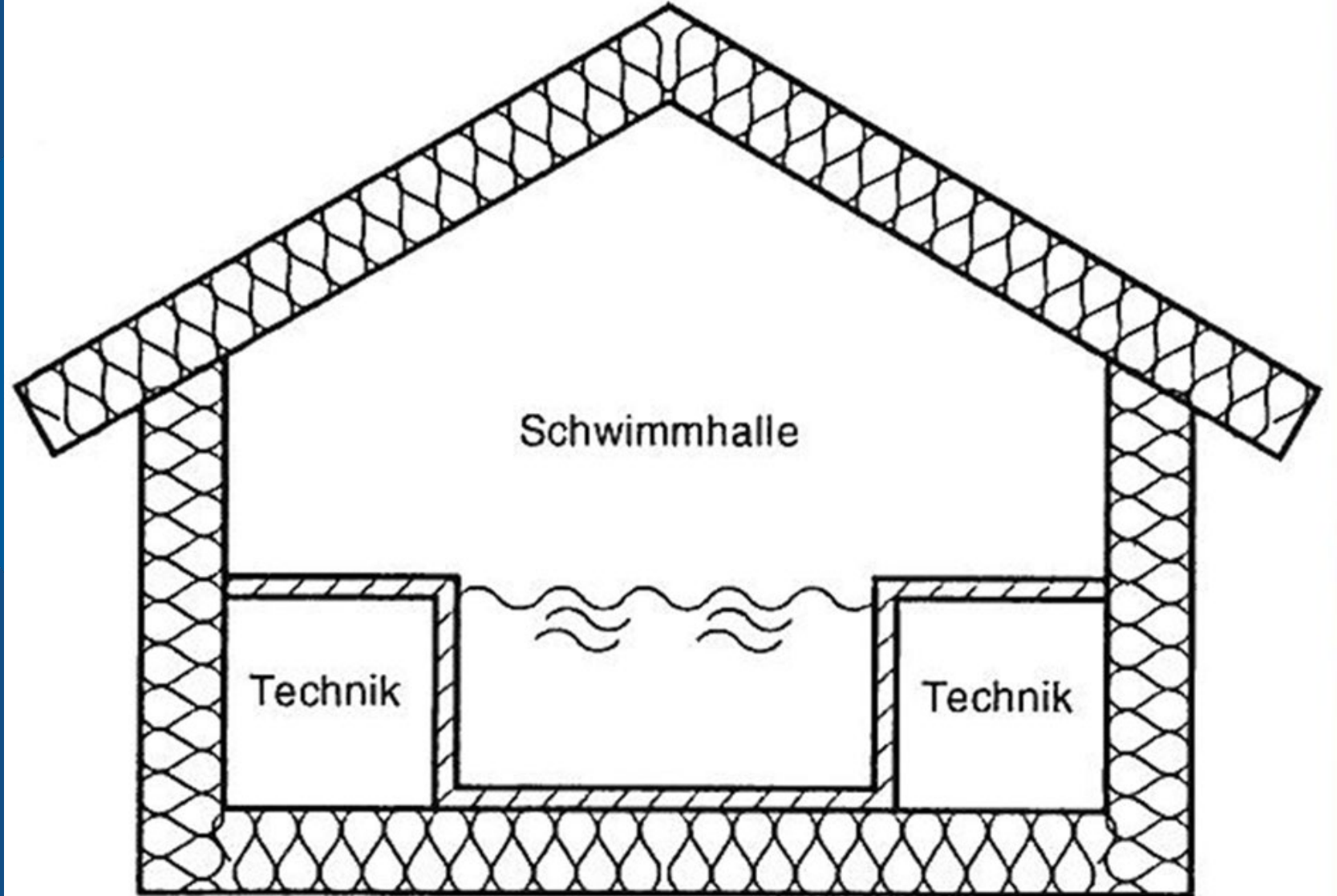
TYPICAL HEAT DEMAND



SPECIFIC ENERGY CONSUMPTION



HEAT INSULATION IN INDOOR SWIMMING POOLS

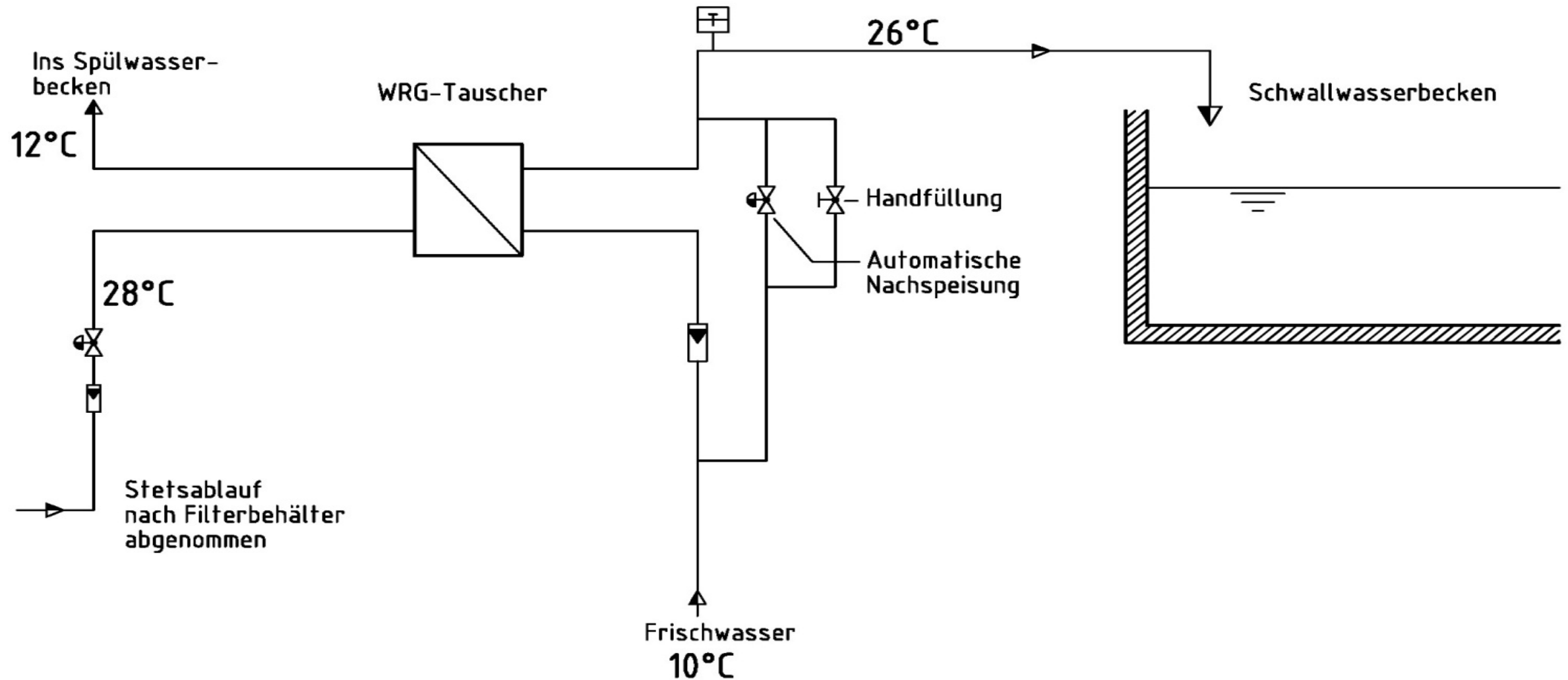


„STANDARD“ CONCEPT

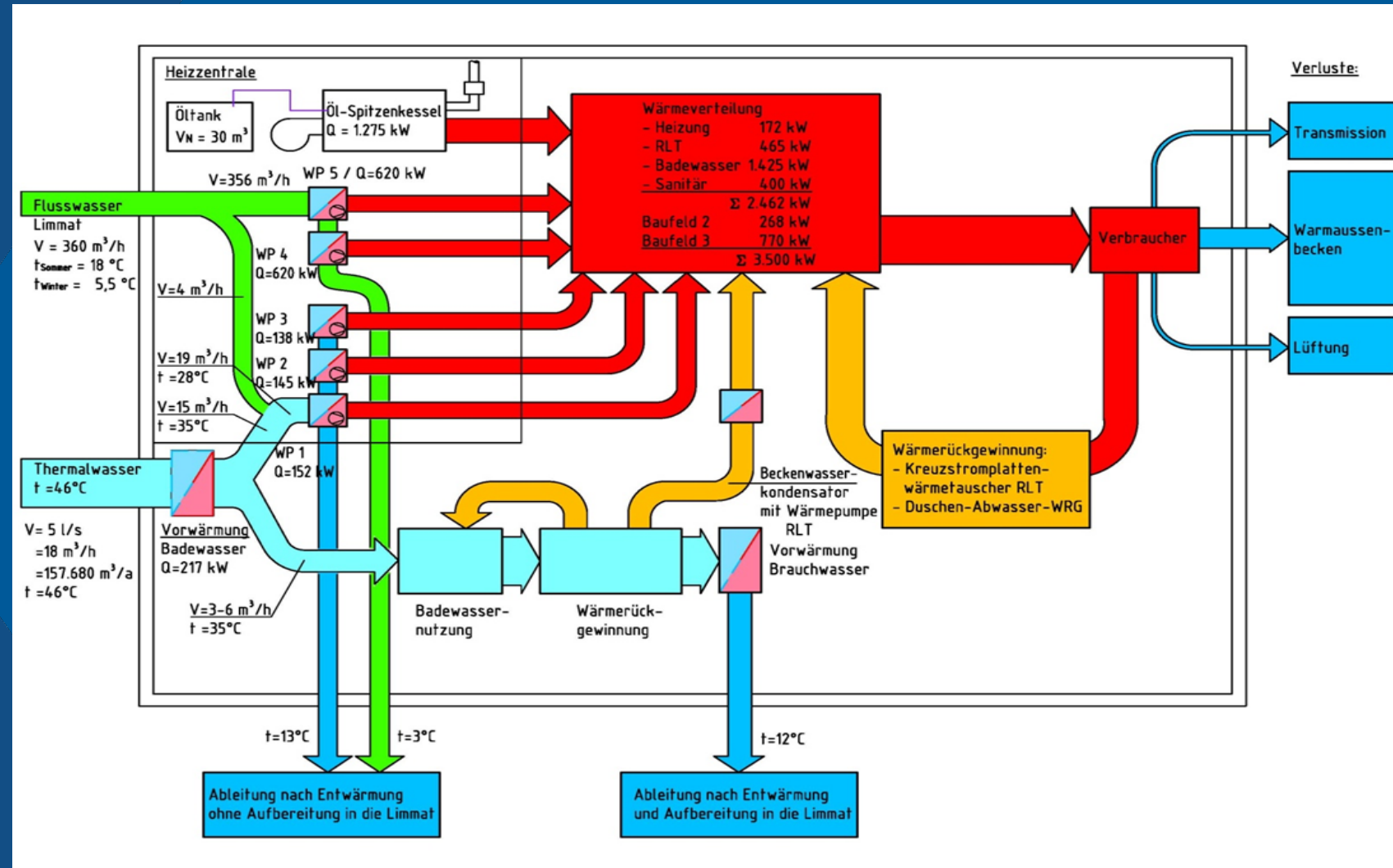
THE "STANDARD" ENERGY CONCEPT IS BASED ON THE ASSUMPTION THAT IT SHOULD MAKE SENSE ECOLOGICALLY ON THE ONE HAND AND ECONOMICALLY ON THE OTHER.

UNTIL NOW, WE HAVE ASSUMED THAT SECURITY OF SUPPLY IS NOT A PROBLEM.

HEAT RECOVERY WATER TREATMENT (FRESHWATER EXCHANGE)

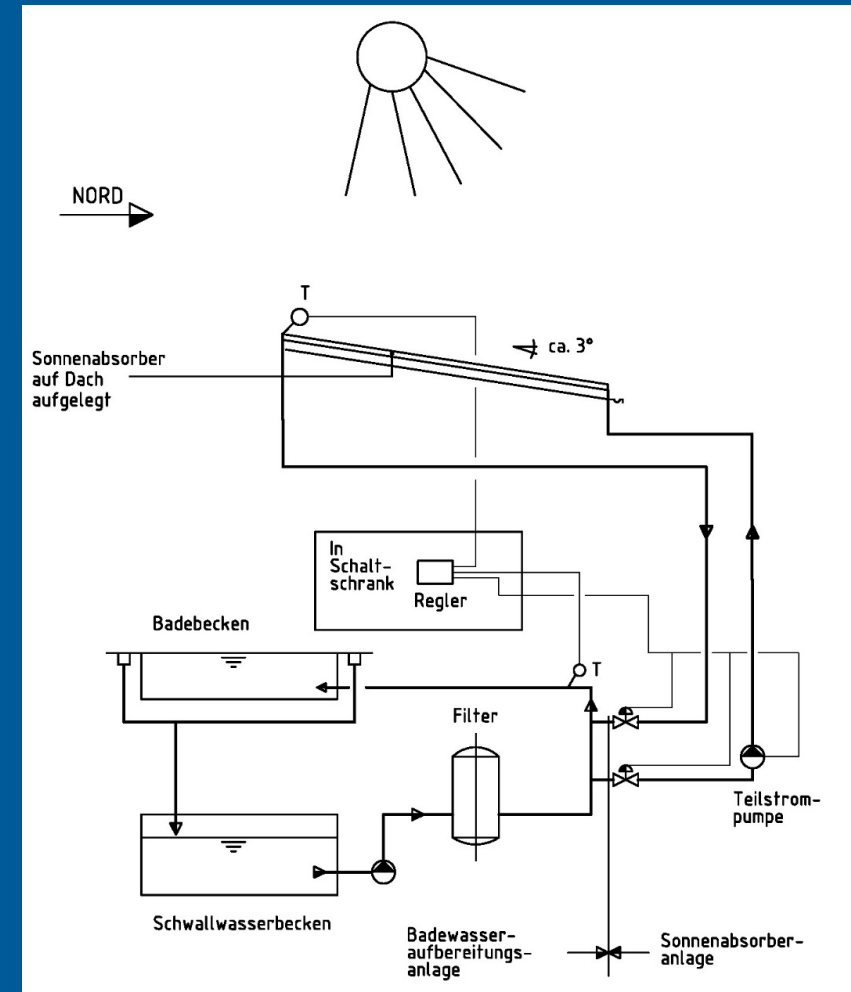


HEAT RECOVERY VENTILATION AND ALL OTHER SYSTEMS

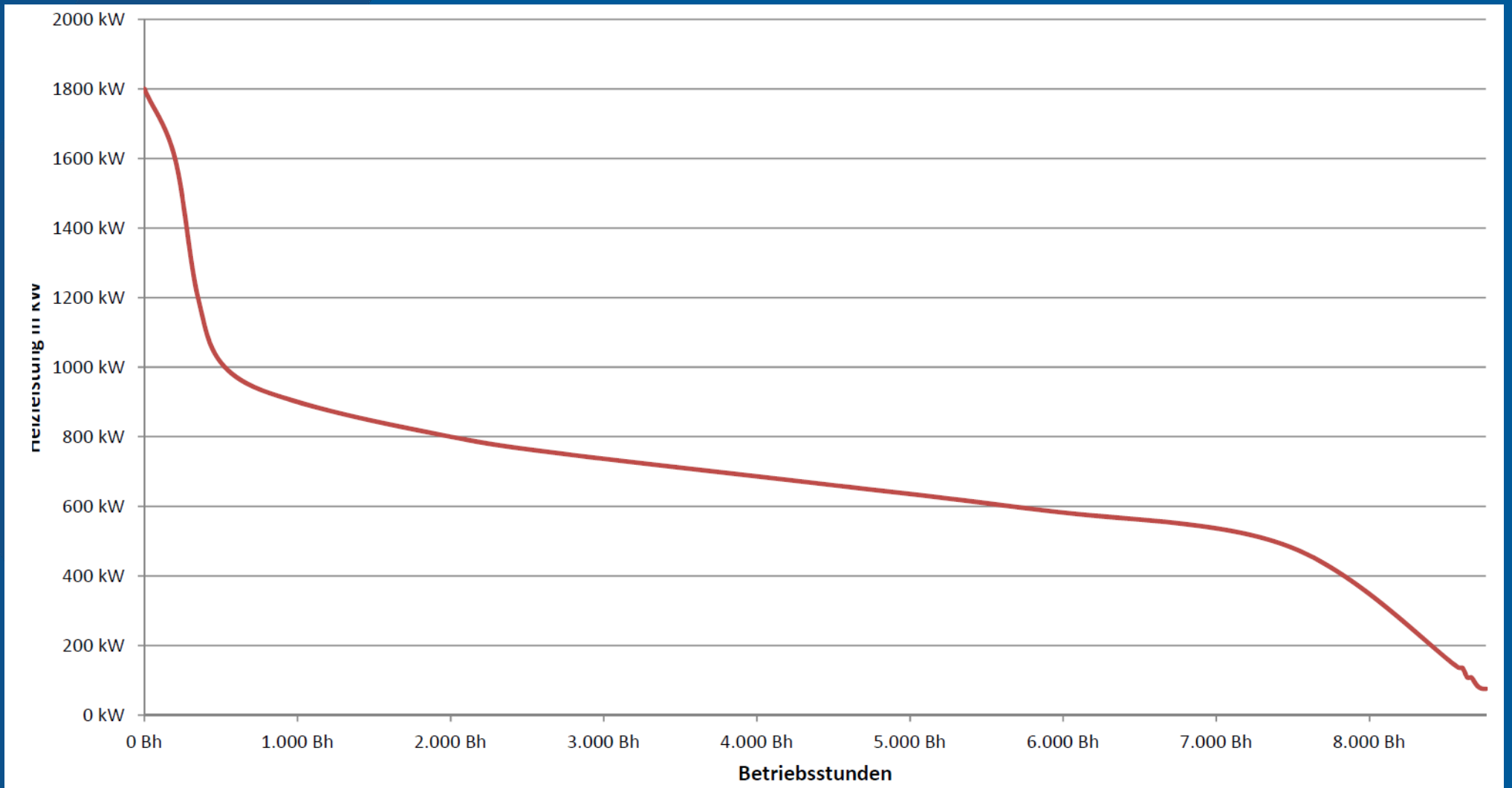


AND OF COURSE RENEWABLE ENERGY AS MUCH AS WE CAN

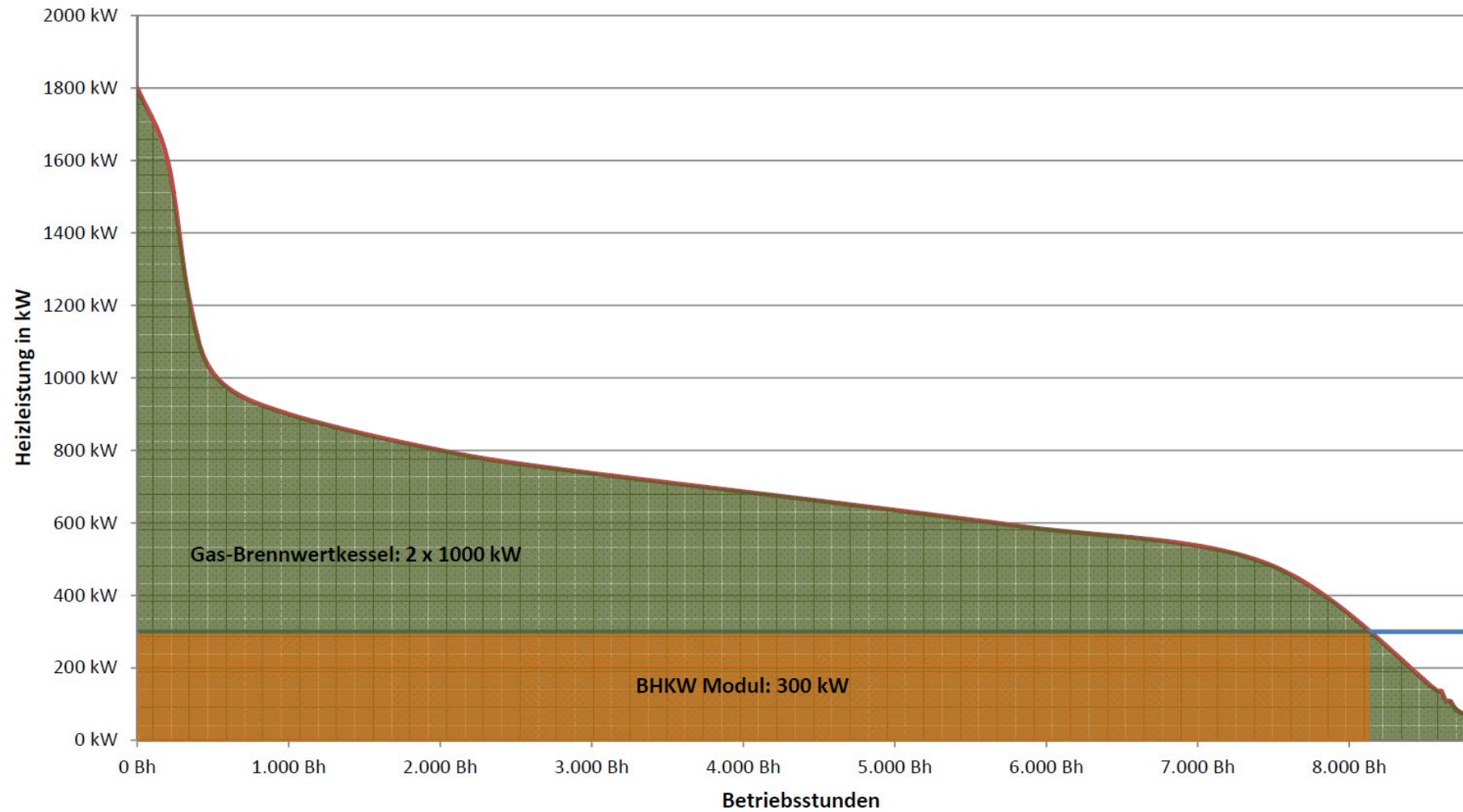
Solar heating
Photovoltaik
LED-Lights
.....



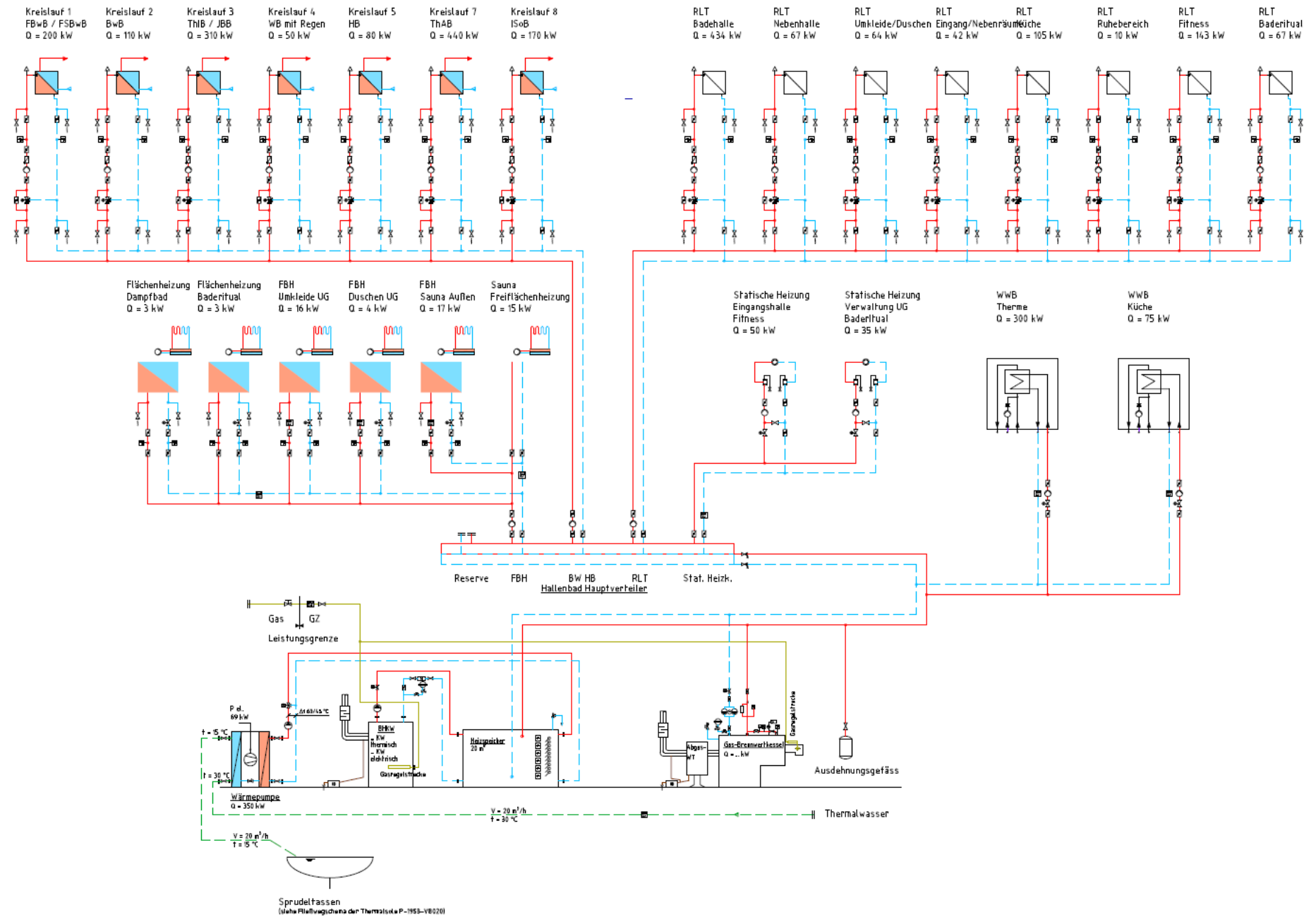
RUNNING TIMES DIAGRAM



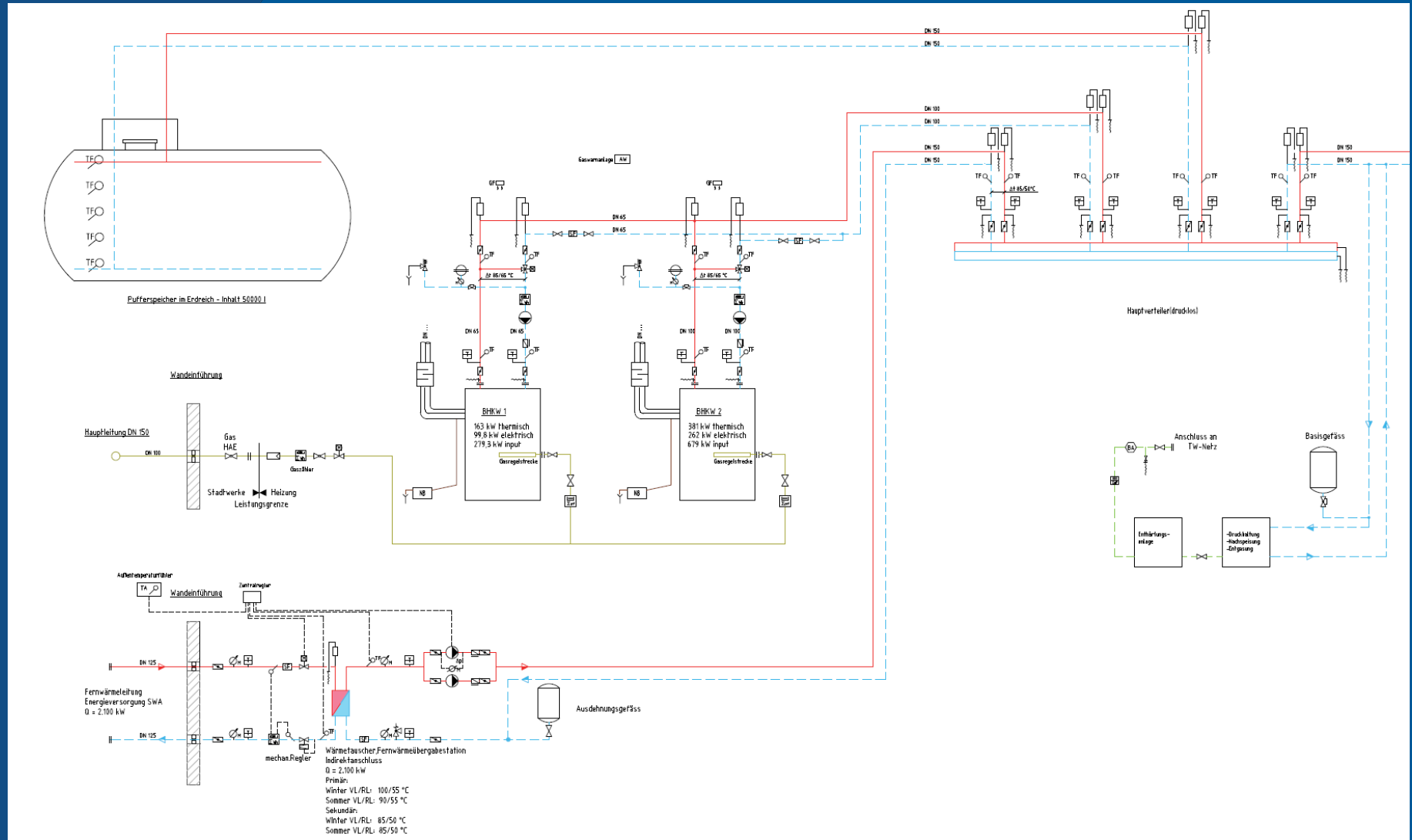
RUNNING TIMES DIAGRAM



HEATING SCHEMA



HEATING SCHEMA WITH DISTRICT HEATING



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OUTLOOK



„NEW WORLD“ CONCEPT

SINCE CARBON IS TAXED AND WILL BE SUBJECT TO MORE AND MORE TAXES IN THE FUTURE, ECOLOGY HAS BECOME THE CENTRAL ISSUE.

CARBON IS THE NEW CURRENCY!

IN THE CURRENT SITUATION, SECURITY OF SUPPLY HAS BECOME A PROBLEM THAT MUST BE CONSIDERED FOR THE FUTURE.

„NEW WORLD“ CONCEPT

ENERGY MONITORING (INVESTIGATING, UNDERSTANDING AND OPTIMISING OPERATIONS)

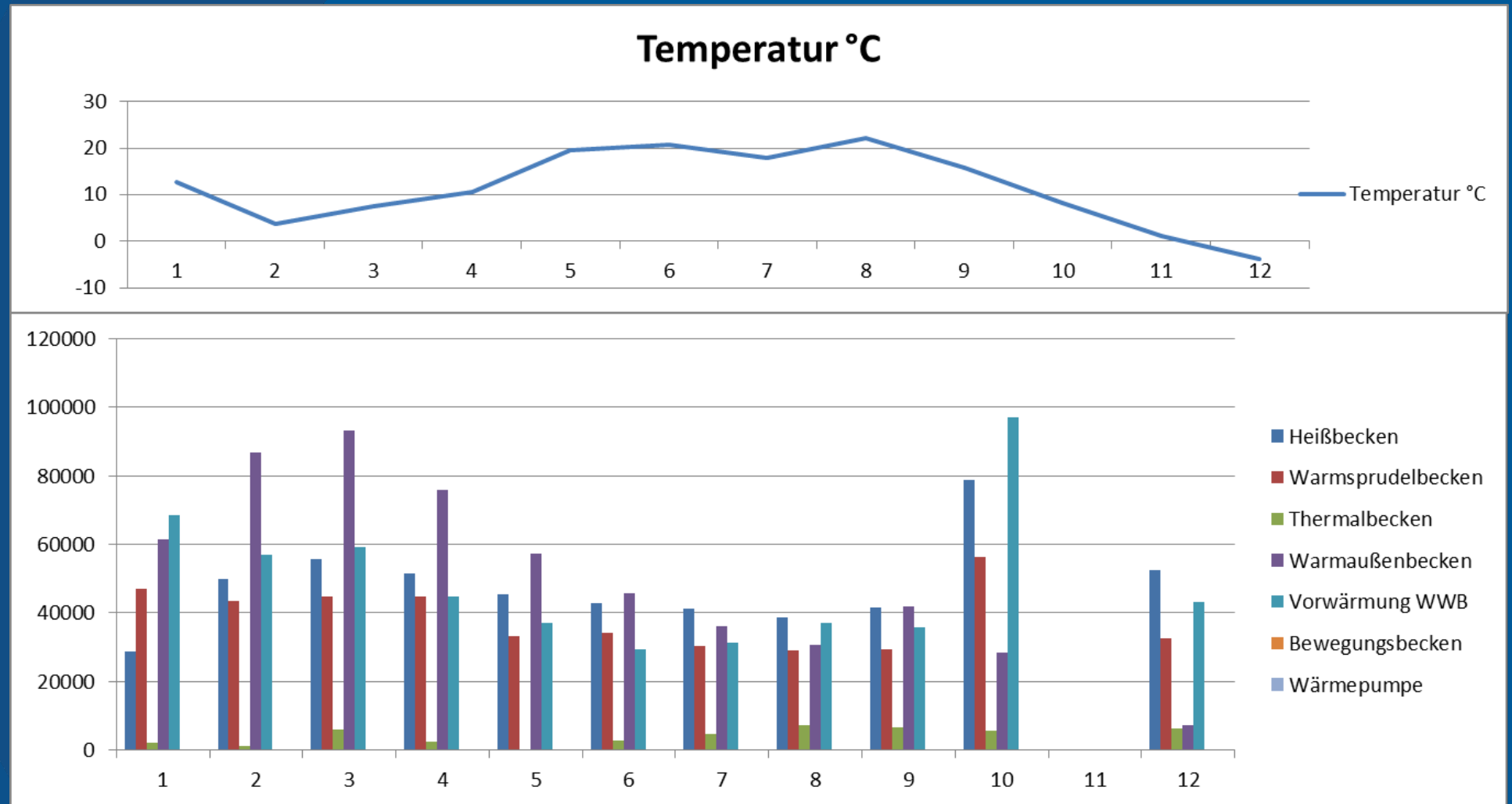
USING GEOTHERMAL ENERGY

INSTALLING HEAT PUMPS

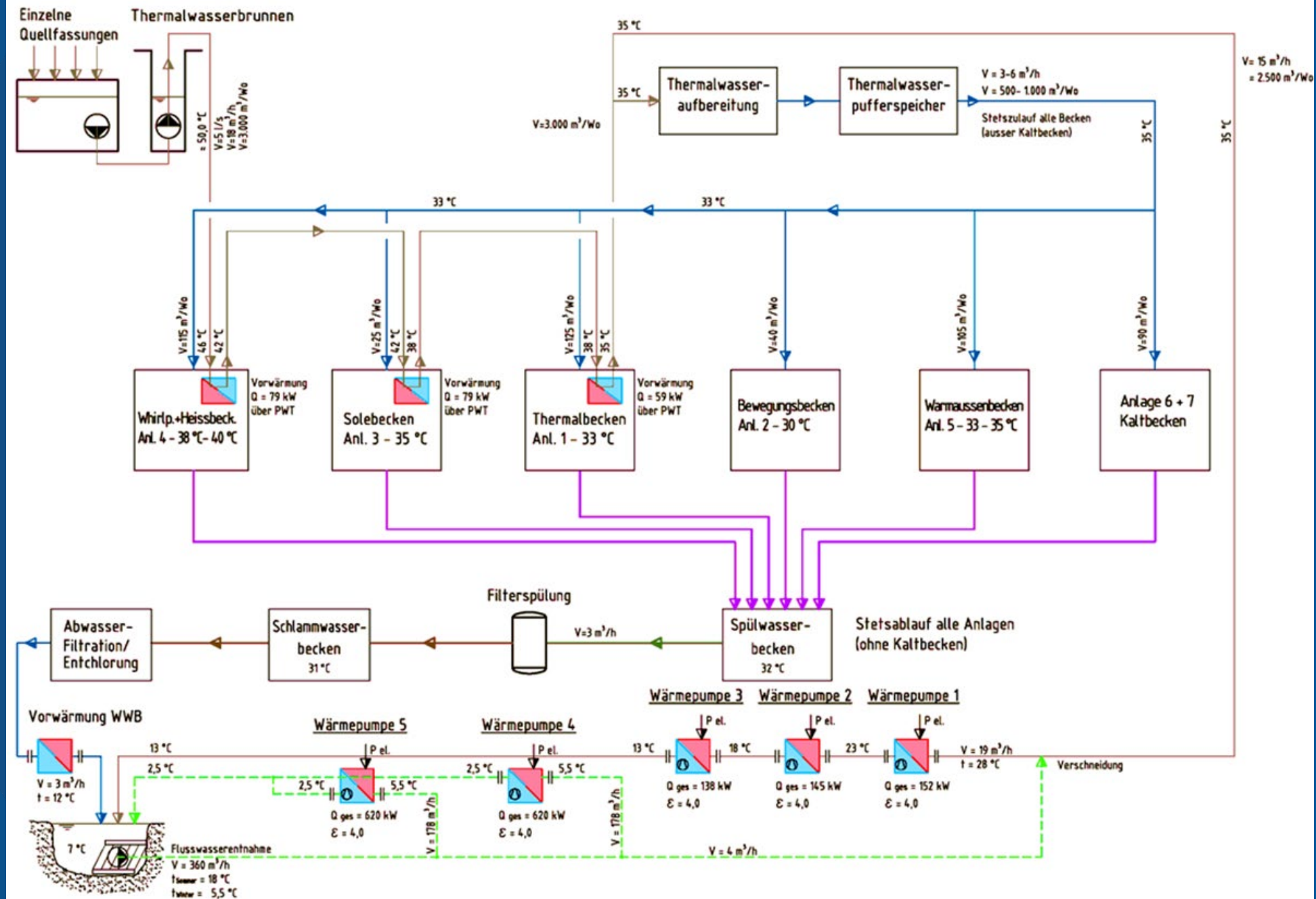
USE "FREE" ENERGY (COOLING)

CHECK WATER AND AIR TEMPERATURES (NO REDUCTION IN COMFORT)

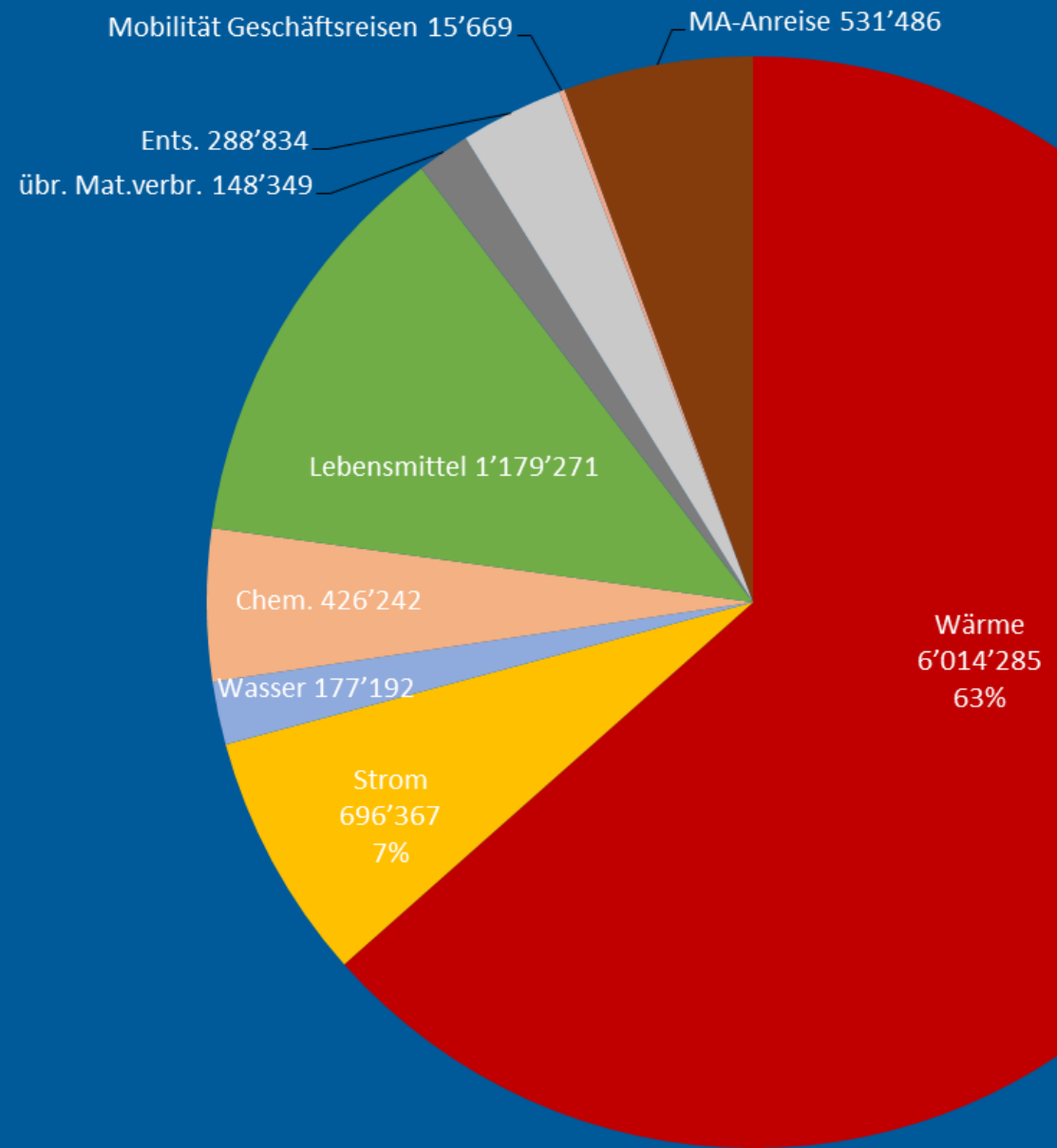
ENERGY MONITORING



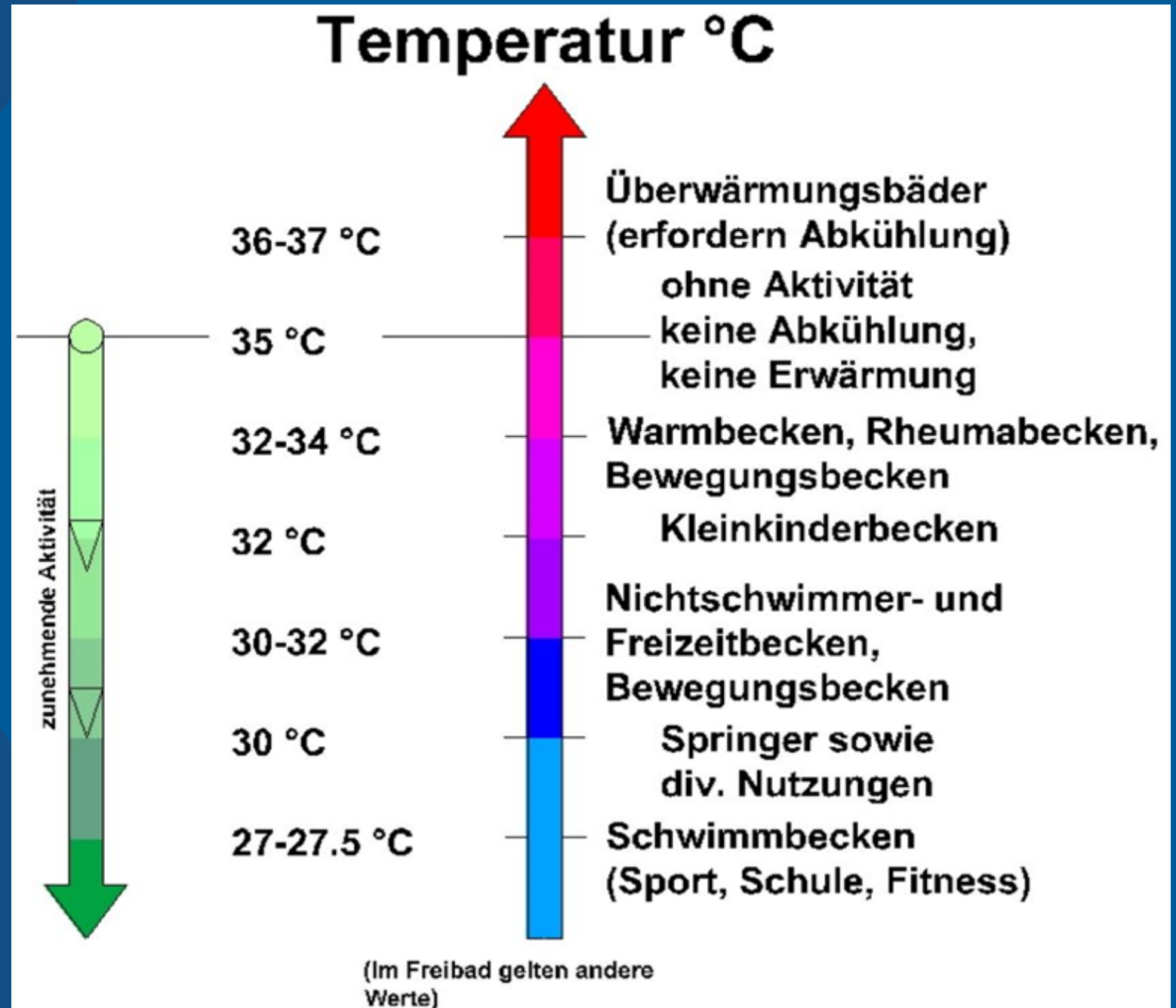
THERMAL WATER AS ENERGY SUPPLY



CO2E ANNUAL CONSUMPTION KANNEWISCHER COLLECTION 2020 (IN KG)



CONCEPT OF POOLS, TEMPERATURES, HUMIDITY



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SUMMARY



SUMMARY, NEW INSIGHTS

- The world goes electric
- Separating temperatures(Attention: hot water hygiene)
- Ecology, economy and security of supply must be weighed up at the very beginning.
- There is much potential for improvement in operation



THANK YOU FOR YOUR ATTENTION



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