Investor Pitch Deck

AG Therm, LLC

SUMMARY

- WE ARE AG THERM, LLC, A NYC-BASED COMPANY INVESTIGATING OPTIONS TO COMMERCIALIZE OUR PATENTED BREAKTHROUGH HYDROGEN-BASED DECARBONIZATION TECHNOLOGY, AG-CYCLE. THE TECHNOLOGY REDUCES LIQUID AND GASEOUS HYDROCARBON FUELS AND CARBON DIOXIDE EMISSIONS BY 60%. THE WORLD'S #1 TESTING, INSPECTION, AND CERTIFICATION COMPANY, SGS, SA, VALIDATED THIS CLAIM. CURRENTLY, AG-CYCLE STANDS ALONE IN ITS FIELD, WITH NO COMPETITION.
- AG-CYCLE IS COMPATIBLE WITH VIRTUALLY ALL EXISTING INDUSTRIAL EQUIPMENT UTILIZED IN THERMAL POWER PRODUCTION AND ENERGY-INTENSIVE INDUSTRIES, INCLUDING HEATING, OIL REFINING, THERMAL WATER DESALINATION, CEMENT, HYDROGEN, FERTILIZER PRODUCTION, ETC. IT IS ALSO APPLICABLE IN HIGHWAY HYBRID TRANSPORTATION, HYBRID EVTOLS, AND CERTAIN TYPES OF POWER STORAGE.
- AG-CYCLE IS BASED ON LOW-ENERGY NUCLEAR REACTIONS (LENR), AN EMERGING AREA OF PHYSICS, RESEARCHING PHENOMENA WITH "ANOMALOUS" HEAT RELEASE (ONLY RECENTLY, THE USPTO ALLOWED A DISTINCT SUB-CLASS FOR LENR-RELATED INVENTIONS: G21B3/00). AG-CYCLE IS A SCALABLE SOLUTION; OUR SUCCESSFUL TESTING OF 100 KW AND 1 MW MULTI-FUEL AG-BURNER PROTOTYPES IS A TESTAMENT TO THIS.
- THE FACTORS MAKING AG-CYCLE AN UNMATCHED INVESTMENT OPPORTUNITY IN DECARBONIZATION ARE LOW COST, WHICH MAKES THE PAYBACK PERIOD SHORTER THAN ONE YEAR, AND LOW CAPEX ON MANUFACTURING FACILITIES FOR AG-BURNERS MASS PRODUCTION.
- OUR MASTER PLAN BUSINESS STRATEGY IS INSTALLING AG-BURNERS IN LARGE RESIDENTIAL AND OFFICE BUILDINGS IN NYC. OUR ESTIMATES INDICATE THIS STRATEGY WILL INCREASE THE COMPANY'S FMV TO $1BN IN 6 - 7 YEARS AND WILL REQUIRE A TOTAL CAPITAL INVESTMENT OF $2M. WE HAVE FINANCED THE PROJECT WITH OUR FUNDS. TODAY, WE SEEK A SEED $0.5M - $1M INVESTMENT TO BUILD AN AG-BURNER READY FOR MASS PRODUCTION.

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TECHNOLOGY SUMMARY

AG-CYCLE IS A BREAKTHROUGH TECHNOLOGY THAT ALLOWS FOR:

- PRODUCING 2.5 MORE THERMAL ENERGY (HEAT) FROM HYDROCARBON AND CARBON FUELS COMPARED WITH CONVENTIONAL COMBUSTION
- REDUCING SPECIFIC CARBON DIOXIDE (CO_2) EMISSION BY 60%
- PRODUCING HIGH OUTPUT TEMPERATURE OF UP TO 2,000 C° AND MORE
- ACHIEVING TARGETS OF PARIS AGREEMENT AHEAD OF SCHEDULE AND AT A FRACTION OF COST IF IMPLEMENTED UBIQUITOUSLY (TO KEEP TEMPERATURE RISE WITHIN 1.5°C CO_2 EMISSIONS NEED TO DECLINE BY ~45% FROM THE 2010 LEVEL BY 2030)
- INCREASING PERFORMANCE OF CERTAIN ENERGY-INTENSIVE INDUSTRIAL PROCESSES
- IMPROVING QUALITY OF CERTAIN INDUSTRIAL PRODUCTS

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AG-CYCLE

- "BASED ON THE TESTS AND CALCULATIONS, THE EFFICIENCY INDEX OF THE AG BURNER IS CONSIDERED TO BE APPROXIMATELY 2.5 DURING STABLE OPERATION AT OPTIMAL PARAMETERS." – CONCLUSION OF THE REPORT ISSUED BY THE WORLD'S LEADING TESTING, INSPECTION, AND CERTIFICATION COMPANY SGS SA IN MAY 2023.
- AG-CYCLE IS BASED ON A PROPRIETARY PROCESS*, THE HIGH-TEMPERATURE OXIDATION OF HYDROCARBONS WITH WATER. THE HYDROGEN GAS, PRODUCED IN THIS PROCESS IS OXIDIZED IN THE COMBUSTION CHAMBER USING OXYGEN FROM THE AIR, GENERATING HEAT. ADDITIONALLY, NON-CHEMICAL REACTIONS BETWEEN THE CONSTITUENT PARTS OF THE HYDROGEN MOLECULES AND CERTAIN METALLIC PORTIONS OF AG-BURNER RESULT IN ADDITIONAL HEAT PRODUCTION, ACCOUNTING FOR A 60% REDUCTION IN SPECIFIC FUEL CONSUMPTION.

AG-BURNER

- 100 KW, 1 MW MULTI-FUEL AG-BURNER PROTOTYPES WITH 60% LOWER SPECIFIC HYDROCARBON FUEL CONSUMPTION WERE BUILT AND SUCCESSFULLY TESTED.
- AG-BURNERS ARE COMPATIBLE WITH EXISTING EQUIPMENT UTILIZED IN THERMAL (RANKINE CYCLE) POWER PRODUCTION AND IN ENERGY INTENSIVE INDUSTRIES, INCLUDING CEMENT, HYDROGEN PRODUCTION, WATER DESALINATION, ETC. SINCE AG-BURNERS ALSO CONSUME WATER FOR THEIR OPERATION, EQUIPMENT RECOVERING WATER FROM EXHAUST GASES MAY BE NEEDED TO REDUCE RELIANCE ON EXTERNAL WATER SUPPLY.
- AG-BURNER IS ALSO COMPATIBLE WITH EXTERNALLY-FIRED GAS TURBINE GENERATORS, ALTHOUGH IT IS GOOD TO KEEP IN MIND THAT THEIR NAMEPLATE CAPACITY REARILY EXCEEDS 4 MW OF POWER.
- AG-BURNER MAY BE RETROFITTED TO CONVENTIONAL GAS TURBINE GENERATORS, BUT IN GENERAL, IT MAY REQUIRE THE DEVELOPMENT OF THE INDIVIDUAL AG-BURNER DESIGN FOR EACH GAS TURBINE MODEL.

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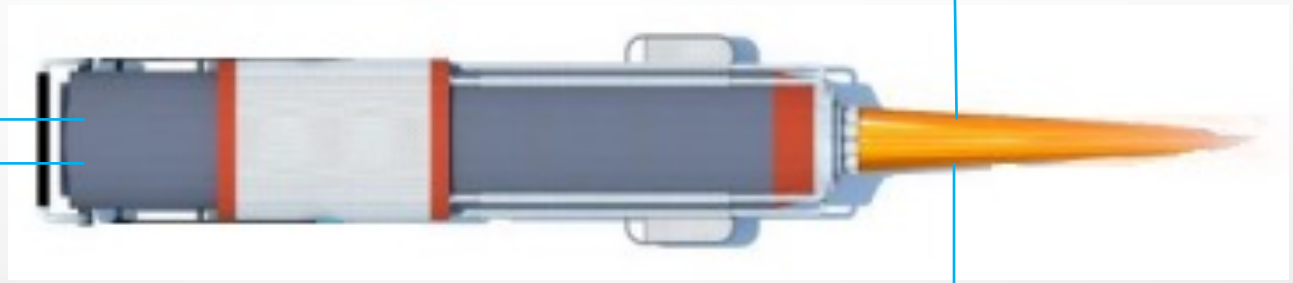
AG-BURNER

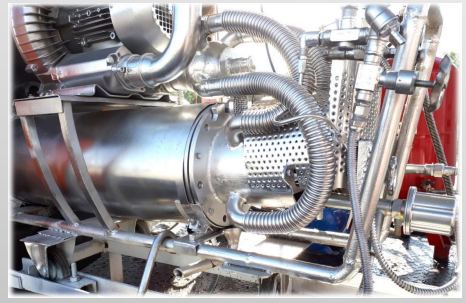
FUEL (IN) 40%

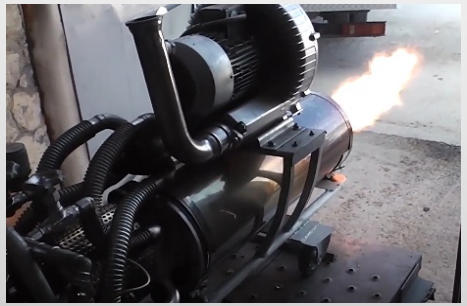
WATER (IN)



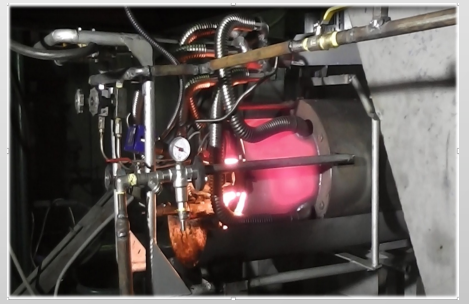
HEAT (OUT) 100%

CO_2 EMISSIONS 40%









PATENTS

- USA
- CANADA
- GERMANY
- FRANCE
- UK
- ITALY
- SPAIN
- INDIA
- SOUTH KOREA

ACCORDING TO THE INTERNATIONAL MONETARY FUND, IN 2024,

THESE COUNTRIES PRODUCED 49% OF THE WORLD NOMINAL GDP

AG Therm™

AG Cycle™

AG Burner™

TARGET MARKET SEGMENTS

TRANSPORTATION:

- SERIES AND PLUG-IN HYBRID VEHICLES
- AUTONOMOUS EV CHARGING STATIONS
- HYBRID EVTOLs

THERMAL POWER PRODUCTION:

- THERMAL POWER PLANTS
- SUPERCRITICAL CARBON DIOXIDE (BRYTON CYCLE) CONVENTIONAL AND OXY- COMBUSION POWER PLANTS

HEATING/COOLING; COMBINED HEAT AND POWER (CHP) SYSTEMS UTILIZING:

- STEAM TURBINES
- STIRLING ENGINES
- EXTERNALLY-FIRED GAS TURBINES
- ORGANIC RANKINE CYCLE ENGINES
- ABSORBTION COOLING SYSTEMS

ENERGY INTENSIVE INDUSTRIES:

- CRUDE OIL REFINING (STEAM &POWER)
- CEMENT (CLINKER FIRING)
- METALS (DIRECT REDUCTION OF IRON)
- HYDROGEN (STEAM METHANE REFORMING)
- WATER DESALINATION (THERMAL METHODS)
- FOOD
- PAPER, GLASS, MINERAL WOOL, ETC.
- DISPOSAL/RECYCLING OF TOXIC WAST:
  - PHOSPHOGYPSUM
  - OIL SLUDGE
  - ORE WAST BENEFICATION

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MAJOR ECONOMIC BENEFITS

- REDUCTIONS OF SPECIFIC FUEL COSTS AND CARBON TAXES/CARBON CREDITS BY AROUND 60%
- UTILIZATION OF FUELS THAT ARE CURRENTLY AVAILABLE/THE CHEAPEST, INCLUDING LOW-GRADE FUEL OIL WITH MOISTURE CONTENT OF UP TO 70%
- ECONOMIC BENEFITS SUPPLEMENTARY TO THE FUEL COSTS AND CARBON TAX REDUCTION :
  - PROLOGNATION OF THE LIFE-CYCLE OF THERMAL POWER PLANTS SCHEDULED FOR DECOMMISSIONING DUE TO REDUCED EMISSION AND LOWER SPECIFIC FUEL COSTS
  - HIGHER QUALITY OF PRODUCTS IN CERTAIN ENERGY-INTENSIVE PROCESSES, SUCH AS ANHYDRITE BINDER, HIGH-GRADE CEMENT, STONE WOOL PRODUCTION. FOR EXAMPLE, THE POSSIBILITY OF CONVERTING PHOSPHOGYPSUM TO ANHYDRITE BINDER WITH COMPRESSIVE STRENGTH EXCEEDING 100 MPA
  - INCREASING THE PERFORMANCE OF ALREADY EXISTING EQUIPMENT DUE TO SHORTENING THE DURATION OF TECHNOLOGICAL PROCESSES.

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$1TR BUSINESS IN 10 YEARS

POTENTIAL FAIR MARKET VALUE (FMV) OF THE PROJECT IS ESTIMATED BASED ON THE FOLLOWING ASSUMPTIONS: THE PROJECT OWNER RETAINS 15% OF THE ECONOMIC BENEFITS PROVIDED BY AG-CYCLE IN THE HIGHWAY TRANSPORTATION SEGMENT, AND 25% IN THERMAL POWER PRODUCTION SEGMENT; NET PROFIT CONSTITUTES 64% OF SALES; P/E IS 20.

UNDER THESE ASSUMPTION, FMV OF THE HIGHWAY TRANSPORTATION SUB-PROJECT IS ESTIMATED AS: 1.15*ANNUAL COST OF FUEL*; FMW OF THE THERMAL POWER PRODUCTION SUB-PROJECT IS ESTIMATED AS: 1.9* ANNUAL COST OF FUEL.

ACCORDINGLY, POTENTIAL FMW OF THE HIGHWAY TRANSPORTATION SUB-PROJECT IS **$1.15TR**; THAT OF THE THERMAL POWER PRODUCTION SUB-PROJECT IS **$342BN**. MORE ACCURATE ESTIMATES INDICATE THAT IF SEVERAL OTHER SEGMENTS ARE ACCOUNTED FOR, THEN FMW GOES UP TO $2TR.

THE MAJOR FACTOR THAT CONTRIBUTES TO POSSIBILITY OF ATTAINING THE TARGET $1TR FMW SPECIFICALLY IN AROUND 10 YEARS, IS THAT AG-CYCLE EQUIPMENT USUALLY HAS SHORTER THEN 12 MONTHS PAYBACK PERIOD.

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HIGHWAY TRANSPORTATION

HIGHWAY TRANSPORTATION ACCOUNTS FOR CONSUMPTION OF NEARLY HALF OF ANNUALLY PRODUCED 35BN BARRELS OF OIL.

UTILIZATION OF AG-CYCLE IN HIGHWAY TRANSPORTATION MAY REDUCE THE GLOBAL OIL DEMAND BY AROUND 30% AND CARBON EMISSION BY AROUND 10%

WILL BE REALIZED THROUGH AG-CYCLE INTEGRATION INTO EXTERNALLY-FIRED GAS TURBINE GENERATORS THAT WILL BE INSTALLED ON SERIES AND PLUG-IN HYBRIDS IN PLACE OF AN INTERNAL COMBUSTION ENGINES

ANNUAL COST OF OIL FOR HIGHWAY TRANSPORTATION IS ESTIMATED AT **$1000BN***

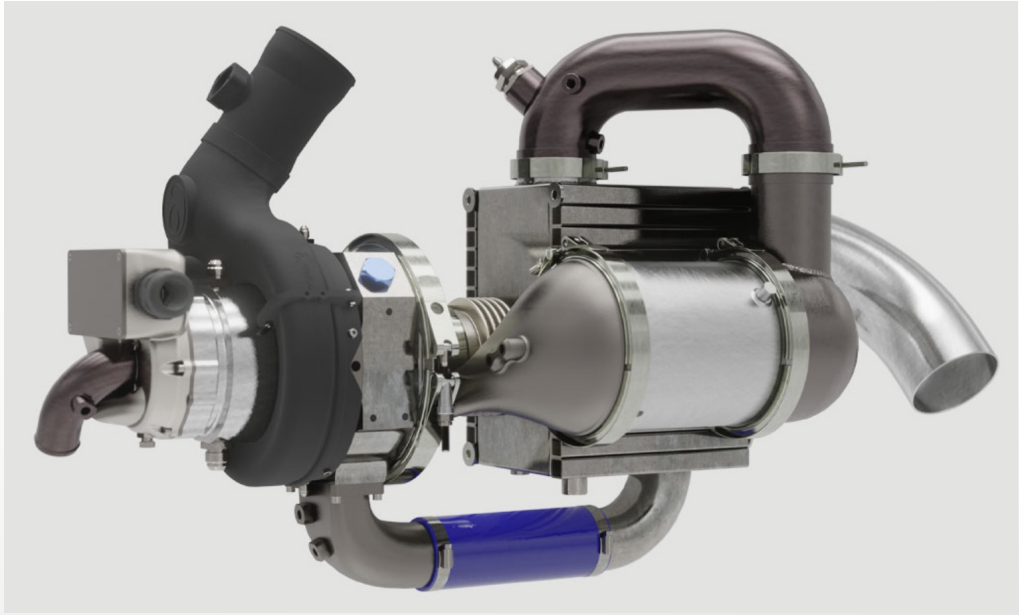

IMAGE OF COSWORTH'S 35 KW GAS TURBINE RANGE EXTENDER WITH ELECTRICAL EFFICIENCY OF AROUND 30%.

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AG-SERIES HYBRIDS WILL SPEED UP HIGHWAY TRANSPORTATION DECARBONIZATION AND DRAMATICALLY REDUCE ITS CAPEX

AG-SERIES AND AG-PLUG-IN HYBRIDS ARE EXPECTED TO BE A MORE SUSTAINABLE SOLUTION THAN CONVENTIONAL EVs. HERE IS WHY:

- THE CARBON FOOTPRINT OF SUCH VEHICLES WILL BE LOWER THAN THAT OF CONVENTIONAL EVs BY AROUND 15%
- MOST CONSUMERS WILL OPT FOR THEM DUE TO THE ABSENCE OF RANGE ANXIETY AND MORE IMPRESSIVE ECO-FRIENDLINESS
- THE AUTOMOBILE INDUSTRY WILL BE ABLE TO MASS PRODUCE THEM USING ALREADY EXISTING PRODUCTION CAPACITIES AND WILL BENEFIT FROM HIGHER PROFIT MARGINS DUE TO LOWER, COMPARED WITH EVs, PRODUCTION COSTS
- PROBLEMS OF CREATING THE CHARGING INFRASTRUCTURE AND UTILIZATION OF USED CAR BATTERIES WILL BE MITIGATED IF NOT WHOLLY SOLVED
- THEY WILL HAVE FUEL ECONOMY IN 110 – 150 MPG RANGE AND WILL BE UNSUSCEPTIBLE TO FUEL QUALITY

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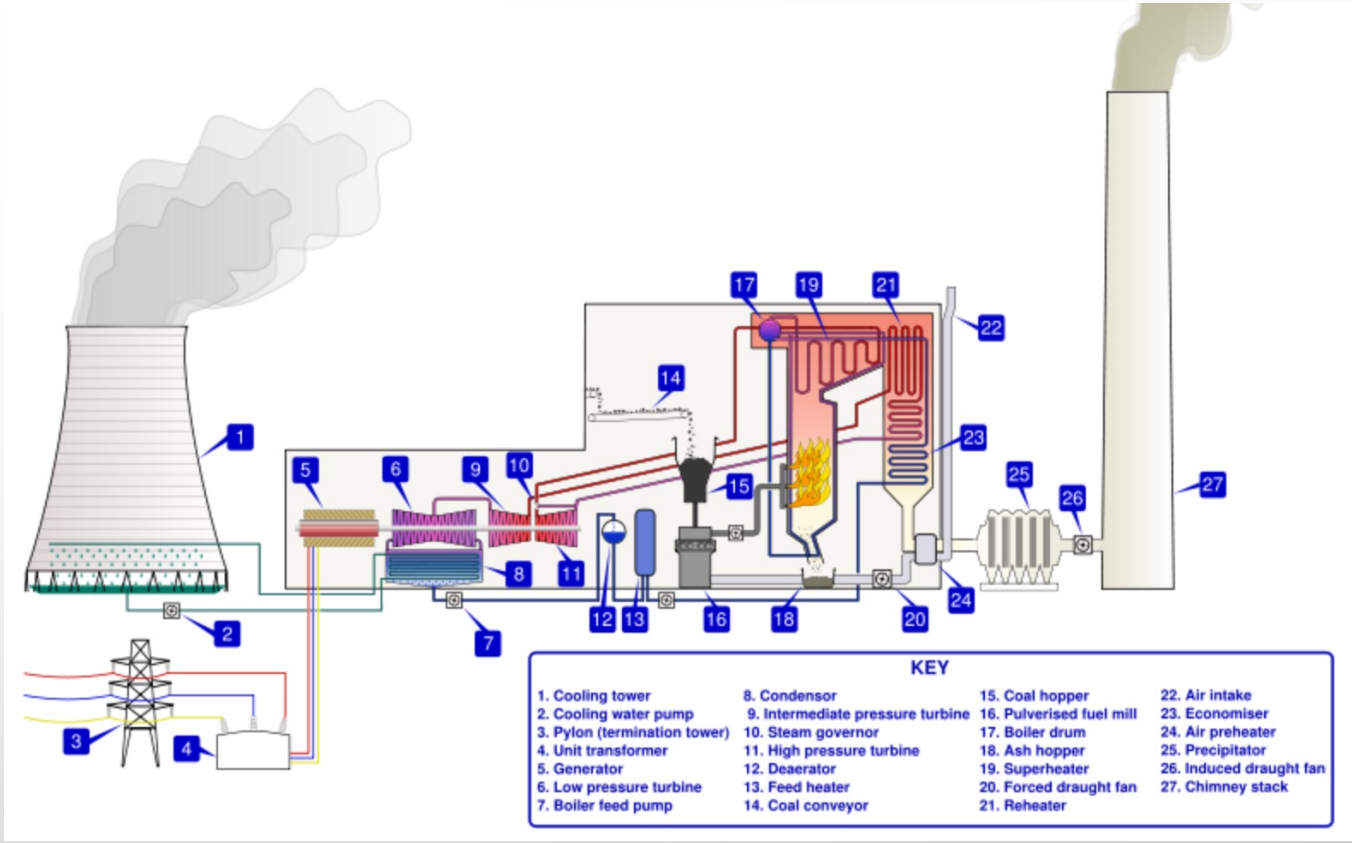
THERMAL POWER PLANTS

IN THERMAL (RANKINE CYCLE) POWER PLANTS RUNNING ON COAL AND OIL FUEL, IMPLEMENTATION OF AG-BURNERS REQUIRES MINIMAL MODIFICATIONS TO THE EQUIPMENT ALREADY IN USE.

SINCE 2000, THE WORLD HAS DOUBLED ITS COAL-FIRED POWER CAPACITY TO AROUND 2,045 GIGAWATTS. A FURTHER 200GW IS BEING BUILT, AND 300GW IS PLANNED.

ANNUAL COST OF COAL FOR COAL-FIRED POWER PLANTS IS ESTIMATED AT **$180BN**



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THERMAL POWER PLANTS

A 3,500 MW COAL-FIRED POWER PLANT ANNUALLY PRODUCING13.5 TWH OF ELECTRICITY, AND PAYING $250M FOR THE FUEL MAY EITHER SUSTITUTE ITS CONVENTIONAL COAL BURNERS WITH AG-BURNERS AND HAVE ITS ANNUAL FUEL COSTS REDUCED BY UP TO $150M OR RE-FIRE TO NATURAL GAS WITH AG-BURNERS ANS STILL PAY LESS FOR FUEL THAN BEFORE.

AG-CYCLE MAY POSTPONE OR CANCEL THE DECOMISSIONING OF MANY COAL POWER PLANTS BY REDUCING CARBON DIOXIDE EMISSION BY AROUND 2.5 TIMES.



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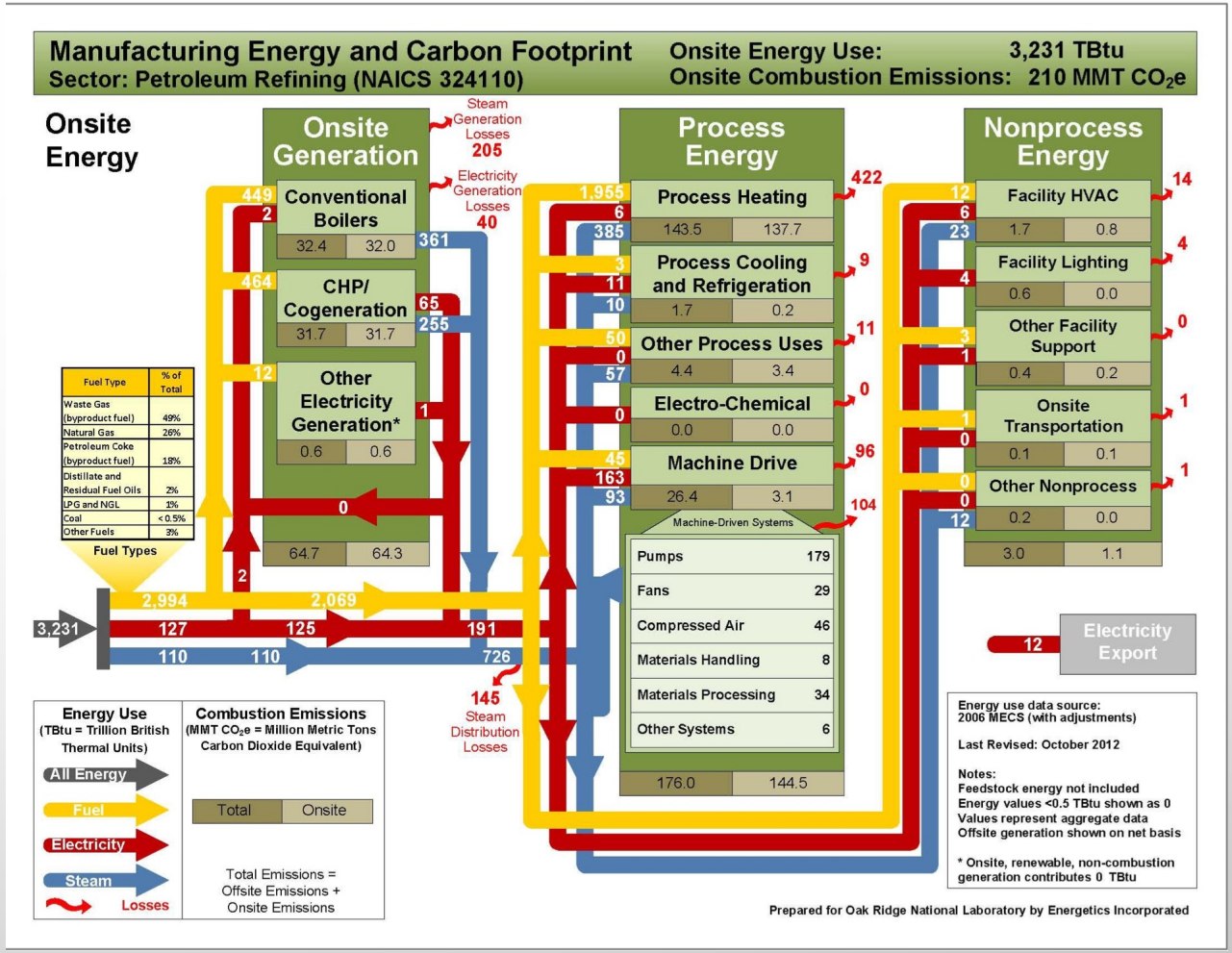
CRUDE OIL REFINING

OIL REFINERIES SPEND ENERGY EQUIVALENT TO AT LEAST 6% OF THE CRUDE OIL THEY PROCESS. ENERGY COSTS AT SOME REFINERIES ACCOUNT FOR UP TO 50% OF TOTAL OPEX. MOST OF THIS CONSUMPTION RELATES TO STEAM AND POWER PRODUCTION.

NOT ONLY CAN AG-CYLCE REDUCE OIL REFINING COSTS BY AROUND 60%, IT CAN DELIVER ADDITIONAL OPEX REDUCTION BY USING VERY LOW-GRADE FUELS WITH MOISTURE CONTENT OF UP TO 70%.

ANNUAL COST OF FUEL CONSUMED BY CRUDE OIL REFINERIES IS ESTIMATED AT **$90BN**

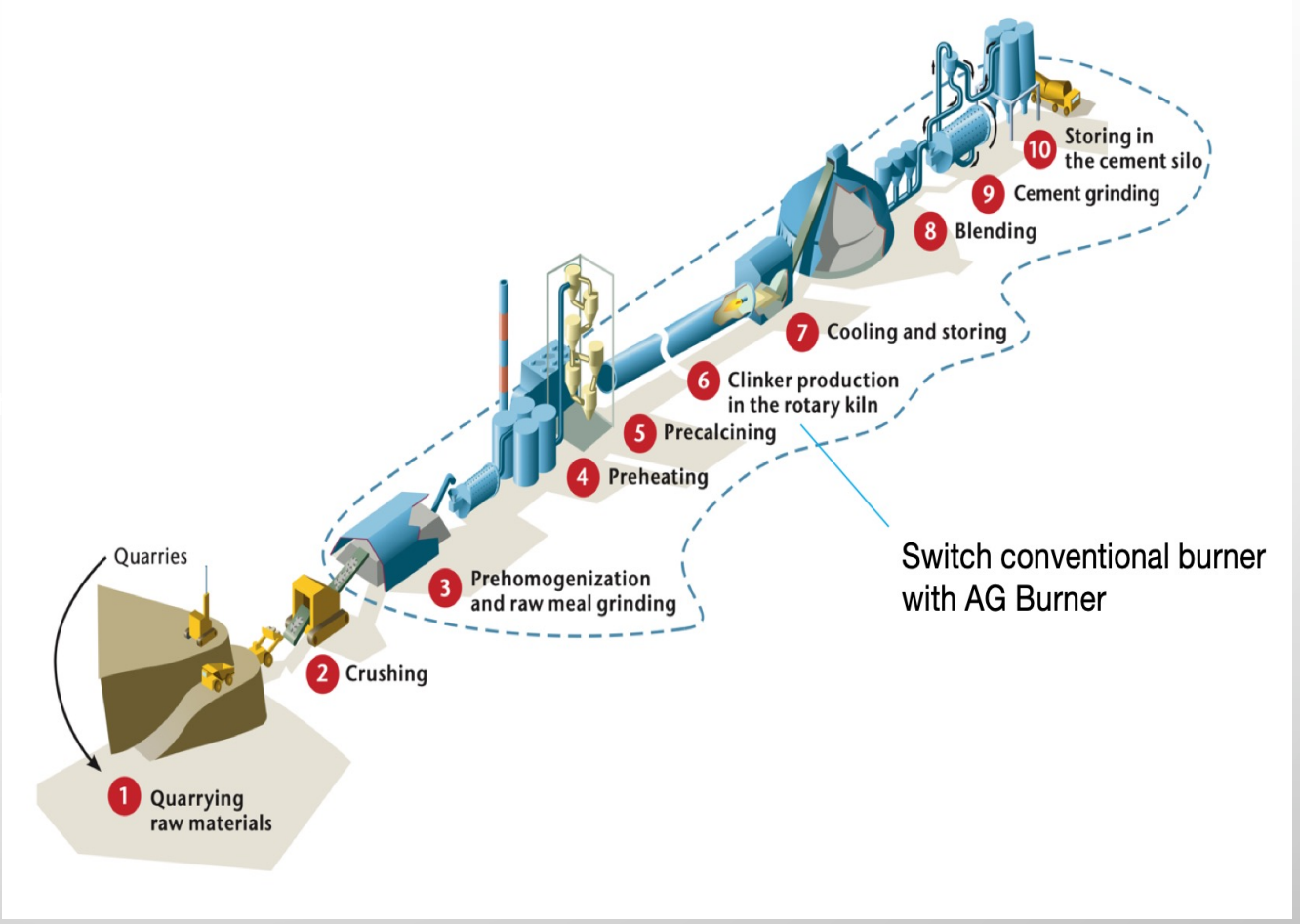


CEMENT PRODUCTION

INSTALLING AG-BURNER IN PLACE OF A CONVENTIONAL BURNER FOR CLINKER FIRING IN A ROTARY KILN WILL NOT ONLY REDUCE SPECIFIC FUEL CONSUMPTION AND CUT CO_2 EMISSION, BUT ALSO ALLOW TO PRODUCE HIGHER GRADE CEMENT DUE TO MUCH HIGHER TEMPERATURES (150° – 250° C).

PRICE INCREASE FOR HIGHER GRADE CEMENT MAY BECOME NOTICEABLY GREATER THAN FUEL COST REDUCTION .

ANNUAL COST OF FUEL IN CEMENT PRODUCTION IS ESTIMATED AT **$36BN**



CEMENT PRODUCTION

Table 2: Key indicators for the global cement industry in the RTS and the roadmap vision (2DS)

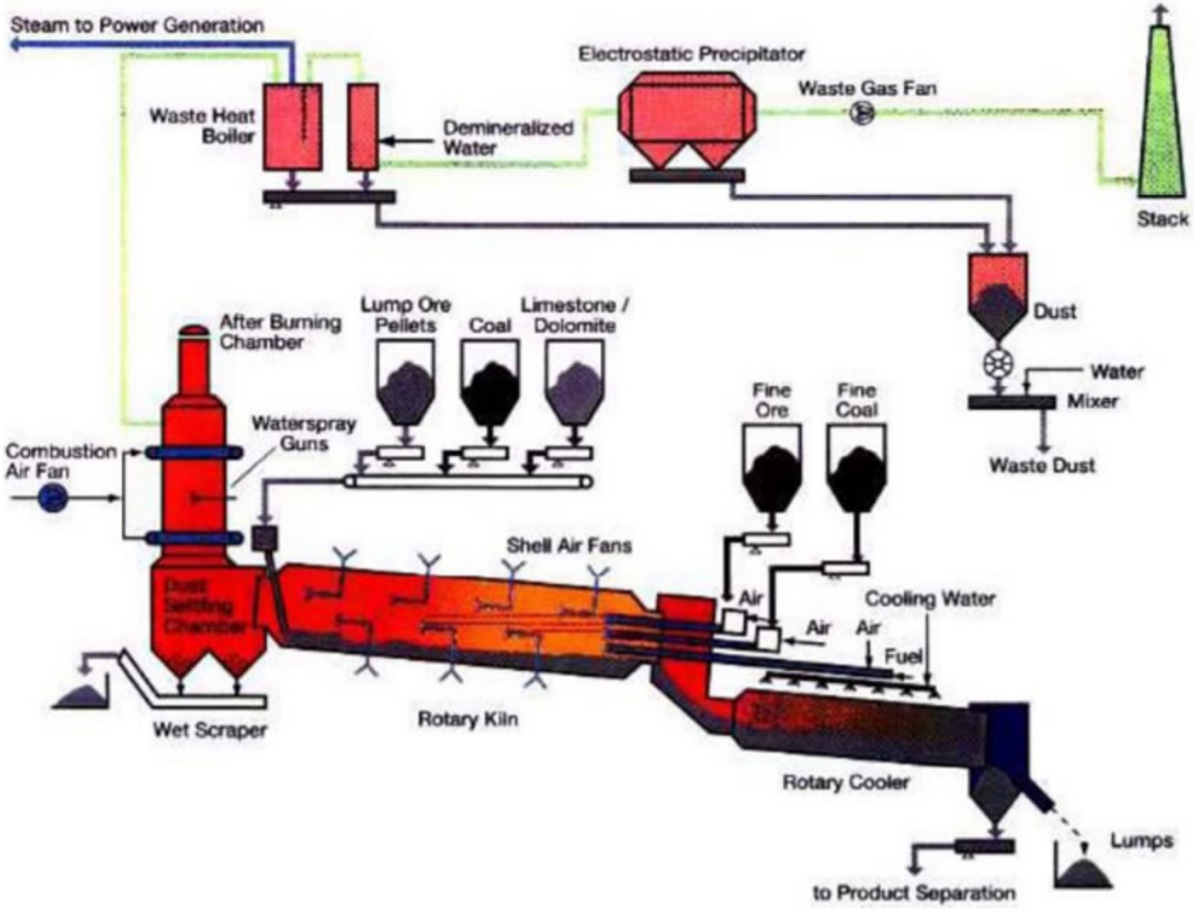
		RTS Low-variability case			Roadmap vision (2DS) Low-variability case		
	2014	2030	2040	2050	2030	2040	2050
Cement production (Mt/yr)	4 171	4 250	4 429	4 682	4 250	4 429	4 682
Clinker to cement ratio	0.65	0.66	0.67	0.66	0.64	0.63	0.60
Thermal energy intensity of clinker (GJ/t clinker)	3.5	3.4	3.3	3.2	3.3	3.2	3.1
Electricity intensity of cement (kWh/t cement)	91	89	86	82	87	83	79

A CEMENT COMPANY ANNUALLY PRODUCING 25M TONS OF CEMENT AND PAYING $250M FOR HYDROCARBON FUELS FOR CLINKER FIRING CAN HAVE ITS ANNUAL FUEL COSTS REDUCED BY UP TO $150M, IF IT SUBSTITUTES CONVENTIONAL BURNERS WITH AG-BURNERS.

DIRECT REDUCTION OF IRON (DRI)

- DIRECT REDUCTION OF IRON IS THE REMOVAL OF OXYGEN FROM IRON ORE IN THE SOLID STATE, I.E. WITHOUT MELTING, AS IN THE BLAST FURNACE. THE REDUCING AGENTS ARE CARBON MONOXIDE AND HYDROGEN, COMING FROM REFORMED NATURAL GAS, SYNGAS OR COAL:

- $3FE_2O_3 + H_2 \rightarrow 2FE_3O_4 + H_2O$;
  $FE_3O_4 + H_2 \rightarrow 3\ FEO + H_2O$;
  $FEO + H_2 \rightarrow FE + H_2O$
  $3FE_2O_3 + CO \rightarrow 2FE_3O_4 + CO_2$;
  $FE_3O_4 + CO \rightarrow 3\ FEO + CO_2$;
  $FEO + CO \rightarrow FE + CO_2$; $O_2 + C \rightarrow 2CO$



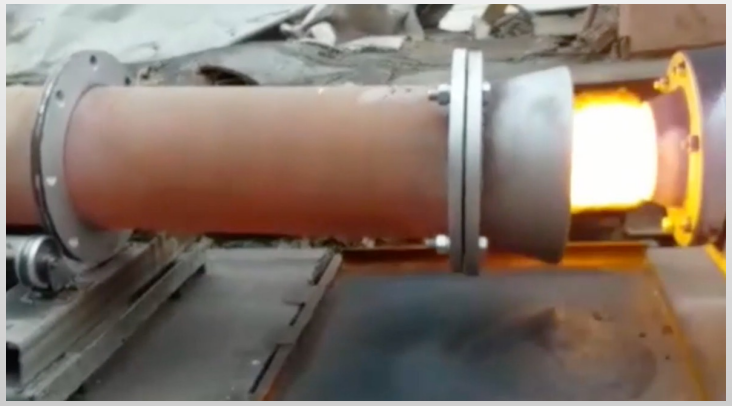
SLRN direct reduction process flowsheet

DIRECT REDUCTION OF IRON

- OUTLINED IN THE ABOVE FLOWSHEET OF SLRN DIRECT REDUCTION PROCESS USES COAL AS A FEEDSTOCK AND FUEL. METSO OUTOTEC IS ONE OF COMPANIES MANUFACTURING SLRN DRI (IMAGE ON THE RIGHT).
- OUR TESTS INDICATE THAT AG-BURNER RUNNING ON LIQUID HYDROCARBONS AND NATURAL GAS MAY SUBSTITUTE COAL BURNERS USED IN DRI ROTARY KILNS AND DELIVER FUEL COST REDUCTION (IMAGES BELOW)









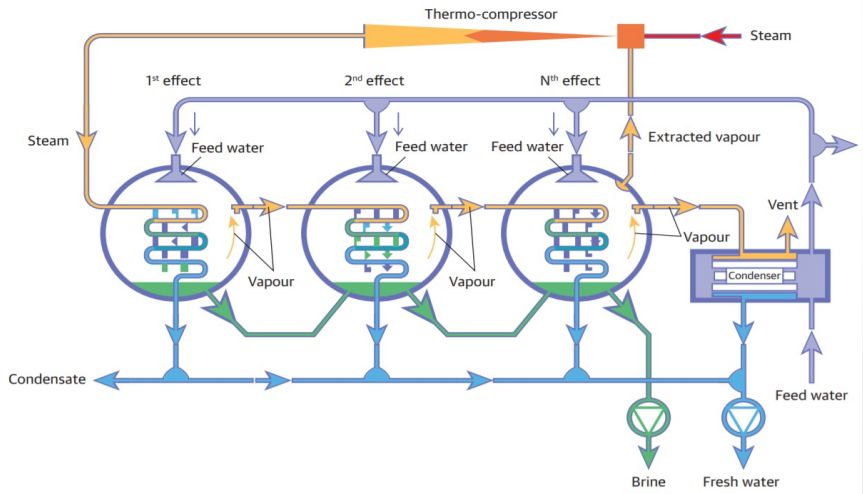
THERMAL WATER DESALINATION

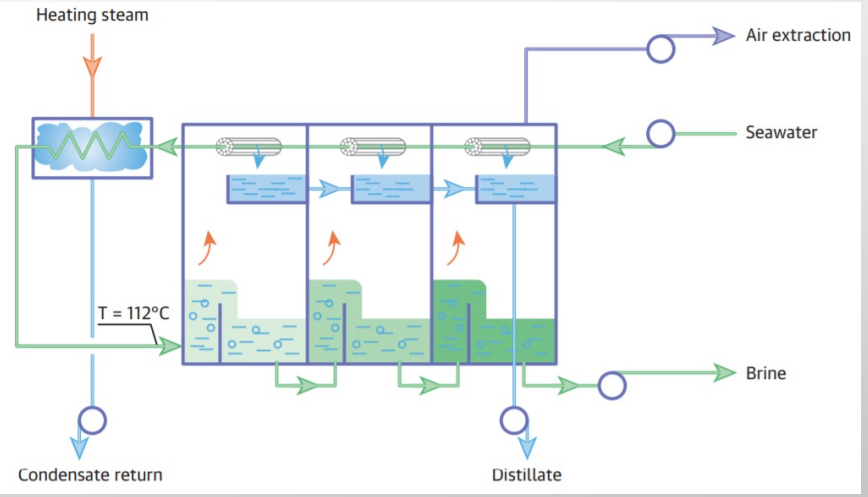
IN TWO MAJOR THERMAL WATER DESALINATION METHODS, MULTI-STAGE FLASH DISTILLATION (MSF) AND MULTI-EFFECT DISTILLATION (MED), OCCUPYING AROUND 30% OF THE MARKET, THE COST OF THERMAL ENERGY ACCOUNTS FOR 30 - 40% OF THE COSTS.

IMPLEMENTATION OF AG-BURNER AS THE PRIMARY HEAT SOURCE (DIRECTLY OR VIE THERMAL (RANKINE CYCLE) POWER PLANT) CAN:

- INCREASE MARKET SHARE OF MSF AND MED IN THE LONG RUN
- REDUCE COST OF DESALINATED WATER BY UP TO 18% – 24%

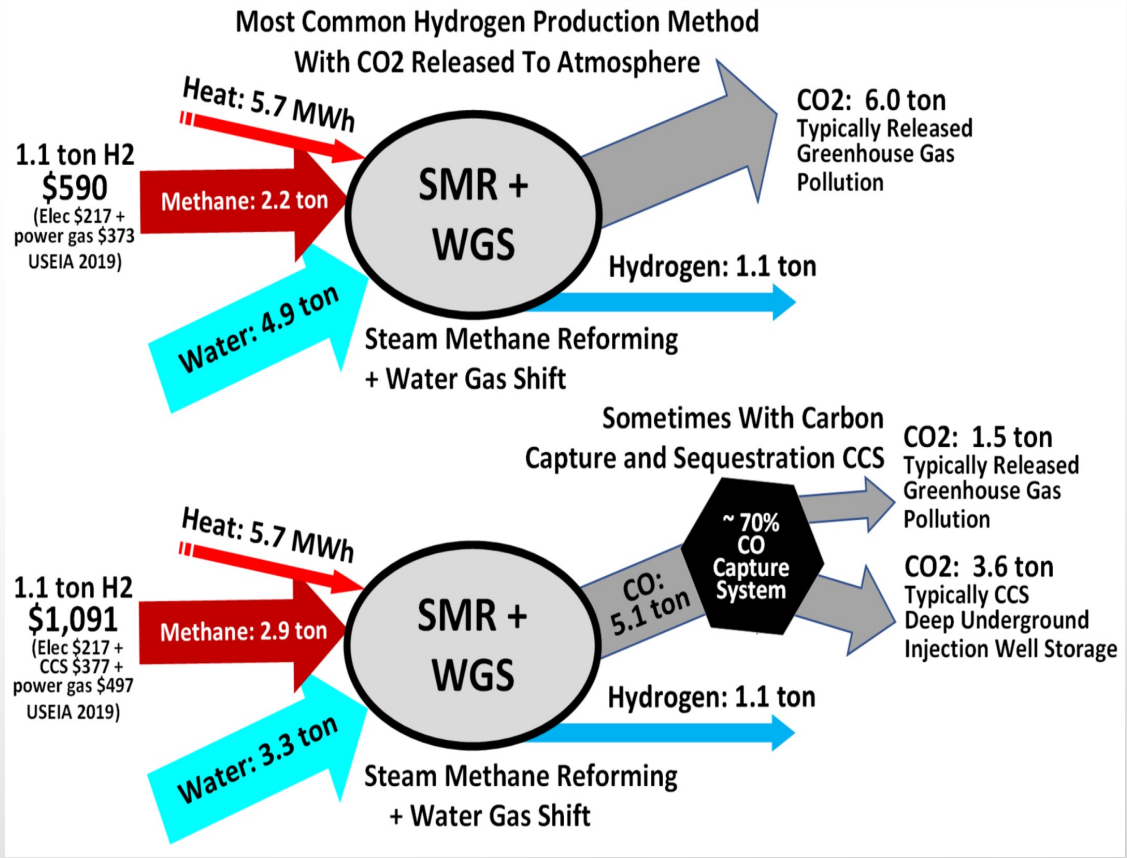
ANNUAL COST OF FUEL IN WATER DESALINATION IS ESTIMATED AT **$12BN**





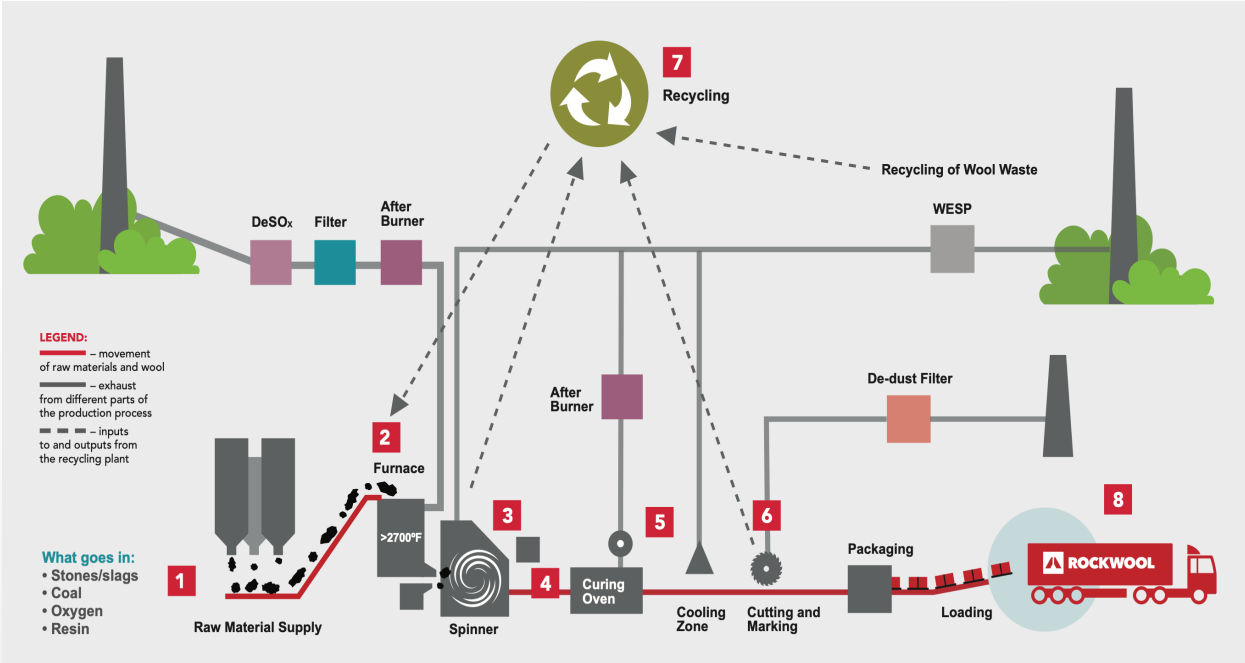
HYDROGEN PRODUCTION

- MOST OF HYDROGEN IS PRODUCED BY STEAM METHANE REFORMING (SMR).
- THE AVERAGE HYDROGEN "NET ENERGY RATIO" OF SMR (I.E. ENERGY RATIO OF HYDROGEN PRODUCED TO THAT OF FOSSIL FUEL CONSUMED) IS AROUND 70%.
- AG-CYCLE CAN BOOST THE NET ENERGY RATIO TO [100 - (30/2.5)] = 88%, WHICH IS EQUIVALENT TO [100 - 100/(88/70)] = 20% LOWER SPECIFIC NATURAL GAS CONSUMPTION.
- ANNUAL COST OF NATURAL GAS USED AS A FUEL IN HYDROGEN PRODUCTION IS ESTIMATED AT **$8BN**



MINERAL WOOL PRODUCTION

- IN 2019, NEARLY ALL OF THE 19M TONS OF MINERAL WOOL PRODUCED IN THE WORLD USED COKE AS A FUEL FOR MELTING BASALT, DOLOMITE, BAUXITE, SLAG, ETC.
- AG-CYCLE MAY NOT ONLY REDUCE FUEL CONSUMPTION IN MINERAL WOOL PRODUCTION PROCESS BY 60% BUT ALSO WHEN PRACTICABLE, RE-FIRE TO NATURAL GAS WITHOUT AIR ENRICHMENT.
- GAS ANNUAL COST OF FUEL AND OXYGEN ENRICHING COSTS IN MINERAL WOOL PRODUCTION IS ESTIMATED AT **$3BN.**



RECYCLING OF PHOSPHOGYPSUM

- THERE ARE ABOUT 1BN TONS OF PHOSPHOGYPSUM ($CASO_4*2H_2O$ ACCOUNTS FOR ~ 98%) STACKED IN 24 STACKS IN FLORIDA AND ABOUT 30M NEW TONS ARE GENERATED EACH YEAR THERE AND AROUND 200M TONS IN THE WORLD.
- IN APRIL, 2021, MANATEE COUNTY OFFICIALS ISSUED EVACUATION ORDERS FOR THE AREA SURROUNDING FLORIDA'S PINEY POINT IN ANTICIPATION OF THE IMMINENT CATASTROPHIC COLLAPSE OF A PHOSPHOGYPSUM STACK RETENTION POND HOLDING UP TO 700 MILLION GALLONS OF WASTEWATER.



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RECYCLING OF PHOSPHOGYPSUM

- WHEN CALCIUM SULFATE DIHYDRATE ($CASO_4*2H_2O$) OF PHOSPHOGYPSUM IS FIRED, IT TURNS INTO ANHYDRITE ($CASO_4$), THE POPULAR CONSTRUCTION MATERIAL AND THE MAJOR FEEDSTOCK IN ANHYDRITE CEMENT MANUFACTURING.
- PHOSPHORUS PENTOXIDE, P_2O_5, THAT IS PRESENT IN PHOSPHOGYPSUM IS KNOWN FOR IMPAIRING ANHYDRITE QUALITY. ITS REMOVAL IS COSTLY. DUE TO HIGH TEMPERATURE, AG-CYCLE NOT ONLY REDUCES FUEL CONSUMPTION IN PRODUCING ANHYDRITE FROM PHOSPHOGYPSUM BUT ALSO NEUTRALIZES P_2O_5 PRESUMABLY DUE TO THE PHENOMENON OF THE TRANSITION OF WATER-SOLUBLE PHOSPHORUS COMPOUNDS TO INSOLUBLE ONES AT VERY HIGH TEMPERATURES AND REDUCING ENVIRONMENT.



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ENERGY STORAGE FOR RENEWABLE POWER

- IN THE RENEWABLE ENERGY SECTOR, AG-CYCLE WILL HELP TO SOLVE A COMPLEX PROBLEM: THE CREATION OF RELIABLE AND AFFORDABLE ENERGY STORAGE WITH HIGH CAPACITY AND ROUND-ABOUT EFFICIENCY.
- "POWER TO GAS/LIQUID TO POWER" STORAGE COMPRISED OF POWER TO GAS/LIQUID SYSTEMS AND COMBINED NATURAL GAS POWER GENERATOR DELIVERS ROUND-ABOUT EFFICIENCY OF AROUND 50%.
- AG-CYCLE CAN MAKE THIS TYPE OF ELECTRIC ENERGY STORAGE AS EFFICIENT AS THE BEST LI-ION BATTERIES.

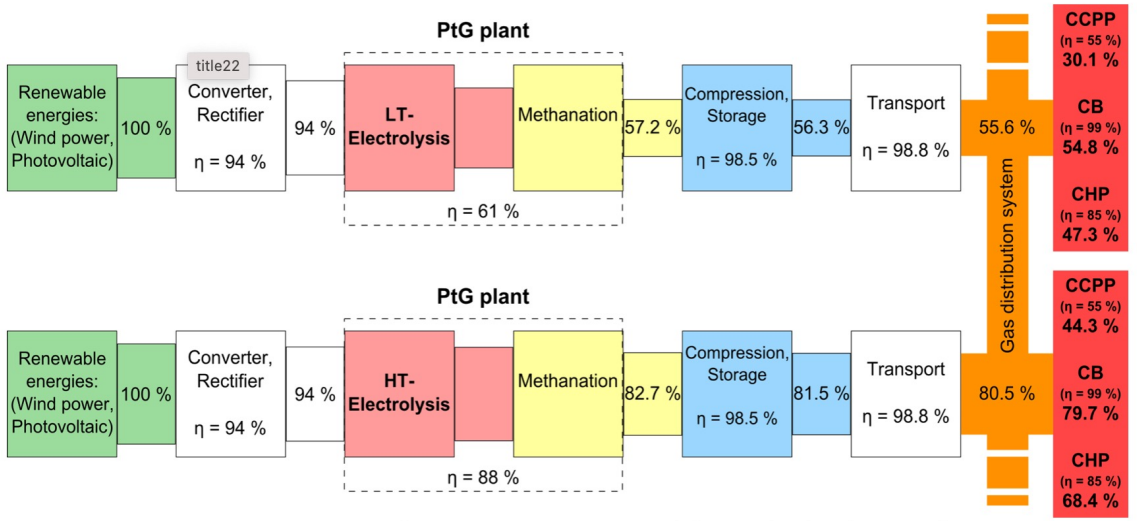
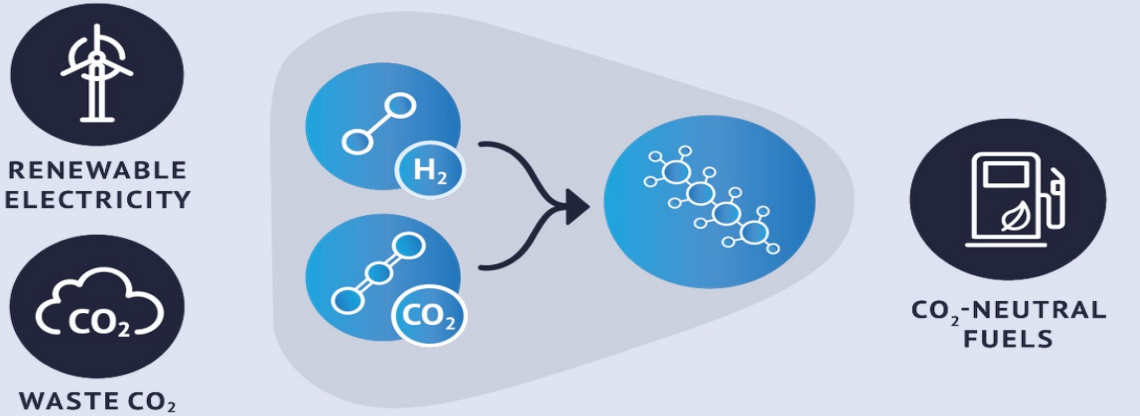
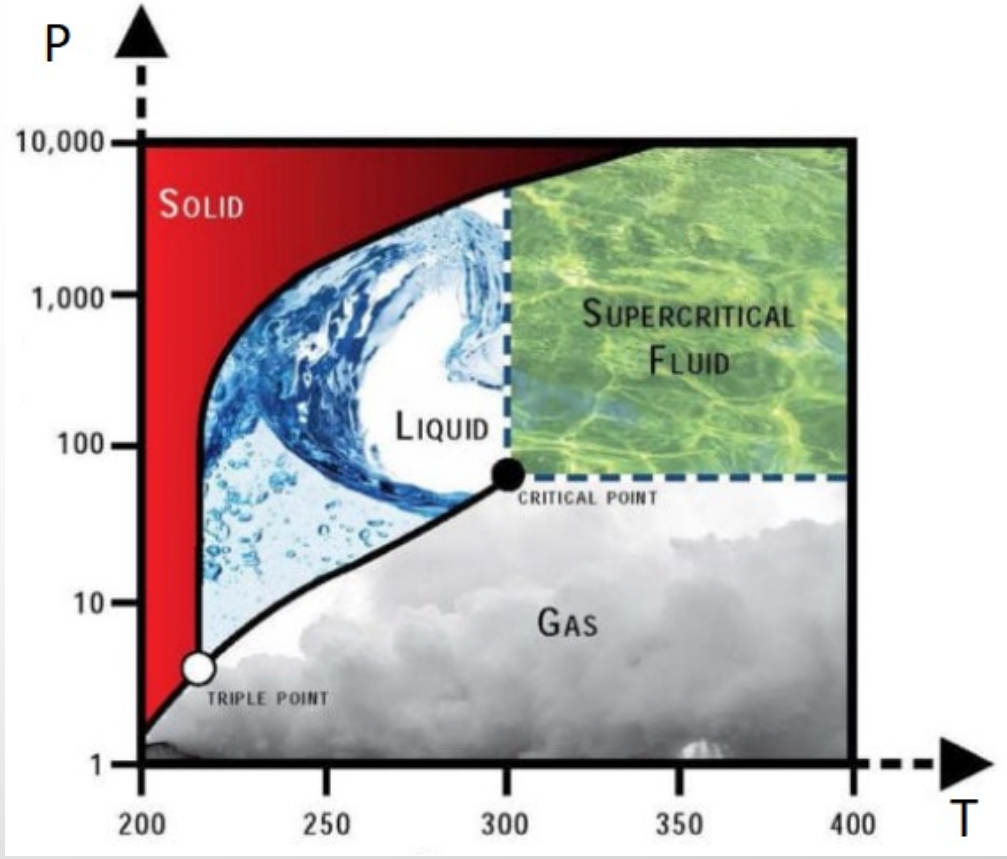


Figure 2: comparison of common PtG processes and the novel Helmeth concept[1]

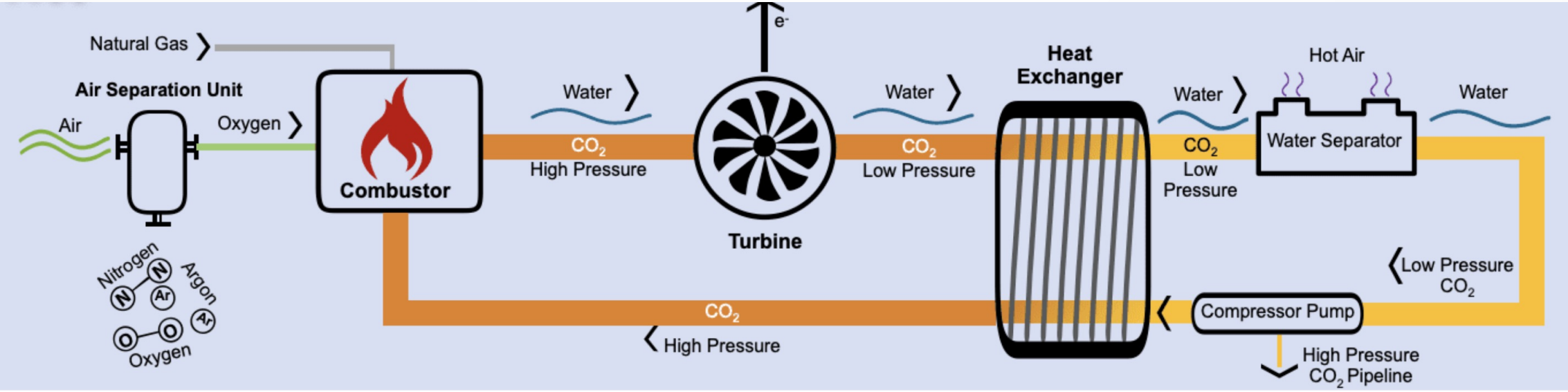


SUPERCRITICAL CARBON DIOXIDE (S-CO_2)

- S-CO_2 CYCLE USES CO_2 AS THE WORKING FLUID THAT IS IN A SUPERCRITICAL STATE.
- S-CO2 TURBINE IS VERY COMPACT, AT LEAST ONE ORDER OF MAGNITUDE THE SIZE OF A STEAM TURBINE OF SIMILAR OUTPUT, AND SUBSTANTIALLY CHEAPER THAN STEAM TURBINES.
- THE MAIN ADVANTAGE OF S-CO2 IS MUCH HIGHER EFFICIENCY COMPARED WITH THAT OF CONVENTIONAL CYCLES.
- **S-CO_2 CYCLE IS CONSIDERED THE UNMATCHED FOSSIL-FUELS-BASED TECHNOLOGY FOR AFFORDABLE CARBON-NEUTRAL POWER PRODUCTION.**



SUPERCRITICAL CARBON DIOXIDE (S-CO_2)



- A PILOT 50 MW S-CO_2 OXY-COMBUSTION PLANT WITH CARBON CAPTURE IN LA PORTE, TX, BASED ON ALLAM-FETVEDT CYCLE HAS ALREADY SHOWN AROUND EFFICIENCY OF 55%
- ALLAM-FETVEDT CYCLE AND AG-BURNER ARE A MATCH MADE IN HEAVEN: CARBON NEUTRAL POWER PRODUCTION AT A COST LOWER THAN THAT AT CONVENTIONAL THERMAL POWER PLANTS.

IMAGES OF AG-BURNER PROTOTYPES









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MOBILE HEATING SETUP FOR TESTS







