Industrial Water Evaporators

# VACUUM ADVANCED EVAPORATORS CONCENTRATORS

## HIGHLY ENERGY-EFFICIENT

#reducecosts #savewater #reusewater


Lab Service & Testing Session

REMOTE CONTROL PLC

CIRCULAR ECONOMY ZLD SAVING WATER

$CO_2$ REDUCTION

engineering MADE IN ITALY

- WASTEWATER VOLUME REDUCTION UP TO 99%
- WASTEWATER RECYCLE
- HIGH SAVINGS ON DISPOSAL COSTS
- INNOVATIVE HEAT EXCHANGERS
- SIMPLIFIED OPERATION AND MAINTENANCE

Industrial Water Evaporators

**IWE Industrial Waters Evaporators** designs and manufactures systems for the evaporation of water-based solutions, also in the ATEX version, and bases its achievements on the valuable experience of its technicians who since 1982 produce and install **High Energy Efficiency Evaporators and Vacuum Concentrators** in many industrial sectors.

In a vacuum situation, evaporation takes place at a lower temperature than the boiling temperature at atmospheric pressure: this allows **considerable energy savings and system efficiency.**

*Through vacuum evaporation,* ***the amount of waste to be disposed of can be drastically reduced, even by up to 99% compared to the original volume,*** *benefiting from considerable cost savings on disposal costs.*



The brand new **IWE headquarters**, opened in 2021, occupies an area of the entire property of over 6,000 square meters and is characterized by a functional office building that welcomes all our guests and by the **Research & Development area "IWE LAB"** where test sessions with pilot plants and laboratory tests are carried out.

Lab
Service & Testing Session


In the production unit located in Pantigliate (Milan • ITALY) in Via Gramsci 44, we have our workshop equipped with a 20-ton overhead crane and **modern equipment that allow the realization of even large plants.**

Industrial Water Evaporators

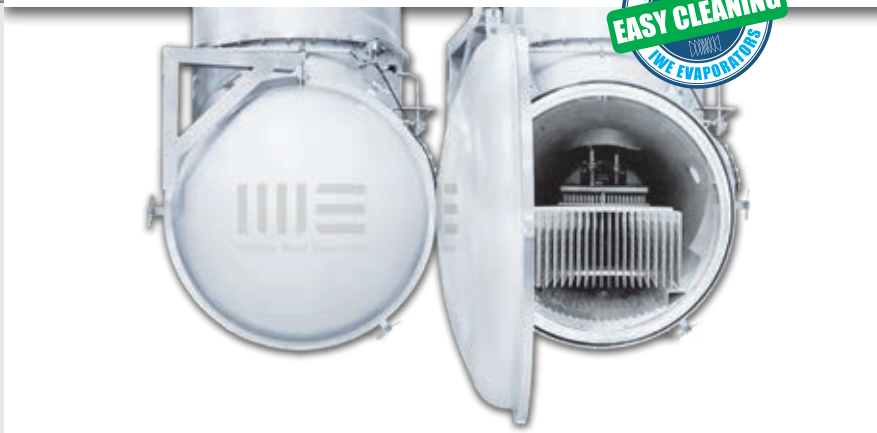
The danger of fouling in heat exchangers is a real and recurrent problem caused by the deposit of substances with limited solubility.

Conventional immersed coil or shell and tube heat exchangers have an extremely small space between the exchange surfaces, do not allow easy removal of deposits and create considerable inconvenience in cleaning and maintenance.

## INNOVATIVE HEAT EXCHANGERS
### *Extremely easy to clean*

**IWE has designed innovative heat exchangers with an "immersed plate" system characterised by large free spaces between the plates and by a special opening of the evaporation boiler through a quick-opening door mechanism instead of the traditional flanged closure.**

**In this way, cleaning the exchangers is extremely easy and quick, drastically limiting machine downtime to restore maximum efficiency of the exchangers.**



# COMPANY PROFILE

## SINCE 1982, OUR EXPERIENCE AT YOUR SERVICE.

**IWE - Industrial** Water **Evaporators** combines technical process and design skills with a long experience in the design and construction of reliable equipment and high-tech plants.

The result is the realisation of a wide range of high performance, **low energy consumption evaporators designed on a "tailor-made" basis that allows the end-user to reduce disposal and maintenance costs.**

Today **IWE - Industrial** Water **Evaporators** is the ideal partner for the application of concrete solutions of **Circular Economy**, providing industries with unparalleled expertise in resource management to achieve together with its customers' exceptional results to the benefit not only of company budgets but also of the environment.

EXPERIENCE
COMPETENCE
SERIOUSNESS

## A perfect solution for Circular Economy!

## REDUCE • REUSE • RECYCLE • *SAVE COSTS*

### OUR VISION

***Improving the environmental sustainability of industries by combining a significant economic advantage with more efficient use of water resources.***



#costreduction #savewater #reusewater

# THE TECHNOLOGY

**THE BEST AVAILABLE TECHNOLOGY FOR EVAPORATION AND CONCENTRATION OF LIQUID SOLUTIONS.**

***WASTEWATER REDUCTION UP TO 99%***

## EASY CLEANING

**INNOVATIVE "IMMERSED PLATES" HEAT EXCHANGERS SYSTEM WITH FAST OPENING OF THE BOILERS.**

## COSTS REDUCTION

**DRASTIC REDUCTION OF DISPOSAL COSTS DUE TO THE REDUCTION OF WASTEWATER VOLUMES**

## DISTILLATE QUALITY

**SAFE AND RELIABLE PROCESS ABLE TO OBTAIN A HIGH QUALITY EVAPORATED PRODUCT**

> *"Being the first means to have the courage to make innovative choices and experience to realize them, with the utmost reliability, with the best technology, without compromise."*

**IWE** directly designs and manufactures vacuum evaporators and concentrators for industrial applications.

Not only traditional evaporators but above all "custom" projects, elaborated to measure for each specific need.

Because efficiency and reliability can only be achieved by paying the utmost attention to detail: designed and manufactured.

**IWE** proposes innovative systems with immersed plate exchangers to obtain maximum efficiency thanks to direct exchange on high surfaces that are extremely easy to clean.

**IWE** has devised an innovative boiler opening system with tie rod closure to replace the traditional flanged joint.

Because eliminating downtime by reducing cleaning and operator presence times translates into additional cost-effectiveness.

For each of its projects, **IWE** defines the best possible configuration, to respond perfectly to the specific characteristics of the wastewater to be treated.

The "ad-hoc" solutions proposed by **IWE** maximise performance, drastically reducing disposal costs and simplifying evaporator cleaning and maintenance operations.

# MULTIPLE ADVANTAGES


## • for every manufacturing companies

Vacuum evaporation systems for the purification of industrial wastewater offer considerable economic and environmental advantages over conventional physical-chemical or biological treatment systems.

The primary objective is the drastic reduction of disposal costs, often even more than 99%, as well as, in many cases, the recovery of raw materials and the reuse of the distilled water obtained with the treatment.

Vacuum evaporation is also applicable in the concentration of thermolabile products, from pharmaceutical synthesis or in the sector of food extracts and aromas, musts and vinegar to obtain food glazes.

## • for every industrial waste disposal plant

In the contract treatment of industrial wastewater, vacuum evaporation makes it possible to increase the EWCs (European Waste Catalogue) that can be treated.

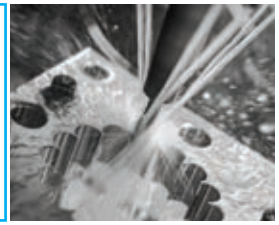
IWE vacuum evaporation plants can be integrated with classic physical-chemical and biological purification systems, which alone cannot achieve satisfactory results in the purification of wastewater with high pollutant content in solution.

# THE APPLICATIONS

**IN MANY INDUSTRIAL SECTORS, VACUUM EVAPORATION IS THE MOST ADVANCED TECHNICAL CHOICE TO MEET THE NEED TO REDUCE DISPOSAL AND RAW MATERIAL RECOVERY COSTS IN THE TREATMENT OF WASTEWATER WITH A HIGH POLLUTANT CONTENT.**

## DIGESTATE
FROM BIOGAS GENERATION PROCESSES, FROM LIVESTOCK MANURE, FROM FORSU.

## MECHANICAL ENGINEERING
CONCENTRATION OF OIL EMULSIONS, WASHING WASTES, VIBRO TUMBLING WASTES.



## GALVANIC
TREATMENT OF REGENERATION ELUATES IN RESIN PLANTS, CONCENTRATION OF SPENT BATHS, RECOVERY OF CHROMIUM, COPPER AND NICKEL PLATING BATHS.

## REVERSE OSMOSIS
FURTHER CONCENTRATION OF HIGH-DENSITY SALT SOLUTIONS FROM MEMBRANE PLANTS.

## LANDFILL LEACHATES

## THERMAL TREATMENTS
PURIFICATION OF WASHING WATER AFTER THERMAL METALWORKING FURNACES AND RECOVERY OF DISSOLVED SALTS.

## RUBBER VULCANISATION
PURIFICATION OF WASHING WATER AFTER CURING OVENS AND RECOVERY OF DISSOLVED SALTS.

## DIECASTING
TREATMENT OF WASTEWATER CONTAINING EMULSIONS RELEASE AGENTS, GLYCOLS, COOLANTS.

## INDUSTRIAL PAINTING
CONCENTRATION OF WASTEWATER FROM WASHING, PRE-PAINTING AND PHOSPHO-CHROMATISATION.

## FOOD CHEMICAL PHARMACEUTICAL
WASTEWATER FROM WASHING REACTORS AND PRODUCTION LINES OR PACKAGING LINES.

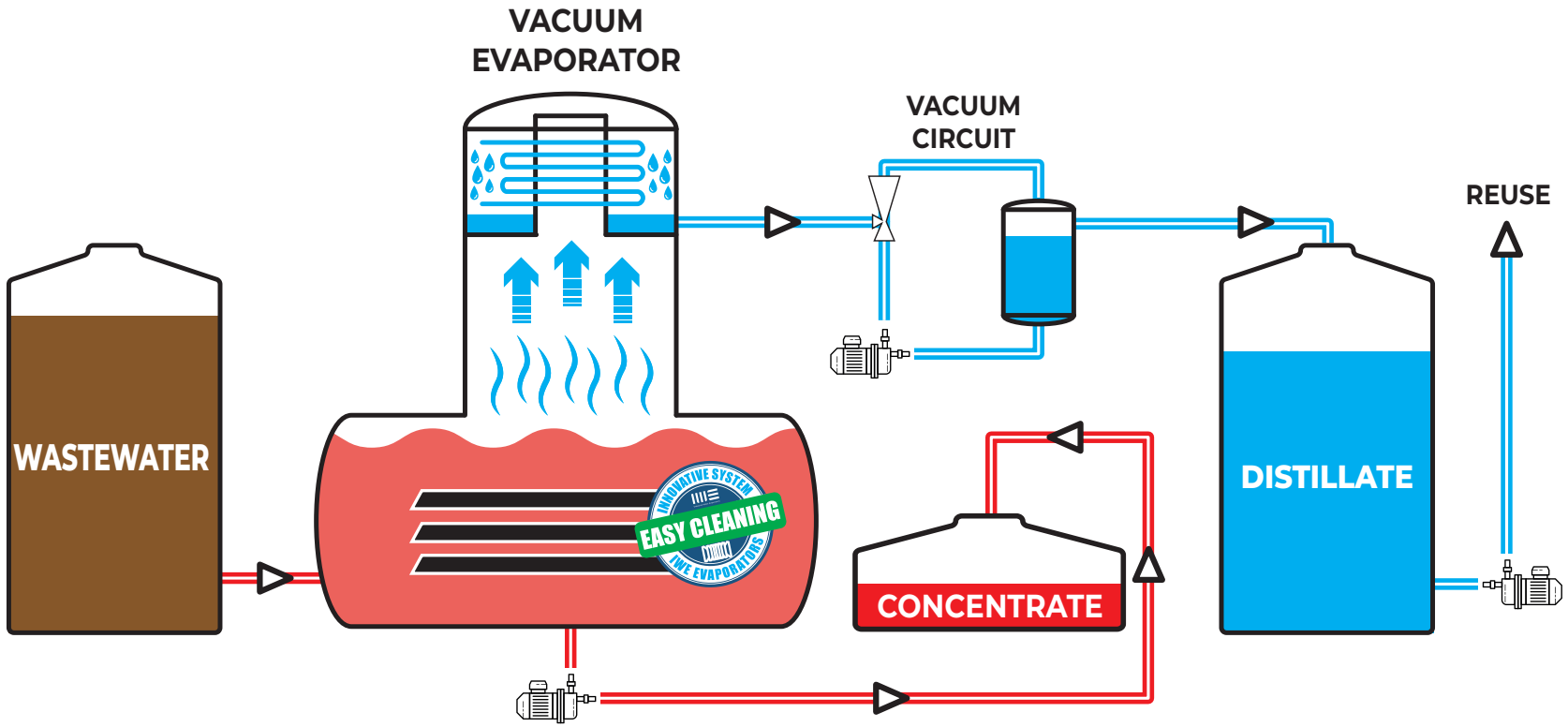
## GRAPE MUST AND BALSAMIC VINEGAR CONCENTRATES

## NATURAL FLAVOUR CONCENTRATES AND HERBAL EXTRACTS

# THE TECHNICAL PROCESS

**THROUGH VACUUM EVAPORATION, IT IS POSSIBLE TO SEPARATE A NON-VOLATILE COMPOUND DISSOLVED IN A SOLUTION INTO DEMINERALISED WATER AND A CONCENTRATED PRODUCT WITH LOW OPERATING COSTS.**

- CONCENTRATION
- SEPARATION BY EVAPORATION
- PRODUCT VALORISATION
- RECOVERY OF AQUEOUS SOLUTIONS
- HIGH CHEMICAL RESISTANCE
- MAXIMUM RELIABILITY
- INNOVATIVE INTERNAL CLEANING SYSTEM
- EASY OPENING






#costreduction #savewater #reusewater

www.iwe-evaporators.com

Industrial Water Evaporators

# THE FEATURES

**A WIDE RANGE OF CUSTOM-DESIGNED VACUUM EVAPORATORS TO SOLVE ANY WASTE DISPOSAL PROBLEM.**

**EASY OPENING**

**EXCLUSIVE SYSTEM FOR AUTOMATIC INTERNAL CLEANING**

**INNOVATIVE HEAT EXCHANGERS "IMMERSED PLATES"**

**HIGH RESISTANCE TO CHEMICALS**

**IWE - Industrial Water Evaporators** manufactures vacuum evaporation plants that use the physical principle of boiling and condensing the vapours of treated liquids.

Through the change of state from liquid to aeriform, which in the presence of vacuum occurs at a lower temperature than the boiling temperature at atmospheric pressure, we obtain a considerable saving of energy and efficiency of the system.

In this way, we separate a non-volatile compound dissolved in a solution so that on the one hand we obtain demineralised water and on the other a final product more concentrated in the other components.

# THE MATERIALS

**THE CHOICE OF THE MOST SUITABLE MATERIALS FOR EACH SPECIFIC APPLICATION IS OF FUNDAMENTAL IMPORTANCE FOR THE CONSTRUCTION OF A PERFECT EVAPORATOR CAPABLE OF ENSURING MAXIMUM PERFORMANCE WITH MAXIMUM RELIABILITY IN THE LONG TERM.**

**IWE,** when studying the most suitable plant for the specific application, to guarantee an extreme duration of the plants, makes the best possible choice of high-quality materials and components, thanks also to the experience of thousands of applications carried out by our technicians.

The basic construction standard envisages systems made using **AISI 316 L** stainless steel for applications with less corrosive possibilities, while special materials such as **DUPLEX (SAF 2205), SUPER DUPLEX (SAF 2507), SILICON CARBIDE, GRAPHITE, TITANIUM** and thick anti-corrosive coatings with special FLUOROCARBONIC RESINS are used.

**AISI 316 L**

**DUPLEX (SAF 2205)**

**SUPER DUPLEX (SAF 2507)**

**SILICON CARBIDE**

**GRAPHITE / TITANIUM**

**FLUOROCARBONIC RESINS**

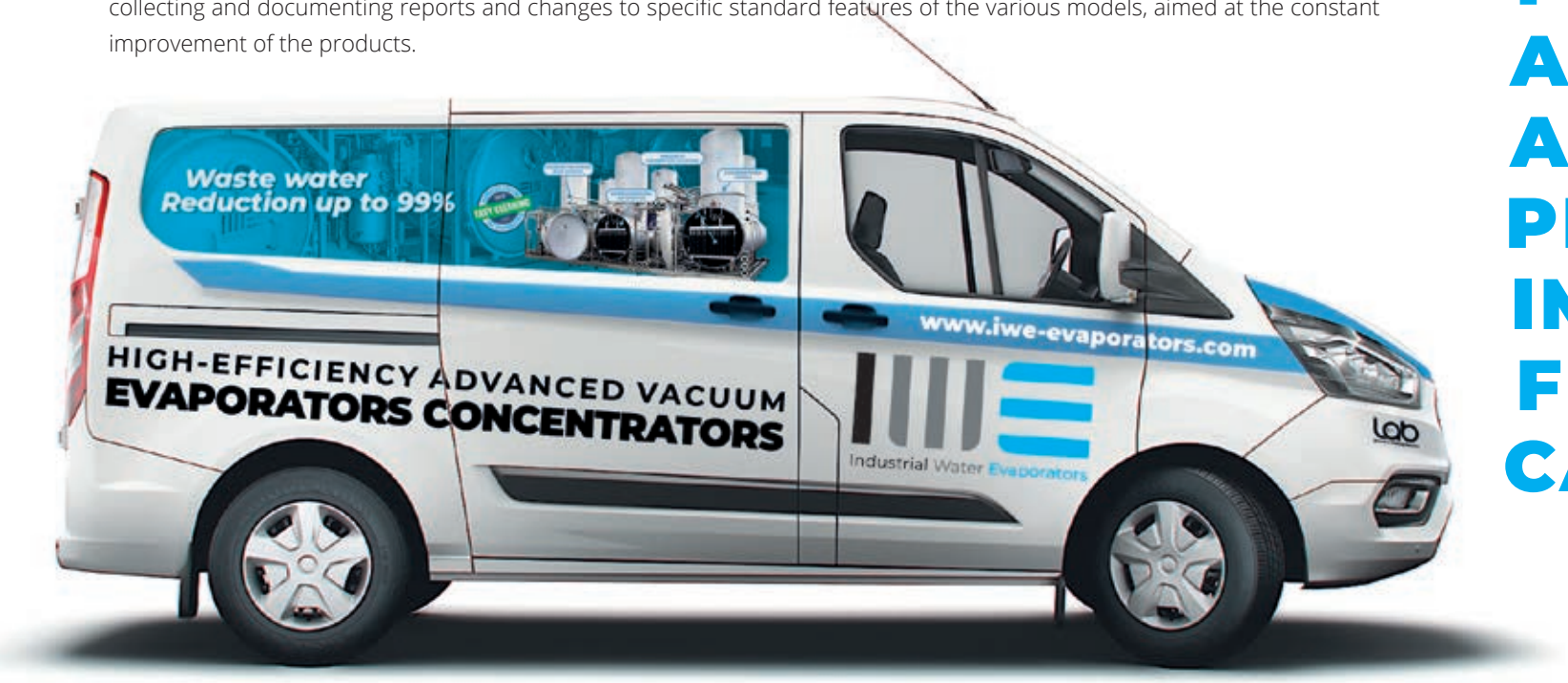
# OUR CUSTOMER SERVICE

**THE RELATIONSHIP WE WANT TO ESTABLISH WITH OUR CUSTOMERS DOES NOT END WITH THE SIMPLE PURCHASE OF ONE OF OUR PRODUCTS. WE AIM TO SUPPORT THE CUSTOMER EVEN IN THE YEARS FOLLOWING THE PURCHASE, USING OUR SPECIALISED TECHNICIANS TO PROVIDE INSTALLATION, START-UP, AFTER-SALES ASSISTANCE, SPARE PARTS AND F-GAS BOOKING SERVICES.**

The after-sales technical assistance service is considered for **IWE** as one of the main keys to acquire and maintain a competitive advantage against the competition.

The importance of this service is fundamental, because the satisfaction of our customers, who can benefit from a product corresponding to their expectations and keeping it in perfect working order over the years, has rewarded **IWE** with the highest level of loyalty and references.

For **IWE**, proposing its after-sales service is also important to carry out the collection of feedback from its customers, collecting and documenting reports and changes to specific standard features of the various models, aimed at the constant improvement of the products.




**EXCLUSIVE PLUS ASSISTANCE AFTERSALES PROOF IMMEDIATE FEEDBACK CARE**

# INNOVATIVE HEAT EXCHANGER

**A SENSITIVE ISSUE IN EVAPORATION SYSTEMS IS THE DANGER OF FOULING OF THE HEAT EXCHANGERS, WHICH ARE SUBJECT TO THE DEPOSITION OF SUBSTANCES WITH LIMITED SOLUBILITY.**

The attention that **IWE** pays in designing the heat exchangers, choosing the best possible conformation, adapted to the specific characteristics of the product to be treated, reduces the frequency and simplifies the cleaning operations to restore the optimal operating conditions.

The traditional heat exchangers used in evaporation systems, whether immersed coil or tube bundle, have the limitation of having an extremely small space between the different exchange surfaces, not allowing easy removal of deposits.

IWE has chosen to use heat exchangers that are easy to clean, making them in the "immersed plate" version, which allows considerable free space between the plates to restore heat exchange efficiency using simple washing or to carry out any necessary disassembly and extraction in a short time.

## STANDARD HEAT EXCHANGERS

*IMMERSED COIL • TUBE BUNDLE*

## INNOVATIVE SYSTEM

*QUICK OPENING DOORS + PARALLEL PLATES*

# THE EVAPORATORS RANGE

**IWE BUILDS EACH EVAPORATION PLANT BY STUDYING THE BEST POSSIBLE ENERGY SOLUTION, CONSIDERING THE MOST APPROPRIATE CHOICE FOR THE SPECIFIC NEEDS AND TREATMENT OF PRODUCTS OF DIFFERENT NATURE AND QUANTITY.**

## ELECTRIC ENERGY

*Heat Pump*

*Vacuum evaporation plants with*
***exclusively electrical power supply.***

### TREATMENT CAPACITY

**from 5 to 4.000 l/h**
**(from 120 to 100.000 l/d)**

### ENERGY REQUIREMENTS

| SINGLE EFFECT | DOUBLE EFFECT |
|---|---|
| 160 $Wh_{el}$/l | 100 $Wh_{el}$/l |

## THERMAL ENERGY

*Hot Water / Steam*

*Vacuum evaporation plants with*
***hot water or steam supply***
***(also from heat recovery or cogenerators).***

### TREATMENT CAPACITY

**from 100 to 12.000 l/h**
**(from 2.400 to 288.000 l/d)**

### ENERGY REQUIREMENTS

| SINGLE EFFECT | DOUBLE EFFECT | TRIPLE EFFECT |
|---|---|---|
| 600 $Wh_{ther}$/l | 300 $Wh_{ther}$/l | 200 $Wh_{ther}$/l |

Industrial Water Evaporators

# ADVANCED VACUUM EVAPORATORS and CONCENTRATORS






# OUR RANGE

Industrial Water Evaporators

| ELECTRIC ENERGY | THERMAL ENERGY |
| --- | --- |
| HP ME | HWS ME |
| HP DE | HWS DE |
| HP DRY | HWS TE |
| HP ME R | HWS ME R |
| HP DE R | HWS DE R |

# HP ME

## HEAT PUMP EVAPORATORS IN MONO EFFECT VERSION WITH IMMERSED PLATE EXCHANGERS.

The vacuum evaporation and concentration plants of the **HP ME Single Effect** series are equipped with special heat exchangers, made with special electro-welded plates directly immersed in the product to be treated and positioned in the boiling chamber.
The energy required for evaporation and condensation of the vapours is obtained through the use of Heat Pump technology which, combined with the vacuum present in the boiling chamber, allows considerable energy savings to be achieved.

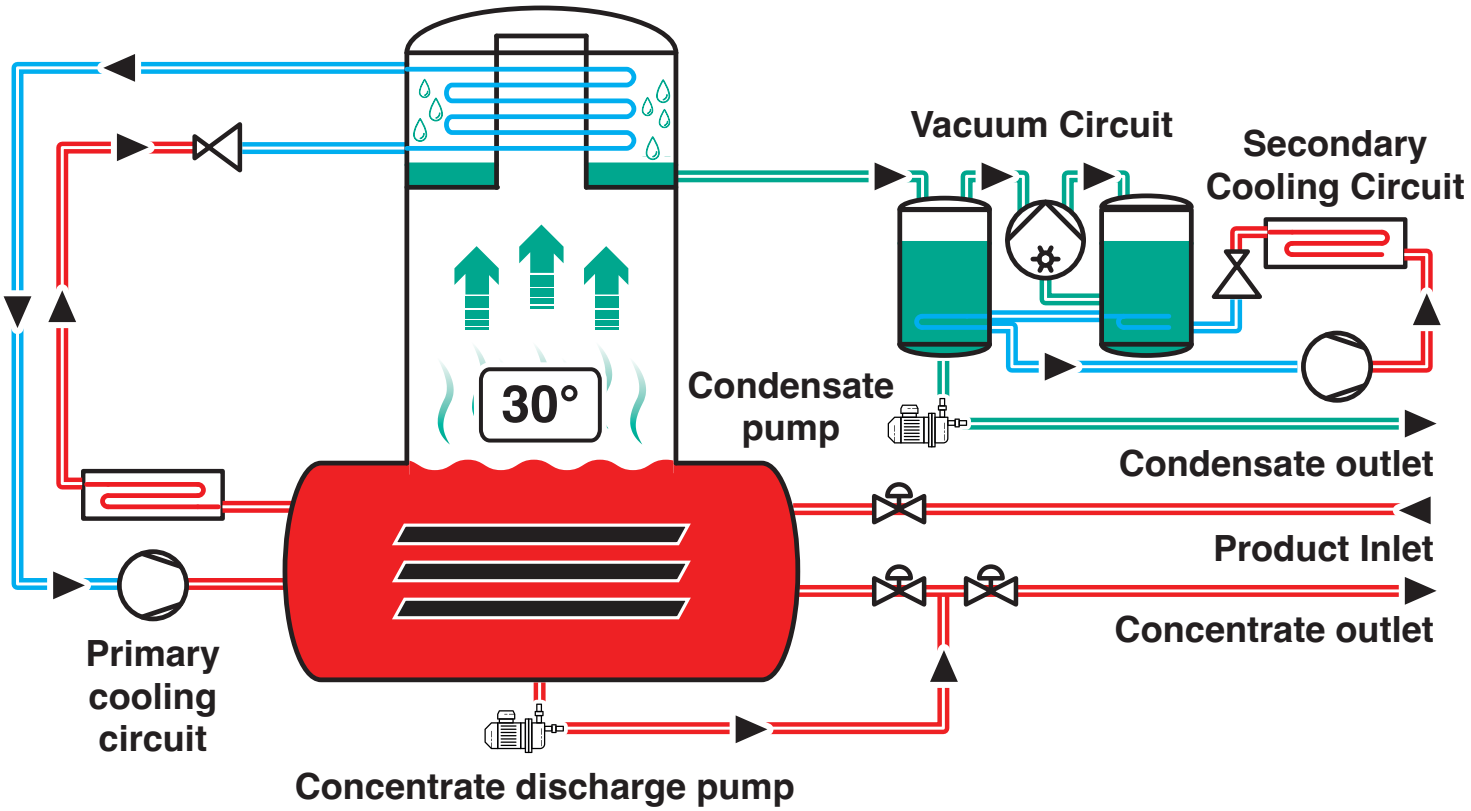
### FEATURES COMMON TO ALL HP ME SERIES EVAPORATORS

- Made of AISI 316 L or special materials for corrosive applications (refer to previous section describing the materials used).
- Automatic 24-hour operation and valve for sampling of distillate and concentrate without stopping the plant.
- Automatic discharge of the concentrate, without losing vacuum, by means of a pump controlled by the PLC installed on the plant, with timed operation or by means of the consent provided by the densimeter with which the evaporator can be equipped.
- Operation with recycling of the treated product in the boiler and possibility of automatic anti-foaming dosage.
- Visual porthole (equipped with automatic glass washing) to control the internal conditions of the boiling boiler.

### HP ME CR SERIES

The HP ME CR series is designed to treat particularly corrosive liquids, as in the case of applications aimed at concentrating chromic washes in chromium plating processes. The HP CR plants are similar, in terms of operation, to the HP ME series, but are made with all parts in contact with the effluent using special anti-acid materials, such as exchangers in TITANIUM, SILICON CARBIDE, GRAPHITE and boiling boilers coated with special anti-corrosive resins such as HALAR or BLUE ARMOR.

# HP ME




| | HP 25 ME | HP 50 ME | HP 100 ME | HP 150 ME | HP 200 ME | HP 300 ME | HP 400 ME | HP 500 ME | HP 1000 ME |
|---|---|---|---|---|---|---|---|---|---|
| Production with water l/24h | 600 | 1.200 | 2.400 | 3.600 | 4.800 | 7.200 | 9.600 | 12.000 | 24.000 |
| Indicative electrical power consumption $kWh_{el}$ | 4 | 8 | 16 | 24 | 32 | 48 | 64 | 80 | 160 |
| Indicative dimensions (l x w x h) cm | 200 x 80 x 220 | 250 x 110 x 220 | 270 x 125 x 260 | 300 x 200 x 280 | 460 x 200 x 280 | 460 x 170 x 370 | 600 x 170 x 370 | 500 x 250 x 440 | 600 x 240 x 450 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HP DE

**HEAT PUMP EVAPORATORS IN DOUBLE EFFECT VERSION WITH IMMERSED PLATE EXCHANGERS.**

**-40%**
ENERGY CONSUMPTION

## FEATURES COMMON TO ALL HP DE SERIES EVAPORATORS

### *VERSATILITY, EASE OF INSTALLATION AND ENERGY SAVING.*

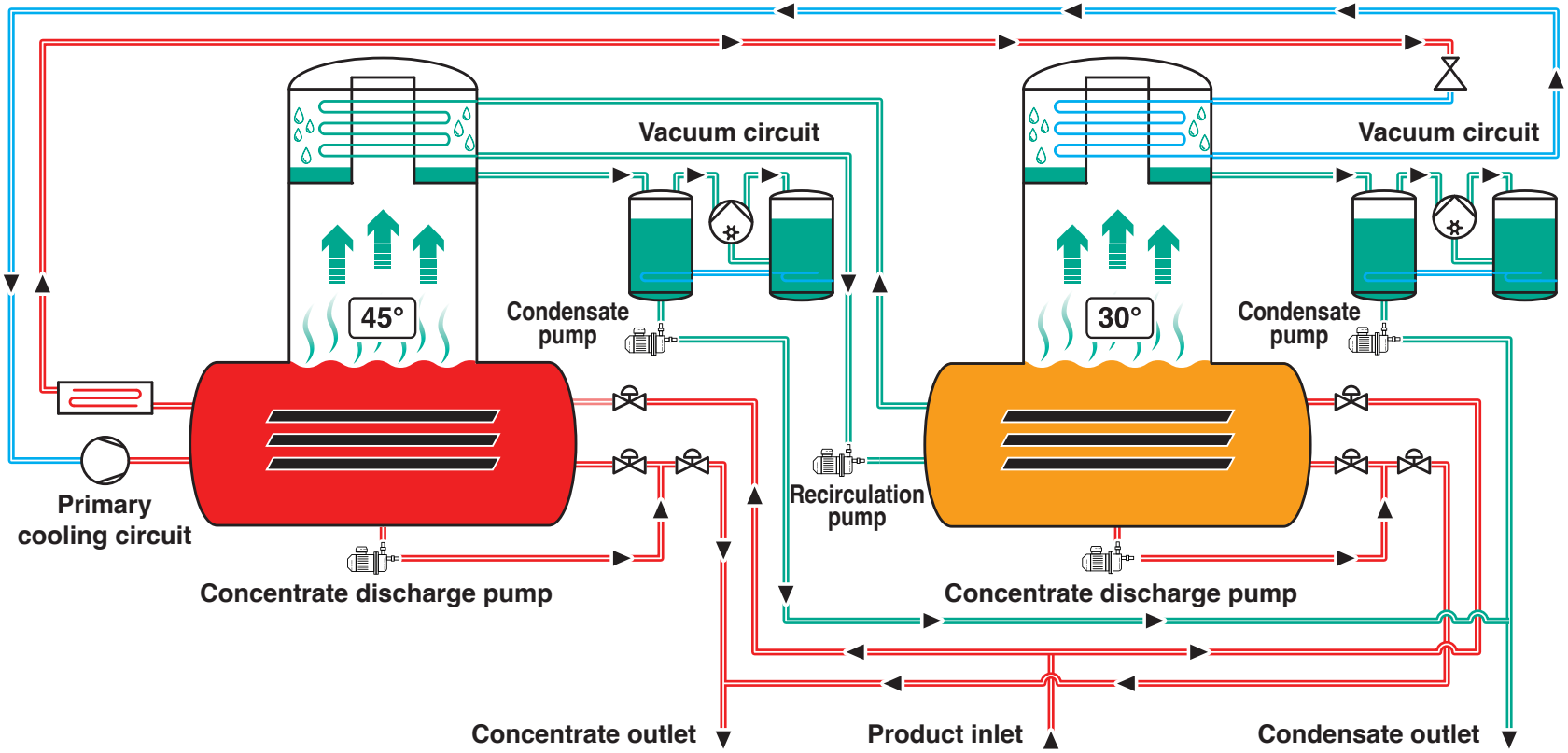
The vacuum evaporation and concentration systems of the **HP DE Double Effect** series are the evolution of the HP ME series and constitute the highest technological expression in terms of energy efficiency with heat pump.

Energy is supplied by a heat pump that uses a special refrigerant gas and uses the thermal energy of the evaporate produced in the first evaporation effect to heat the second evaporation effect free of charge.

This development allows electricity savings of 40% compared to the HP ME single effect series.

Also for this series, the construction in AISI 316L is foreseen, with the possible use of special materials for applications in corrosive environments to satisfy a wide range of applications.

# HP DE




| | HP 300 DE | HP 400 DE | HP 500 DE | HP 600 DE | HP 800 DE | HP 1000 DE | HP 2000 DE | HP 2500 DE | HP 3000 DE | HP 4000 DE |
|---|---|---|---|---|---|---|---|---|---|---|
| Production with water l/24h | 7.200 | 9.600 | 12.000 | 14.400 | 19.200 | 24.000 | 48.000 | 60.000 | 72.000 | 96.400 |
| Indicative electrical power consumption $kWh_{el}$ | 30 | 40 | 50 | 60 | 80 | 100 | 200 | 250 | 300 | 400 |
| Indicative dimensions (l x w x h) cm | 170 x 500 x 270 | 240 x 500 x 320 | 240 x 500 x 320 | 240 x 600 x 350 | 240 x 700 x 350 | 240 x 700 x 380 | 240 x 1100 x 500 | 240 x 1100 x 500 | 900 x 600 x 550 | 900 x 600 x 550 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HP DRY

## HEAT PUMP EVAPORATORS WITH EXTERNALLY JACKETED EXCHANGERS.

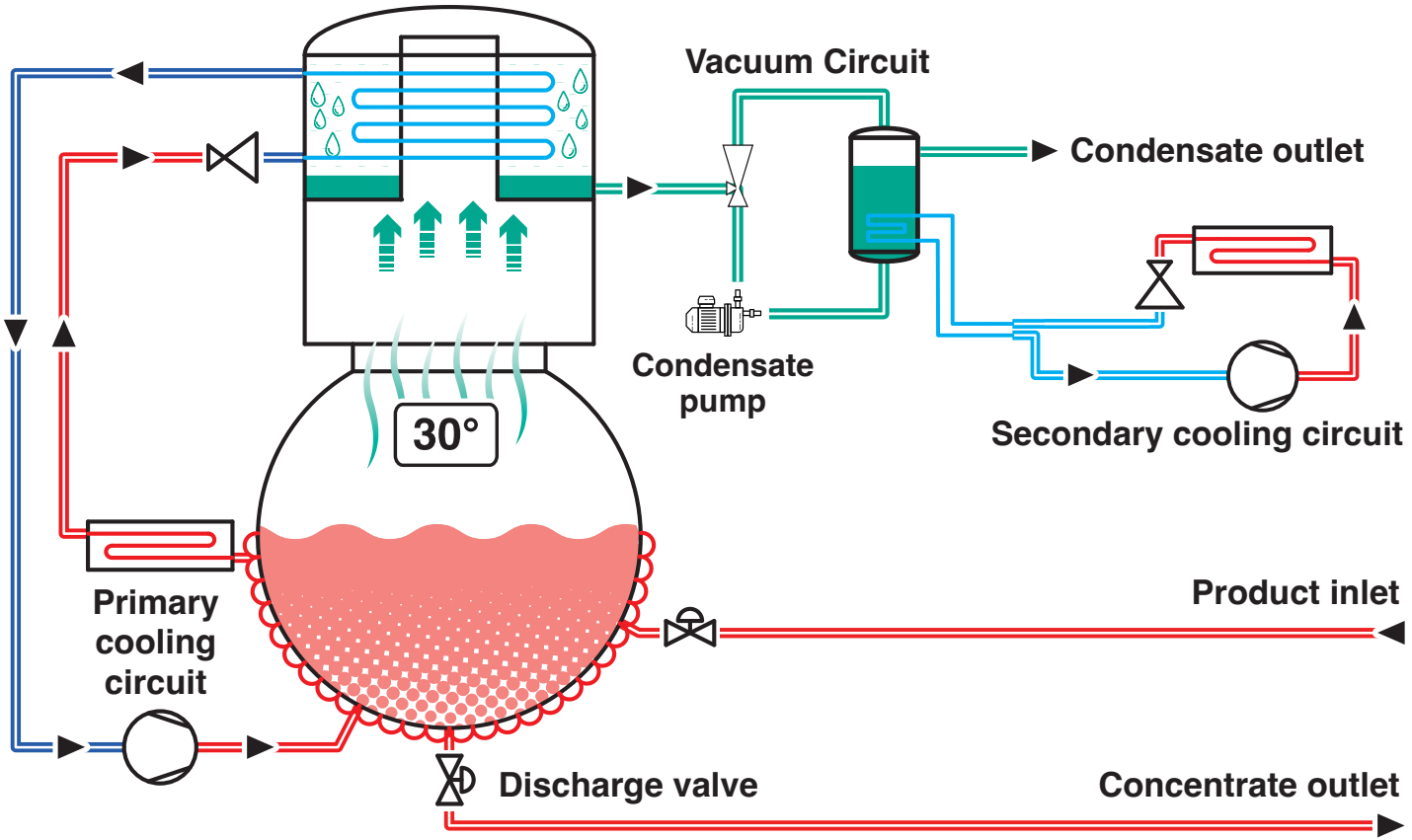
## HP DRY, FOR SHOVELABLE CONCENTRATES

The heat pump evaporators of the **HP DRY** series enable the precipitation of crystals of dissolved salts by increasing the concentration of the solute above the solubility limit.

To obtain a final concentrate with the consistency of a “shovelable” sludge, the evaporator is constructed with a horizontal boiling boiler and a heat exchanger made using an interposed jacket.

The final discharge of the concentrate is done manually through the hatch at the front of the boiling boiler.

# HP DRY




| | HP 5 DRY | HP 10 DRY | HP 15 DRY | HP 20 DRY | HP 30 DRY | HP 40 DRY | HP 50 DRY | HP 70 DRY |
|---|---|---|---|---|---|---|---|---|
| Production with water l/24h | 120 | 240 | 360 | 480 | 720 | 960 | 1.200 | 1.680 |
| Indicative electrical power consumption $kWh_{el}$ | 1,6 | 2,7 | 3,8 | 5,0 | 7,8 | 10,5 | 12,5 | 17,5 |
| Indicative dimensions (l x w x h) cm | 70 x 120 x 170 | 80 x 150 x 180 | 80 x 220 x 200 | 120 x 220 x 220 | 180 x 260 x 245 | 150 x 260 x 260 | 160 x 300 x 300 | 160 x 320 x 280 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HP ME R

## HEAT PUMP MONO EFFECT EVAPORATORS WITH EXTERNALLY JACKETED EXCHANGERS AND INTERNAL SCRAPER.

### FEATURES COMMON TO ALL HP ME R SERIES EVAPORATORS

The heat pump evaporators of the **HP ME R** series are ideally suited to meet the need for very high density concentrates and for the evaporation of products that are extremely encrusting to heat exchangers.

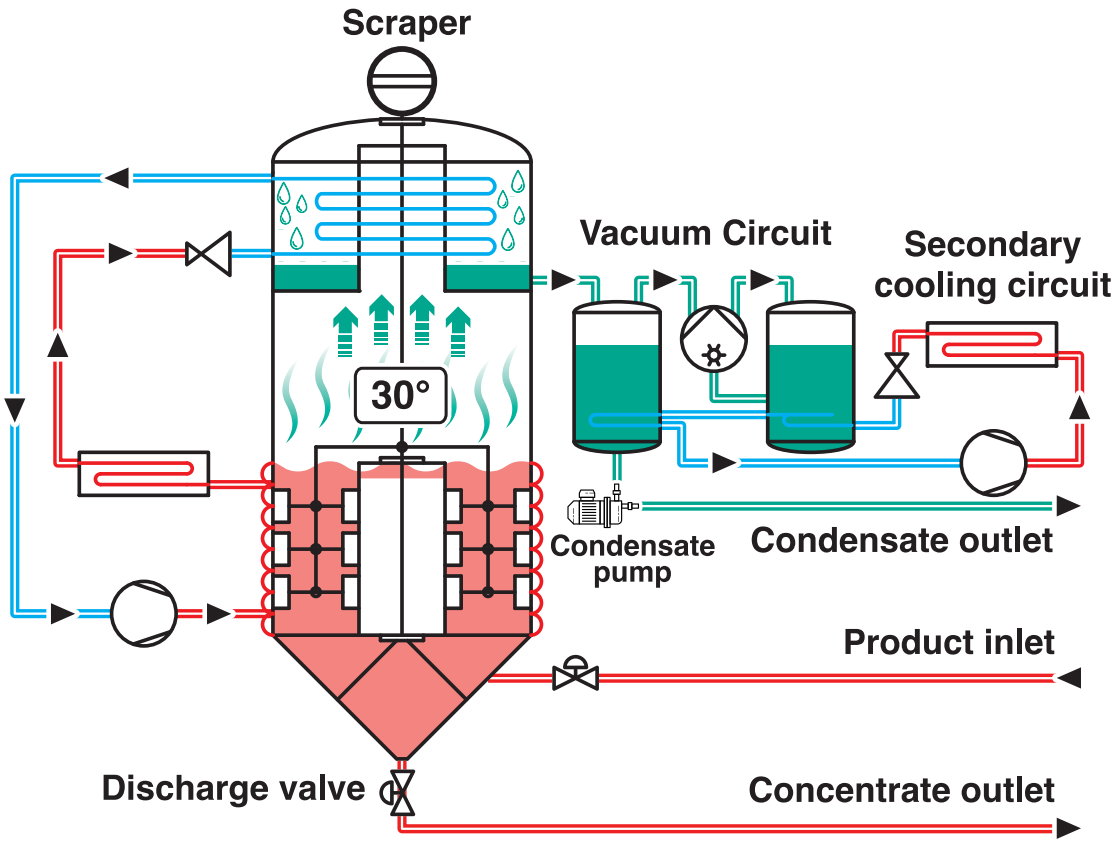
Using an automatic motor-driven scraper, which continuously keeps the exchange surfaces of the boiling boiler clean, higher concentrations are obtained compared to other evaporative systems, while avoiding deposits on the exchange walls.

The final concentrate is finally discharged using a pneumatic diaphragm or progressive cavity pumps.

It is also possible to position the system above a lifting frame, to discharge through the bottom discharge valve directly into a crystal separation system.

**HIGHEST CONCENTRATIONS FOR PRODUCTS EXTREMELY ENCRUSTING**

# HP ME R




| | HP 10 ME R | HP 20 ME R | HP 30 ME R | HP 40 ME R | HP 60 ME R | HP 80 ME R | HP 125 ME R | HP 150 ME R | HP 200 ME R |
|---|---|---|---|---|---|---|---|---|---|
| Production with water l/24h | 240 | 480 | 720 | 960 | 1.440 | 1.920 | 3.000 | 3.600 | 4.800 |
| Indicative electrical power consumption $kWh_{el}$ | 2,5 | 5 | 7,5 | 10 | 15 | 20 | 31 | 37 | 50 |
| Indicative dimensions (l x w x h) cm | 70 x 220 x 250 | 80 x 250 x 280 | 80 x 250 x 300 | 110 x 270 x 300 | 120 x 300 x 320 | 120 x 300 x 320 | 200 x 350 x 350 | 240 x 350 x 350 | 240 x 350 x 350 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HP DE R

## HEAT PUMP DOUBLE EFFECT EVAPORATORS WITH EXTERNALLY JACKETED EXCHANGERS AND INTERNAL SCRAPER.

**-40%**
ENERGY CONSUMPTION

### FEATURES COMMON TO ALL HP DE R SERIES EVAPORATORS

The **HP DE R** series consists of double-acting heat pump evaporators that not only achieve very high concentration levels, but also reduce energy requirements by 40% compared to the corresponding single-acting version.

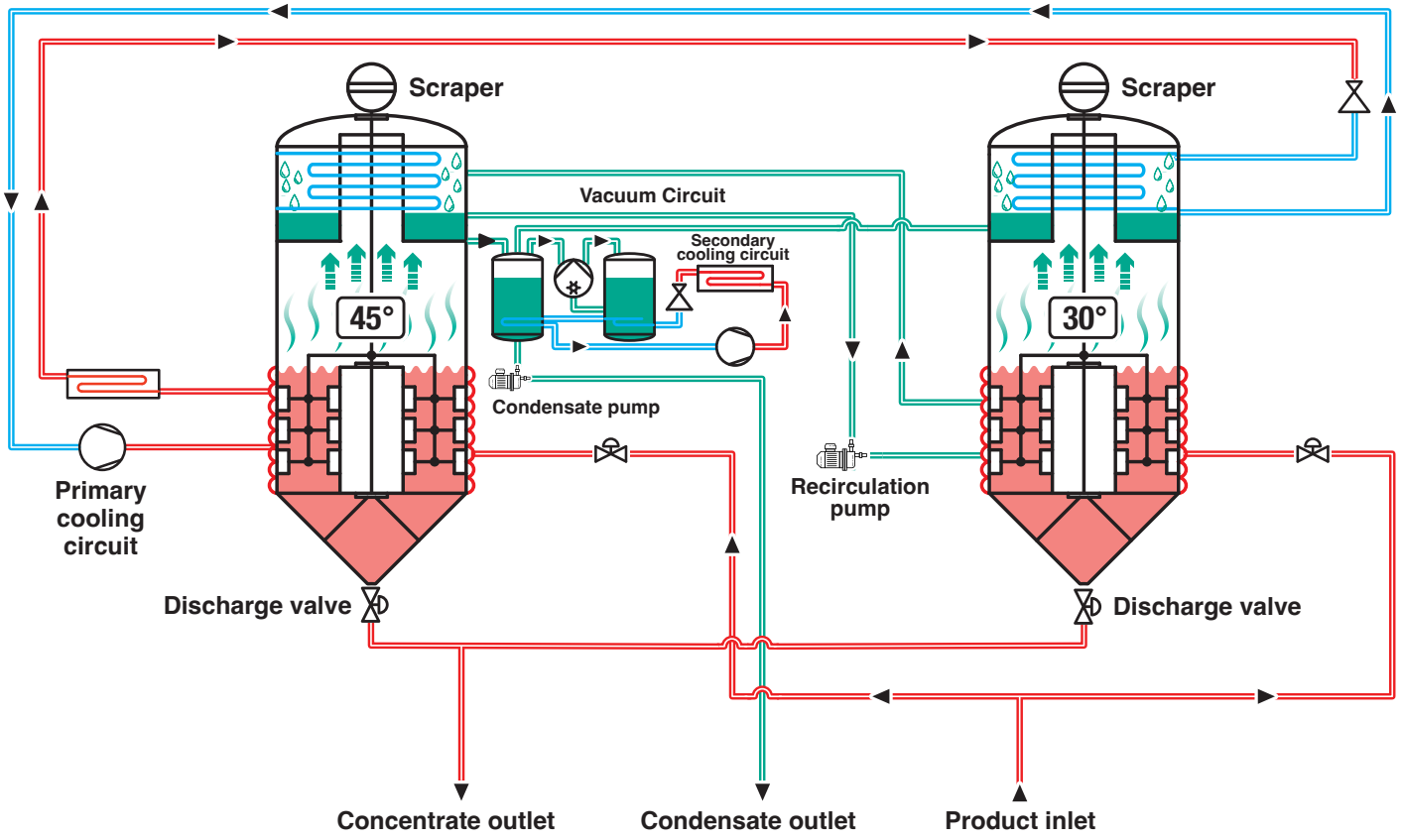
The **HP DE R** evaporators are also equipped with automatic scraper motors that, acting in continuous rotation, guarantee maximum cleanliness of the exchange surfaces inside the boiling boilers.

For this reason, the **HP DE R** evaporators are perfect for the treatment of particularly encrusting products.

These models can be positioned at the top of a skid structure, so that the concentrate can be conveniently discharged by dropping it into big-bag-type containers.

**HIGHEST CONCENTRATIONS FOR PRODUCTS EXTREMELY ENCRUSTING**

# HP DE R




| | HP 200 DE R | HP 250 DE R | HP 300 DE R |
|---|---|---|---|
| Production with water l/24h | 4.800 | 6.000 | 7.200 |
| Indicative electrical power consumption $kWh_{el}$ | 28 | 30 | 32 |
| Indicative dimensions (l x w x h) cm | 500 x 240 x 300 | 500 x 240 x 300 | 500 x 240 x 300 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HWS ME

**EVAPORATORS SUPPLIED WITH HOT WATER OR STEAM, IN MONO EFFECT VERSION WITH IMMERSED PLATE EXCHANGERS.**

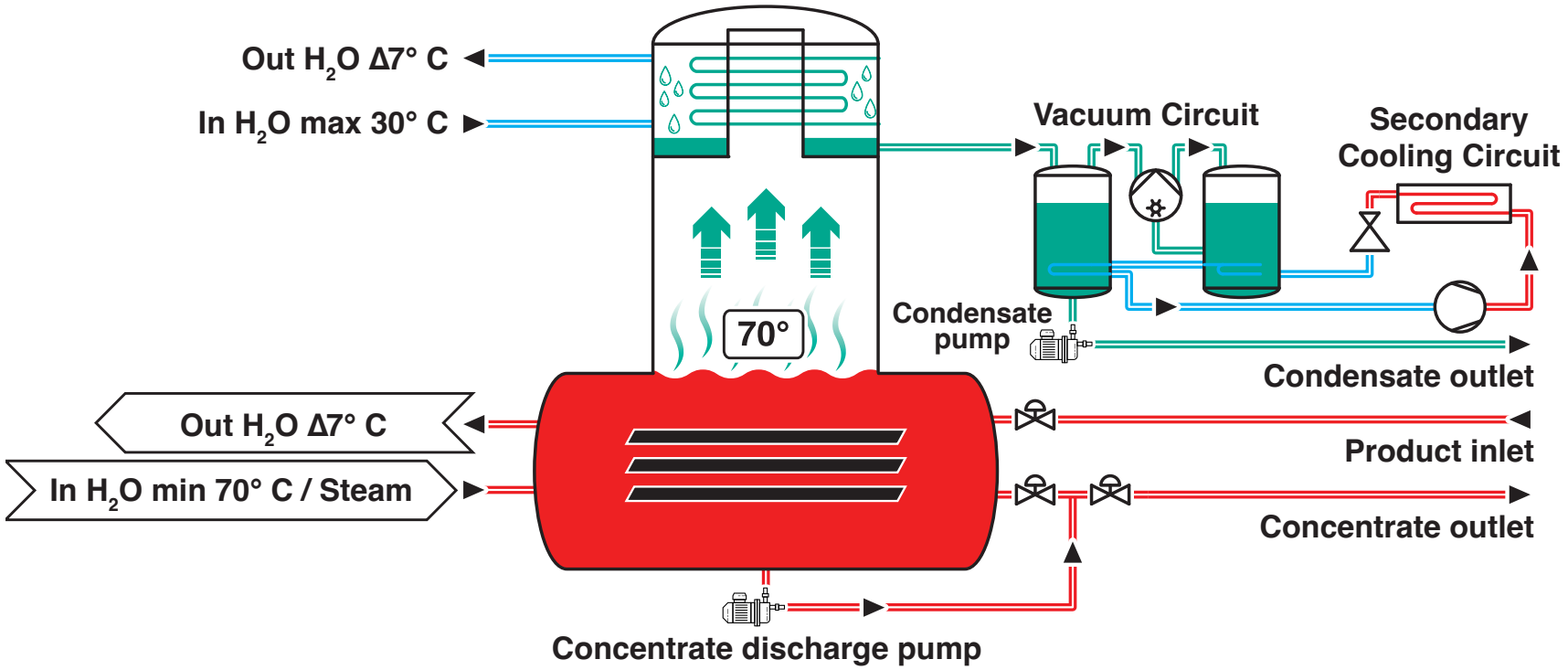
## FEATURES COMMON TO ALL HWS ME SERIES EVAPORATORS

***HIGH CAPACITY, LIMITED INVESTMENTS.***

The **HWS ME** series of evaporators powered by thermal energy already available in the factory, in the form of hot water or steam, is a vacuum evaporation/concentration plant with plate heat exchangers placed directly inside the boiling boilers and immersed in the liquid to be treated.

These vacuum evaporators/concentrators use, for the condensation phase of the vapours, the cold water available in the company, usually coming from closed-circuit dry-coolers or evaporative towers, which can be supplied as a complement to the evaporation plant.

# HWS ME




| | HWS 250 ME L | HWS 500 ME L | HWS 800 ME L | HWS 1000 ME | HWS 1500 ME | HWS 2000 ME | HWS 3000 ME |
|---|---|---|---|---|---|---|---|
| Production with water l/24h | 6.000 | 12.000 | 19.000 | 24.000 | 36.000 | 48.000 | 72.000 |
| Indicative electrical power consumption $kWh_{el}$ | 3 | 3 | 8 | 18 | 27 | 30 | 35 |
| Thermal power consumption $kWh_{therm}$ (kcal/h) | 175 (150.000) | 350 (300.000) | 560 (480.000) | 700 (600.000) | 1.050 (900.000) | 1.400 (1.200.000) | 2.100 (1.800.000) |
| Indicative dimensions (l x w x h) cm | 180 x 230 x 340 | 240 x 300 x 380 | 240 x 350 x 380 | 200 x 450 x 430 | 240 x 650 x 590 | 240 x 680 x 550 | 480 x 600 x 550 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HWS DE

**EVAPORATORS SUPPLIED WITH HOT WATER OR STEAM, IN DOUBLE EFFECT VERSION WITH IMMERSED PLATE EXCHANGERS.**

THERMAL ENERGY

**-50%**
ENERGY CONSUMPTION

## FEATURES COMMON TO ALL HWS DE SERIES EVAPORATORS

### *HIGH CAPACITY, LIMITED INVESTMENTS.*

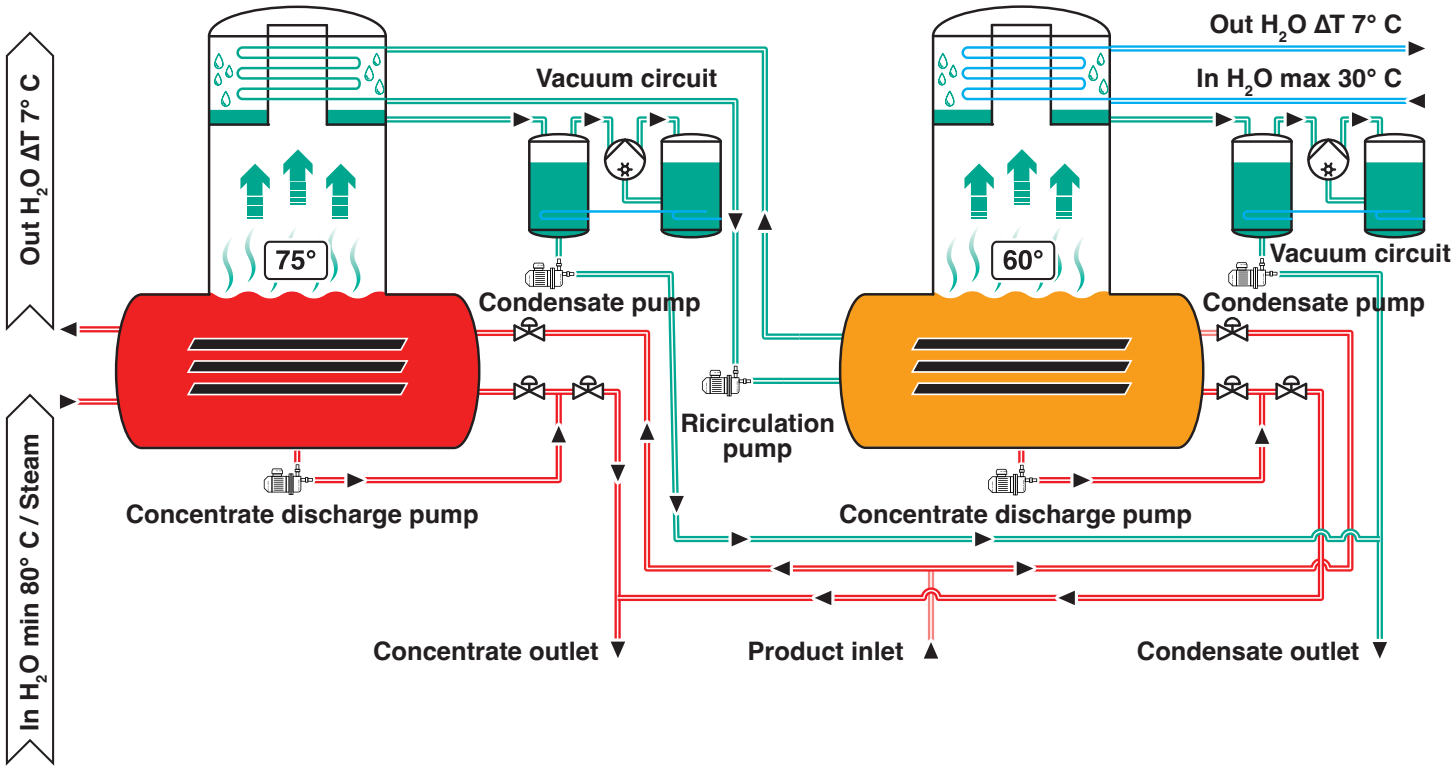
The **HWS DE** series evaporators are energy-efficient systems.

Similar to the HWS ME series, these vacuum evaporators/ concentrators require thermal energy, but only to power the first evaporative stage.

The second stage, due to a higher vacuum value than the previous stage, allows to operate with a lower boiling temperature and it is, therefore, possible to use the thermal energy of the evaporate produced in the first evaporation stage to feed the second evaporation stage for free.

**Thanks to this technique, the Double Effect model achieves reductions in thermal energy consumption of 50% compared to the single effect version.**

# HWS DE




| | HWS 500 DE L | HWS 1000 DE L | HWS 1600 DE L | HWS 2000 DE | HWS 3000 DE | HWS 4000 DE | HWS 6000 DE |
|---|---|---|---|---|---|---|---|
| Production with water l/24h | 12.000 | 24.000 | 38.000 | 48.000 | 72.000 | 96.000 | 144.000 |
| Indicative electrical power consumption $kWh_{el}$ | 6,5 | 6,5 | 15 | 40 | 60 | 70 | 80 |
| Thermal power consumption $kWh_{therm}$ (kcal/h) | 175 (150.000) | 350 (300.000) | 560 (480.000) | 700 (600.000) | 1.050 (900.000) | 1.400 (1.200.000) | 2.100 (1.800.000) |
| Indicative dimensions (l x w x h) cm | 230 x 320 x 340 | 300 x 420 x 380 | 350 x 480 x 440 | 500 x 480 x 500 | 600 x 480 x 500 | 680 x 480 x 550 | 600 x 720 x 550 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HWS TE

**EVAPORATORS SUPPLIED WITH HOT WATER OR STEAM, IN TRIPLE EFFECT VERSION WITH IMMERSED PLATE EXCHANGERS.**

## FEATURES COMMON TO ALL HWS TE SERIES EVAPORATORS

### *HIGH CAPACITY, MORE LIMITED CONSUMPTION.*

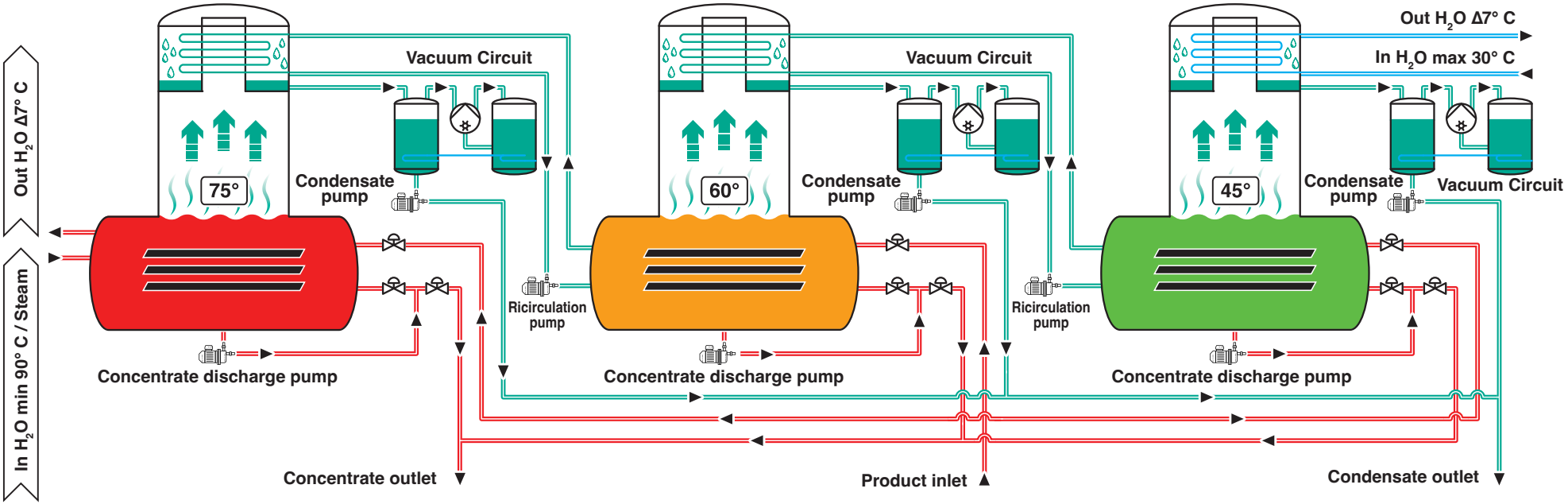
The **HWS TE** series evaporators are even more energy-efficient systems.

As in the previous Double Effect version, the HWS TE series uses the thermal energy of the evaporate produced by the previous evaporation stage to feed the third evaporation stage free of charge, thus further improving the energy efficiency of the system.

**Thanks to this technique, the Triple Effect model achieves reductions in thermal energy consumption of more than 66% compared to the single effect version.**

**-66%**
ENERGY CONSUMPTION

# HWS TE



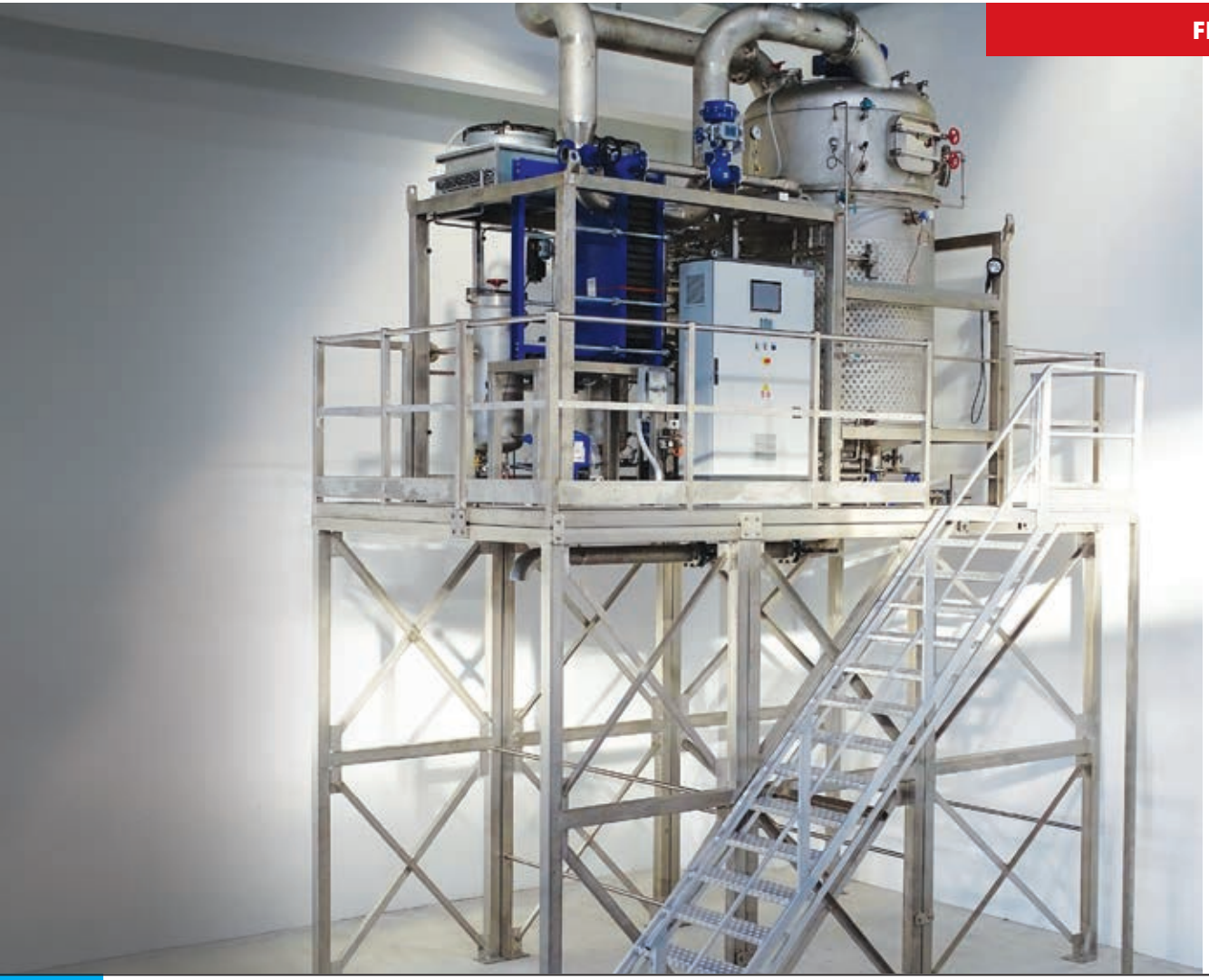

| | HWS 750 TE L | HWS 1500 TE L | HWS 2400 TE L | HWS 3000 TE | HWS 4500 TE | HWS 6250 TE | HWS 7500 TE | HWS 9000 TE |
|---|---|---|---|---|---|---|---|---|
| Production with water l/24h | 18.000 | 36.000 | 57.000 | 72.000 | 108.000 | 150.000 | 180.000 | 216.000 |
| Indicative electrical power consumption $kWh_{el}$ | 10 | 10 | 23 | 77 | 90 | 130 | 140 | 190 |
| Thermal power consumption $kWh_{therm}$ (kcal/h) | 175 (150.000) | 350 (300.000) | 560 (480.000) | 700 (600.000) | 1.050 (900.000) | 1.460 (1.250.000) | 1.750 (1.500.000) | 2.095 (1.800.000) |
| Indicative dimensions (l x w x h) cm | 260 x 540 x 340 | 350 x 600 x 380 | 350 x 720 x 440 | 720 x 700 x 540 | 720 x 700 x 600 | 1260 x 650 x 560 | 1260 x 650 x 560 | 1300 x 650 x 560 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HWS ME R

**MONO EFFECT EVAPORATORS FED BY HOT WATER OR STEAM WITH EXTERNALLY JACKETED EXCHANGERS AND INTERNAL SCRAPER.**

THERMAL ENERGY



## FEATURES COMMON TO ALL HWS ME R SERIES EVAPORATORS

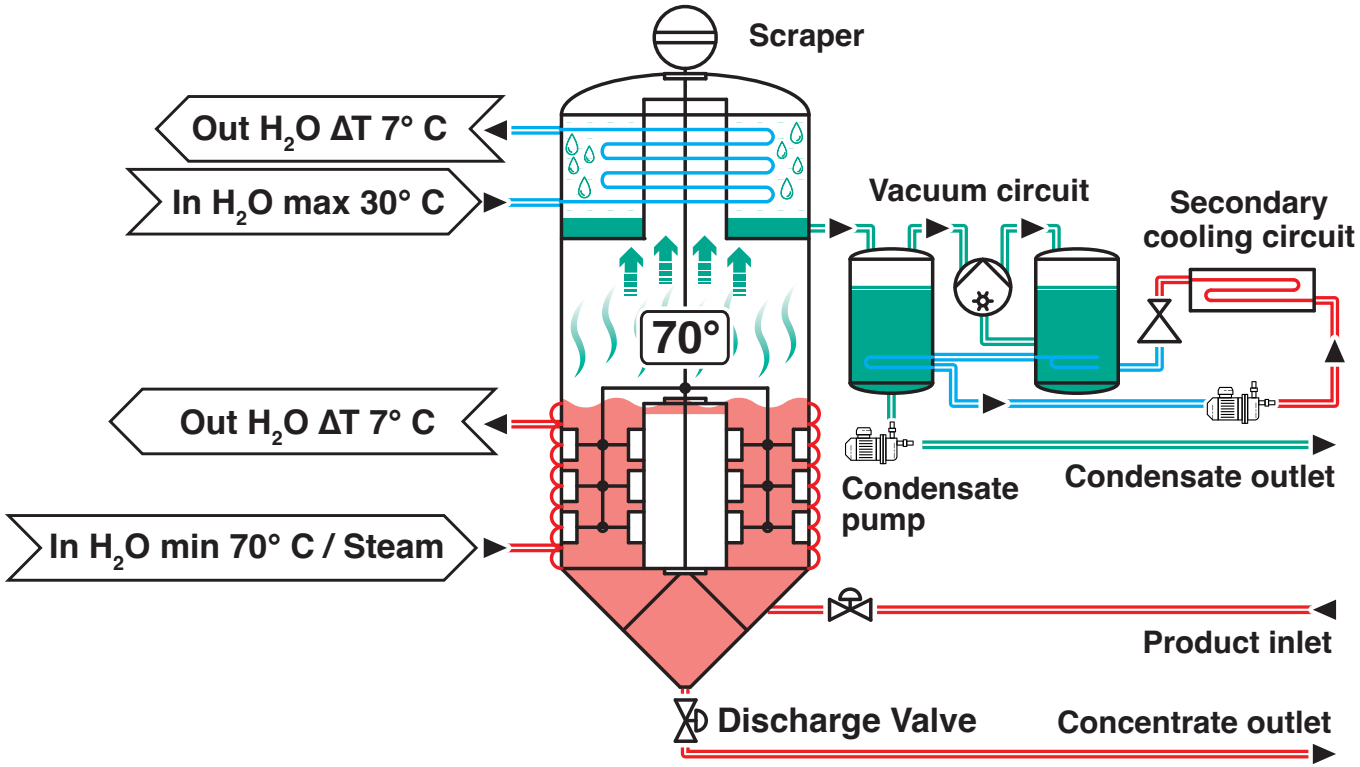
**HIGHEST CONCENTRATIONS FOR PRODUCTS EXTREMELY ENCRUSTING**

In the range of evaporation systems powered by thermal energy, the **HWS ME R** series is designed to meet the need for very high density concentrates and for the evaporation of products that are extremely encrusting to heat exchangers.

Utilizing a motorised automatic scraper, which continuously keeps the heat exchanger surfaces clean, higher concentrations are achieved than with other evaporative systems.

The final concentrate will eventually be discharged through a diaphragm pump or a progressive cavity pump, or by placing the system on top of a lifting frame so that the discharge can be made through the bottom discharge valve directly into a crystal separation system.

# HWS ME R




| | HWS 100 ME R | HWS 200 ME R | HWS 300 ME R | HWS 500 ME R | HWS 840 ME R |
|---|---|---|---|---|---|
| Production with water l/24h | 2.400 | 4.800 | 7.200 | 12.000 | 20.000 |
| Indicative electrical power consumption $kWh_{el}$ | 7 | 8 | 10 | 12 | 12,5 |
| Thermal power consumption $kWh_{therm}$ (kcal/h) | 70 (60.000) | 140 (120.000) | 210 (180.000) | 350 (300.000) | 590 (504.000) |
| Indicative dimensions (l x w x h) cm | 140 x 270 x 320 | 200 x 350 x 380 | 170 x 400 x 370 | 200 x 550 x 350 | 530 x 230 x 400 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# HWS DE R

**DOUBLE EFFECT EVAPORATORS FED BY HOT WATER OR STEAM WITH EXTERNALLY JACKETED EXCHANGERS AND INTERNAL SCRAPER.**

THERMAL ENERGY

**-50%**
ENERGY CONSUMPTION

## FEATURES COMMON TO ALL HWS DE R SERIES EVAPORATORS

**HIGHEST CONCENTRATIONS FOR PRODUCTS EXTREMELY ENCRUSTING**

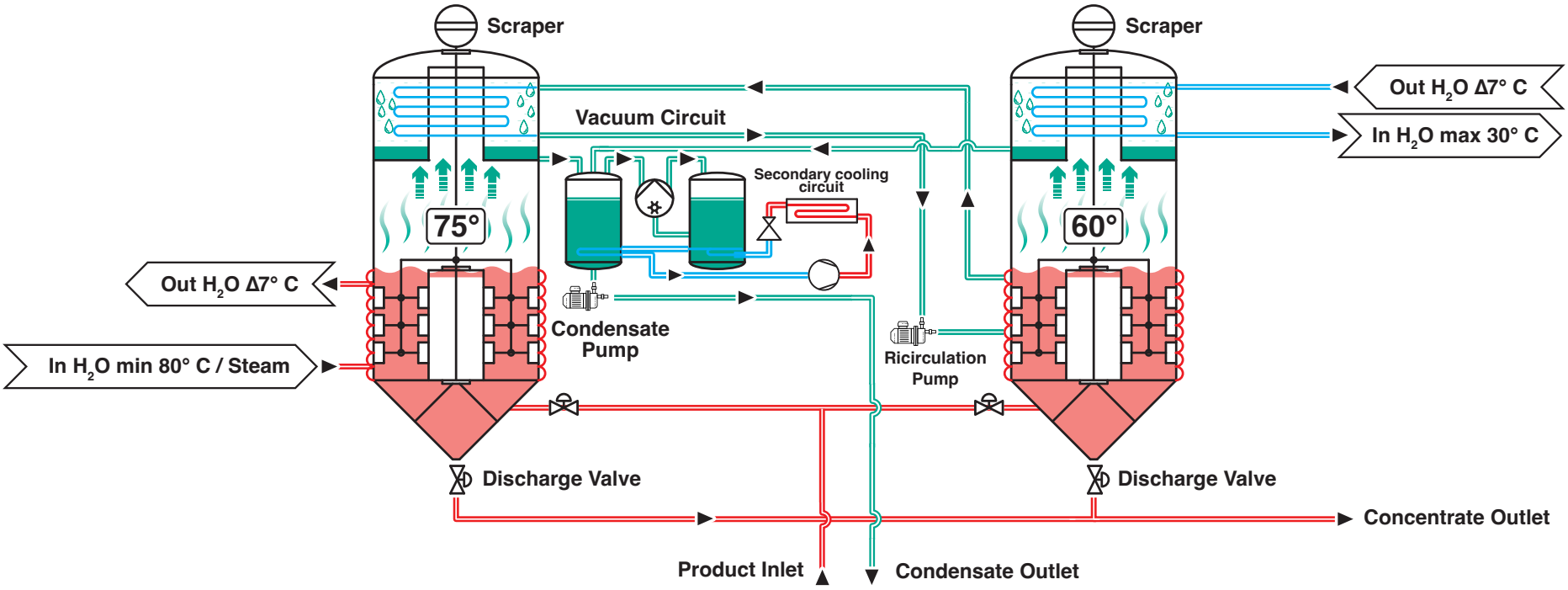
The **HWS DE R** series evaporators achieve a very high density concentrate with a 50% reduction in energy requirements compared to the corresponding single-acting version.

Each of the two units is equipped with an automatic scraper motor that keeps the internal surfaces of the boiling boiler clean.

This is a perfect solution for the treatment of effluents characterised by a high degree of fouling capacity.

The final concentrate can be discharged by means of a diaphragm or single screw type pump, or with a skid design in which the evaporators are placed in an elevated position in order to collect the effluent through the bottom discharge valve directly into a crystal separation system.

# HWS DE R




| | HWS 300 DE R | HWS 500 DE R | HWS 650 DE R | HWS 800 DE R | HWS 1000 DE R |
|---|---|---|---|---|---|
| Production with water l/24h | 7.200 | 12.000 | 15.600 | 19.200 | 24.000 |
| Indicative electrical power consumption $kWh_{el}$ | 12 | 15 | 15 | 20 | 22 |
| Thermal power consumption $kWh_{therm}$ (kcal/h) | 105 (90.000) | 175 (150.000) | 230 (195.000) | 280 (240.000) | 350 (300.000) |
| Indicative dimensions (l x w x h) cm | 500 x 400 x 300 | 500 x 500 x 310 | 500 x 500 x 370 | 500 x 500 x 380 | 500 x 500 x 380 |

*Indicative table of some of the available models. Other sizes are available and can be realized custom-made.*

# SPECIAL VERSIONS


## EVAPORATORS EQUIPPED WITH AUTOMATIC REMOVAL OF DEPOSITS FROM HEAT EXCHANGERS

**IWE**'s standard use of immersed plate heat exchangers offers the advantage of reduced cleaning requirements.

Further development in the search for systems with even less need for periodic maintenance has enabled **IWE** to develop a special system for the automatic removal of deposits from heat exchangers.

The system is based on a robust, pneumatically-driven structure that moves special brushes with a timed frequency, thus automatically cleaning the heat exchange surface.

# SPECIAL VERSIONS

## EVAPORATORS WITH COMPLETE CASING FOR OUTDOOR INSTALLATION

Thanks to this particular version, it is possible to install the system outside the building.

The evaporator is made with a special frame equipped with insulating panels and a cover with plastic material for perfect acoustic and thermal insulation that ensures full protection in the event of external installation.

The panels used for the cladding are of high thickness, removable and equipped with hinges and handles for opening the access doors, and guarantee resistance to frost (down to -15°C) by means of an integrated automatic heating system.

# SPECIAL VERSIONS

## EVAPORATORS WITH SILICON CARBIDE EXCHANGERS FOR HIGHLY CORROSIVE LIQUID APPLICATIONS

For the concentration of solutions containing substances with high corrosive potential, such as hydrochloric acid or hydrofluoric acid, which are not compatible with the special materials (e.g. SUPER DUPLEX SAF 2507) used in the construction of our plants, **IWE** can produce vacuum evaporators with heat exchangers in **GRAPHITE** or **SILICON CARBIDE** and with **BOILING BOILERS ENAMELLED OR INTERNALLY COATED WITH FLUOROCARBON RESIN (HALAR® ECTFE).**

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