

A KHL Group publication

DPI

DIESEL PROGRESS INTERNATIONAL

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Four decades at the heart of the industry



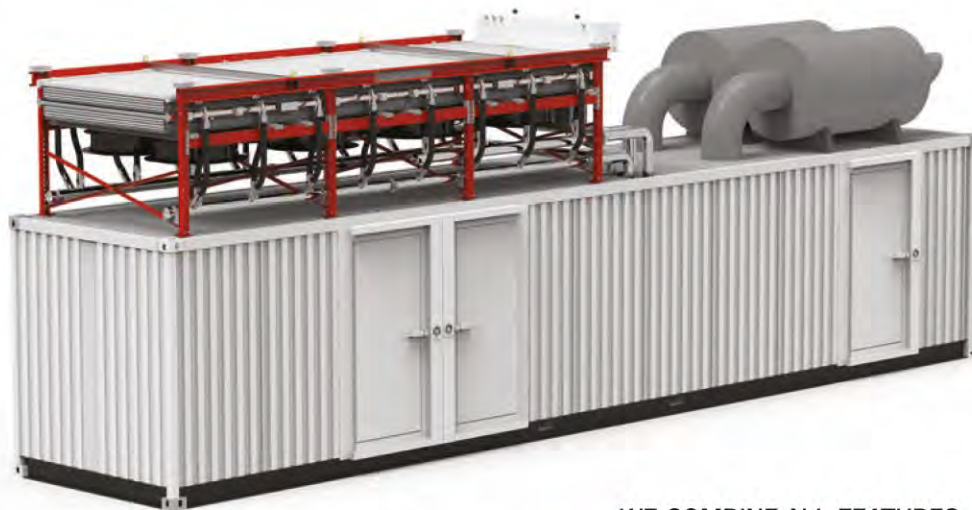
Supplement:

40 pages of reflections and also a look into the future.

THE MAGAZINE FOR ENGINE DESIGN, POWER AND COMPONENTS ON A GLOBAL SCALE

HYDAC

Air Blast Coolers for Diesel and Gas Generators



WE COMBINE ALL FEATURES
TO OFFER YOU **A NEW LEVEL IN TABLE COOLING**

Cooling elements

100% Aluminum alloy cooling elements.

Extruded fluid tube sections combined with clogging resistant louvered air fins.

Corrosion resistant alloy radiators qualified to 1500hr SWAAT.

Single or double circuit configurations.

Single or layered radiator designs.

Ventilation system

AC or EC fan motors pre-wired to a common terminal box.

Plug&play operation or integration into J1939 / Modbus system.

Product configuration

Modular design with sectional construction covering 4 base sizes and fan configurations.

Distribution manifold for improved serviceability.

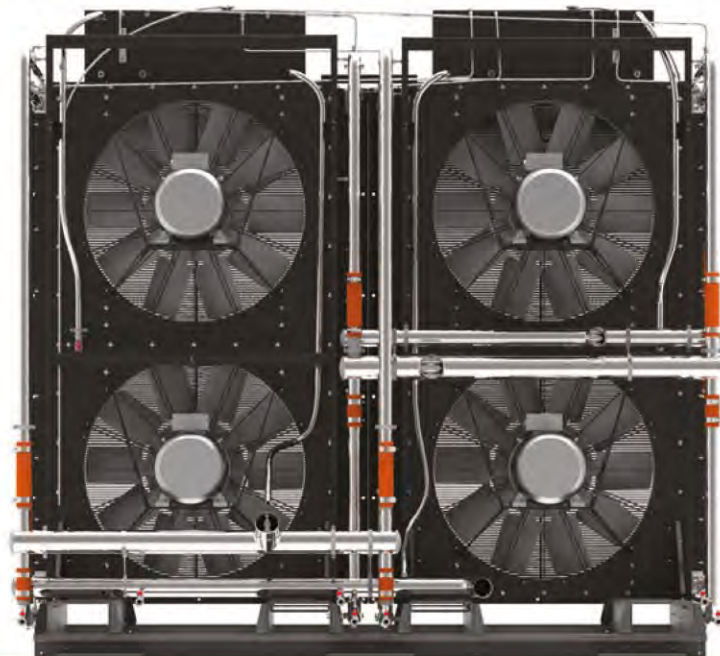
Expansion tank with low level switch, visual sight level indication.

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OUR WAY OF COOLING

HYDAC

Air Blast Coolers
for Diesel and Gas Generators



**Integrated In-Container
Cooling Systems for
Diesel & Gas Generators.**

Combined Multi-circuit radiators

- Engine Jacket Water Circuit
- Low -Temperature Secondary Charge - Air Cooler
- Air to Air Charge Cooler
- Fuel Cooler

Heavy Duty Bar and Plate Cooling elements constructed from 100% aluminum alloys.

Special coating options available to offer increased levels of corrosion protection.

Variable fan speed drive technology via frequency controller available as option.

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**THE BEST
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AVAILABLE**

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OUR WAY OF COOLING

From thermal management to end user's system care

A paper by Sebastiano Campo, Engineering & Innovation manager at Hydac AG, describes a new generation of cooling system designed to change the approach from thermal management to end user's system care.

Thermal management is important for the human body as it is for machines, for example, for diesel and gas engines, gas turbines, fuel cells, batteries and so on, to ensure the optimal efficiency, higher reliability, and longest lifetime; in summary, to reduce the life cycle cost.

In cooling systems, thermal management is managed by a control unit that has the capability of monitoring the trend of the temperature and modifying the performance of the cooling system, to guarantee the optimal temperature target to the user. This capability is a key asset for the end user and becomes more and more

important for next generation cooling solutions.

Hydac AG makes a lot of investment to reach the goal of "system care", an ambitious goal that can be achieved by thinking differently the thermal management by the control unit and let it encompass the management of temperature, noise emission, electrical consumption, cooling medium, volume flow, thermal efficiency, and more.

OPTIMAL SETUP

Some examples of these different requirements can be done looking at the trend with energy demand, that is higher year after year and with the low-carbon economy

that fixes very low limits of CO₂ and a negligible level of noise emission. Consequently, power generator sets use more and more sustainable biofuels that can change the thermal needs of the power unit. From the thermal point of view, these sustainable biofuels must also be stored and managed in

a different way compared to diesel.

If we consider the hydrogen economy and the possibility to use the hydrogen as fuel for the gen-sets, the cooling system must be able to guarantee the optimal setup of the gen-set but also to manage hydrogen fuel storage. Hydrogen can



Production of the Hydac AC-MS cooler with integrated Thermal Management System; a solution to improve the efficiency/ lifetime of the machine it is used for.

be stored in several ways, one of them could be in a chemical hydride or in some other hydrogen-containing compound that must be heated or cooled in order to absorb or release the hydrogen.

Other examples are with renewable energies, fuel cells, batteries and so on, as all of them have: a specific thermal setpoint; a typical cooling medium that must be

compatible with the material of the cooling element; specific needs for the integration; a typical mission profile (charging, fast charging, warm up or normal operation); and sometimes as in fuel cell applications, the need to control air humidity within a specific range of values.

HIGH LEVEL OF CARE

There is not one single magic solution that fulfills all applications and needs and it is important to customise the solution and take care of the system integration. Today, the meaning of system integration is different compared to the past, in fact while product development and co-design is still a multi-objective optimisation, the machine characteristics, boundaries conditions, rules, etc. are stricter and sometimes new compared to the past.

Hydac's AC-MS+ is a good example of a new generation thermal management/system care solution; thanks to a new cooling element for very low pressure drop, low conductivity and low inner volume of medium, plus with all available options, it can be used in diesel- and hydrogen-powered gen-sets, in electrolyzers or for concentrating solar power. All these customisations have a dedicated thermal management able to provide a high level of system care. **dpi**