Innovation: New combi-burner for the municipal utilities of Hannover.

A concept was realised for „enercity", the municipal utilities of Hannover, in which two independent product lines of Körting Hannover AG and its affiliated company, Hans Hennig GmbH, were merged to form a novel total product: a combi-burner which is distinguished by highest efficiency and lowest emissions.

From the left: Henning Schmeyer (enercity), Michael Branzke, Ralf Michehl, Udo Urban, Thomas Funck, Heiko Koch, Sebastian Schnehage.

"Worldwide no other competitor can offer a comparable burner", explained Udo Urban, grad. Eng. at Körting Hannover AG on the subject of this innovative product. The basis is formed by the Körting CKM-Burner and the Hans Hennig HG-Burner. "Both have been applied numerous times and are distinguished, particularly in natural gas operation mode, by low emissions and robustness", so Mr. Urban. By means of a design-dependent intervention they can now be combined with each other in a modular manner. In this constellation a completely new trend-setting product made up of components from the mother company and its affiliated company came into being. The successful TÜV Inspection took place in March 2013. "Since then, we, as the Körting concern, now dispose over a burner with an output range from 0.15 – 6.5 MW output which even today already fulfils the future NOx boundary values of 2016!"

Up to today, enercity operated an auxiliary boiler in a power plant with a commercial gas Monoblock burner of 6.8 MW output range in standby operation mode. In order to be able to fall back on a reserve steam quantity on a permanent basis, a discontinuous post-heating is necessary, as is the case with a domestic heating unit. If no steam is taken off, the burner then switches itself off. When steam is taken off, then the burner switches itself on and produces steam. If only a low amount of steam below the burner's minimum output is required, in this case 1 MW, then the burner switches itself on and off on a permanent basis. However for reasons of safety, with each new start the whole waste gas path is purged several times with cool fresh air – and valuable energy gets lost.

To get around this problem one needs a low-load burner which will maintain heating in the steam boiler to compensate for heat transfer losses when no steam is being taken off."With additional heat demands the burner increases its output and then switches the main burner on as well. Purging of the waste gas path with fresh air and in connection with this, the heat losses, is so dispensed with," explained Mr. Urban.

"enercity required a control range of 1:68 which in this cases means 0.1 MW up to 6.8 MW output", as Mr. Urban said. The solution was found very quickly: Körting Hannover AG's product range provided with its proven and tested Monoblock burner CKM63 the main load burner whereas Hans Hennig GmbH delivered the appropriate low-load burner in the form of their geometrically and output matching high-speed gas burner HG250.

Both burners were assembled in a constructive concentric manner, one inside the other. The "mother company" surrounds the "affiliated company" and so merges to one unit," so Mr.Urban. The customer

showed his satisfaction with the result too: “With this new and very large control range we are now in a position of being able to operate our boiler in low-load operation mode for most of the time,” as Henning Schmeyer, Manager of the Electrical and Control Technology Dept., was happy to say. “And all that without having to switch the boiler off from time to time, as was the case in earlier times. A new boiler start always means renewed wear and demands on the materials which now can be avoided by means of the continuous low-load operation mode.” Here, Körting Hannover AG’s strengths in this market niche are proved again and are reinforced even more by the power of its affiliated company, Hans Hennig GmbH. Together they are able to develop a product tailor-made entirely according to the customer’s requirements. Henning Schmeyer, Manager of the Electrical and Control Technology Dept., commented on the project procedure very positively: “As it is a prototype, diverse optimisation steps were necessary here on site in order to finally achieve today’s status. With regard to this process, collaboration with Körting Hannover AG was always correct and goal-oriented,” as he summed up.

The new combi-burner for enercity.

At a glance

Thermal firing output gas	150 - 6800 kW
Control ratio	1 : 68
Gas consumption	ca.16 - 750 m³/h
Combustion air requirements	180 - 8250 m³/h (at Lambda =1,25)
NOx emissions	below 100 mg/Nm³ (based on 3 % residual O2 in the waste gas)
CO emissions	0 mg/Nm³ (based on 3 % residual O2 in the waste gas)
Motor rated output ventilator	22 kW
Ambient temperature	10°C bis +35°C

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