U unique
V visionary
P passionate

Energy Efficiency Consulting at voestalpine Stahl Donawitz

Client	voestalpine Stahl Donawitz GmbH
Location	Leoben, Austria
Technology	industrial fans
Power of 23 fans in total	10 MWel (average in 2017; capacity 15 MW)
First evaluation	2017
Start-Up	2020 (new sinter waste gas fan)
Investment	2 Mio. €
Consulting Services provided	Efficiency consulting, feasibilities, support for operating tests, acceptance test

To support voestalpine Stahl Donawitz in evaluating and enhancing the energy efficiency of ancillary plants, UVP was contracted in 2017 as expert partner with process engineering know how, in order to focus on industrial fans of the sinter production and blast furnace division.

In the first step of the systematic approach, the most important information was collected and operational data of the main 23 fans were evaluated. The status quo was summarized in a well-structured overview, which has since been updated regularly and nowadays serves as road map and progress-evaluation for the division's energy management. Thereupon, the most "promising" fans, which showed the highest potential for optimization, were further investigated, considering the whole process. Optimization proposals ranged from "low hanging fruits" without hardly any investment (e.g. optimization in the control-settings of a fan halving the energy consumption) to new, even in partial load highly efficient fans requiring an investment of 2 Mio. € (sinter waste gas fan).

Several efficiency projects were then carried out with UVP's support. For the new, highly efficient sinter waste gas fan (5,6 MW el.), this included efficiency consulting for supplier negotiations as well as the efficiency acceptance test. So far, more than 7000 MWh el. can be saved each year at average production rates, not taking into account ongoing projects for further energy efficiency optimization.

Gebläse / Einbauort	Nenn-Spg [V]	Nenn-Strom [A]	Motor-nenn-leistung [kW]	Dreh-zahl [Upm]	FU	Regelung	Zeitanteil Leistungslastbereiche: > 75%	75% > x > 50%	50% > x > 25%	25% > x >0	<= 0%
GHE Ventilator 1	690	712	710	994	ja	FU	0,4%	42%	35%	22%	0%
GHE Ventilator 2	690	712	710	994	ja	FU	0,1%	40%	37%	22%	0%
HO1 A-Cowperbläser 1 und 2	690	670	690	1491	ja, 1 für beide	FU, (Drallregler	0%	0%	0%	100%	0%
HO1 C-Cowper Brennluftbl. 1 u 2	500	79	55	1480	ja, 1 für beide	FU	0%	6%	82%	12%	0%
HO4 E - Cowper Brennluftbl. 1 u 2	500	184	132	1490	ja, 1 für beide	FU	0%	0%	100%	0%	0%
PCI Saugzug Mahlkreislauf	6000	54	450	1489	nein	Drallregler	0%	93%	2%	0%	5%
Theisen 5	6000	154	1250	744	nein	Drallregler	53%	6%	0%	0%	41%
Theisen 6	6000	72	580	799	nein	Drallregler	16%	59%	0%	0%	25%
Theisen 7	6000	72	580	740	nein	Drallregler	35%	3%	0%	0%	62%
Theisen 8	6000	72	580	740	nein	Drallregler	39%	5%	0%	0%	56%
Theisen 9	6000	154	1250	744	nein	Drallregler	60%	5%	0%	0%	35%
AS10 *	500	198	160	1485	nein	keine	48%	50%	0%	0%	2%
AS34	6000	84,5	710	988	nein	Schaufel im Sti	0%	36%	56%	6%	2%
AS50	6000	492/510	5000	1500	nein	kaskadenbetrie	96%	0%	1%	0%	2%
AS51	6000	72	580	740	nein	Drallregler, fix	97%	0%	0%	0%	3%
Kobus Entstaubung Ventilator	525	148	110	1485	ja	FU	59%	0%	0%	0%	40%
Linie 1 Absaugventilator	500	450	315	993	ja	FU	96%	1%	1%	0%	3%
Linie 2 Absaugventilator	500	450	315	993	ja	FU	79%	17%	2%	0%	2%
Linie 3 Absaugventilator	500	450	315	993	ja	FU	94%	1%	1%	0%	3%
Linie 4 Absaugventilator	500	450	315	993	ja	FU	83%	12%	1%	0%	3,2%

Overview of technical data for fan evaluation (© UVP GmbH)

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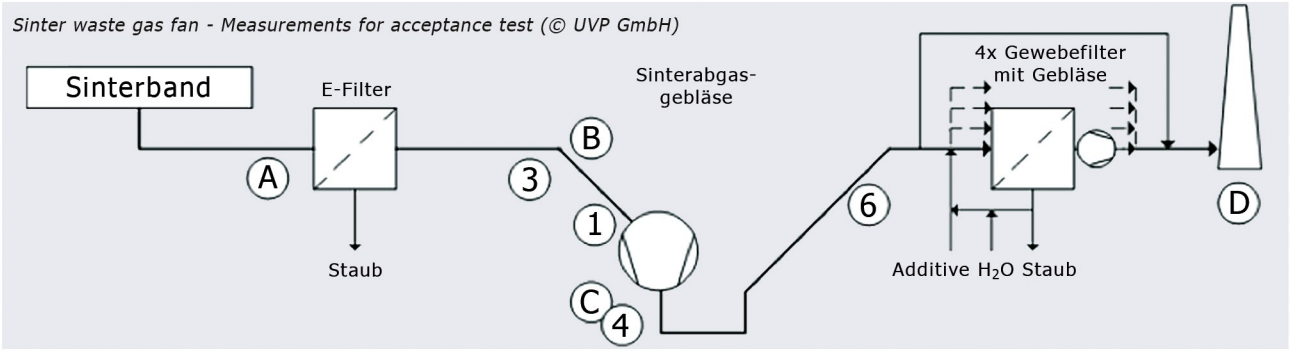
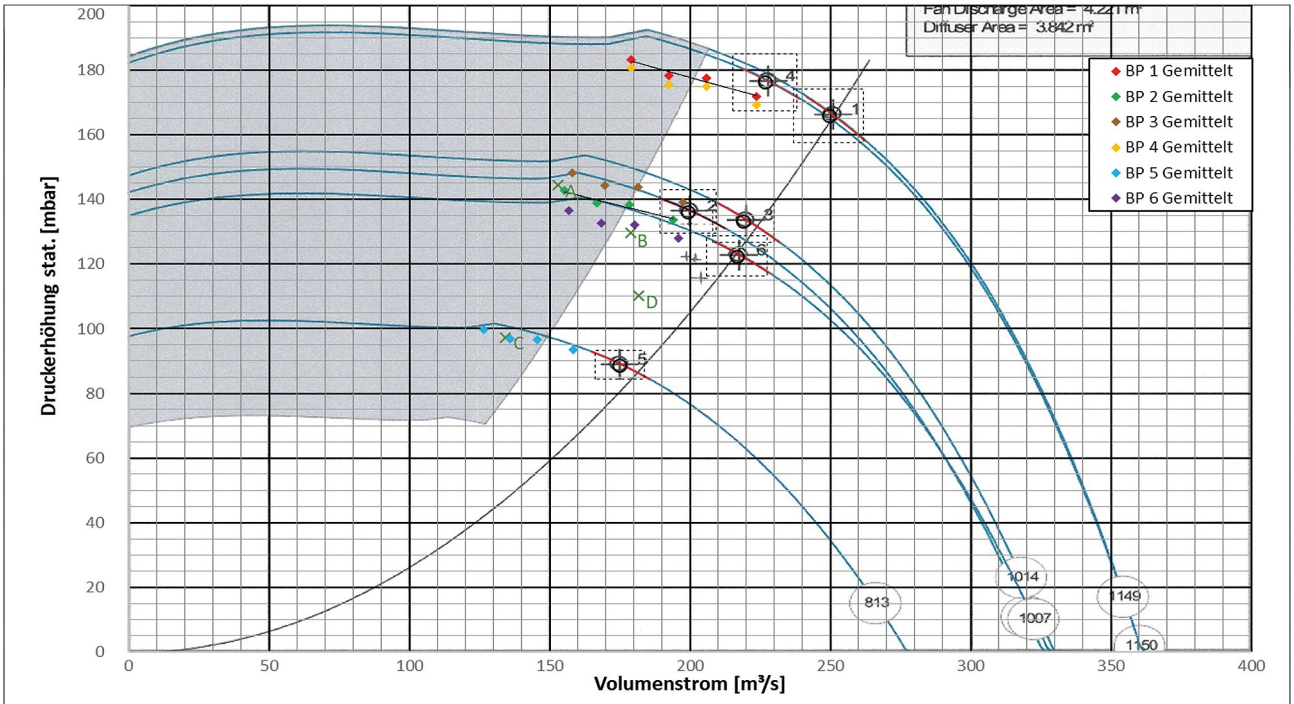
Old sinter waste gas fan (© UVP GmbH)

New sinter gas fan (© Howden Turbowerke GmbH)

Sinter waste gas fan - Measurements for acceptance test (© UVP GmbH)





Performance evaluation and acceptance test of the new sinter waste gas fan (© Howden Turbowerke GmbH, adapted by UVP GmbH)

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