

**VGC**

MULTI BLADE DUCT TYPE SMOKE DAMPER



**FOUR SEASONS**<sup>®</sup>  
is a registered trademark of  
Doğu İklimlendirme A.Ş.

# Venues Breathe with Dogu HVAC Systems

DOGU HVAC founded in 1999, and ever since has been manufacturing Energy-and Cost-Efficient products as Air Handling Units, Air Distribution&Management&Movement Systems(HVAC Components) and constantly enhancing to provide an integrated solutions for well-being. DOGU HVAC's core business products which are subsumed under 3 major groups as HVAC Units, HVAC Components and Kitchen Ventilation all are manufactured in compliance with EU Standards. Particularly HVAC Units are entitled under the "FOURSEASONS" brand name for both domestic and foreign markets. DOGU HVAC's headquarter, based in Izmir/Turkey, operates in a large sized 25.000 sqm plant that enables us to manufacture 130 various types of products. Additionally DOGU HVAC has a powerful sales network with 3 sales offices located in Istanbul, Ankara and Antalya in Turkey as well as authorized dealers in many other countries for sales and after sales operations. DOGU HVAC has been exporting to more than 40 countries.

Thanks to our "Customer Satisfaction","Zero-defect policy" motto and reinforced by complete certified products, more than 250 employees. DOGU HVAC R&D department developed exclusive products, such as Double Skin Make-Up Kitchen Hood, Recirculated Laminar Airflow Unit, Single Piece Square Ceiling Diffuser and Ecology Units, for the first time have brought to the sector. DOGU HVAC R&D has the ability to make customized production which can meet the requirement of the customers by means of special software such as "ANSYS FLUENT". DOGU HVAC guaranteed its quality of management by having advantages of ISO 9001, ISO 14001, ISO 18001 certifications. Air Handling Units have EUROVENT, TUV Hygiene [in accordance with DIN1946-4, VDI 6022-1, DIN EN 13053 standards], CE, TSEK, GOST-R certifications; Fire Dampers have EN 1366-2 and EN 13501-3 CE certifications; Smoke Control Dampers have EN 1366-10 and 12101-8 CE certifications; Kitchen Ventilation Products have TSE, CE and GOST-R quality certifications.





### VGC –MULTI BLADE DUCT TYPE SMOKE DAMPER

- ☞ Tested by accredited body in accordance with EN1366-10.
- ☞ Produced up to 1250x1250 mm.
- ☞ Fire resistance class E90.(EN 13501-4)
- ☞ Temperature class 600oC. (EN 13501-4)
- ☞ Pressure class 500Pa. (EN 13501-4)
- ☞ ON/OFF position tracking by damper electric actuator. (Belimo BLE)
- ☞ Class 2 in accordance with EN 1751.

### WORKING PRINCIPALS

- ☞ **VGC –Multi Blade Duct Type Smoke Dampers** are used to evacuate and control the smoke from the environment during the fire. They perform their tasks according to the fire scenario, which enables blades open or close by the actuator. VGC resists fire 90 minutes under **500 Pa** and **600°C** conditions. Its performance was tested by EN1366-10 testing procedure and certified in accordance with EN 13501- 4 **E<sub>600</sub> 90 (h<sub>o</sub> – i→o) S500 C<sub>300</sub> AA Single**
- ☞ Actuator needs 60 seconds in order to change its on-off position. If electricity is cut off, blades keep their current position. Actuator cables must be fire resistant in order to ensure the fire scenario works properly.
- ☞ **VGC – Multi Blade Duct Type Smoke Damper** is open when it does not detect smoke.
- ☞ Since they have guarantee for 10.000 on/off processes, they can be used for daily ventilation purposes.

## SELECTION

## 1. Effective Area

W/H (m <sup>2</sup> )	200	300	400	500	600	700	800	900	1000	1100	1200	1250
200	0,03	0,03	0,06	0,06	0,10	0,10	0,13	0,13	0,17	0,17	0,20	0,20
250	0,03	0,03	0,07	0,07	0,12	0,12	0,17	0,17	0,21	0,21	0,25	0,25
300	0,04	0,04	0,09	0,09	0,15	0,15	0,20	0,20	0,25	0,25	0,30	0,30
350	0,05	0,05	0,10	0,10	0,17	0,17	0,23	0,23	0,29	0,29	0,35	0,35
400	0,06	0,06	0,12	0,12	0,20	0,20	0,27	0,27	0,34	0,34	0,41	0,41
450	0,06	0,06	0,13	0,13	0,22	0,22	0,30	0,30	0,38	0,38	0,46	0,46
500	0,07	0,07	0,15	0,15	0,24	0,24	0,33	0,33	0,42	0,42	0,51	0,51
550	0,08	0,08	0,16	0,16	0,27	0,27	0,37	0,37	0,46	0,46	0,56	0,56
600	0,08	0,08	0,18	0,18	0,29	0,29	0,40	0,40	0,50	0,50	0,61	0,61
650	0,09	0,09	0,19	0,19	0,32	0,32	0,43	0,43	0,55	0,55	0,66	0,66
700	0,10	0,10	0,20	0,20	0,34	0,34	0,46	0,46	0,59	0,59	0,71	0,71
750	0,10	0,10	0,22	0,22	0,37	0,37	0,50	0,50	0,63	0,63	0,76	0,76
800	0,11	0,11	0,23	0,23	0,39	0,39	0,53	0,53	0,67	0,67	0,81	0,81
850	0,12	0,12	0,25	0,25	0,42	0,42	0,56	0,56	0,71	0,71	0,86	0,86
900	0,13	0,13	0,26	0,26	0,44	0,44	0,60	0,60	0,76	0,76	0,91	0,91
950	0,13	0,13	0,28	0,28	0,46	0,46	0,63	0,63	0,80	0,80	0,96	0,96
1000	0,14	0,14	0,29	0,29	0,49	0,49	0,66	0,66	0,84	0,84	1,01	1,01
1050	0,15	0,15	0,31	0,31	0,51	0,51	0,70	0,70	0,88	0,88	1,06	1,06
1100	0,15	0,15	0,32	0,32	0,54	0,54	0,73	0,73	0,92	0,92	1,12	1,12
1150	0,16	0,16	0,34	0,34	0,56	0,56	0,76	0,76	0,96	0,96	1,17	1,17
1200	0,17	0,17	0,35	0,35	0,59	0,59	0,80	0,80	1,01	1,01	1,22	1,22
1250	0,17	0,17	0,37	0,37	0,61	0,61	0,83	0,83	1,05	1,05	1,27	1,27

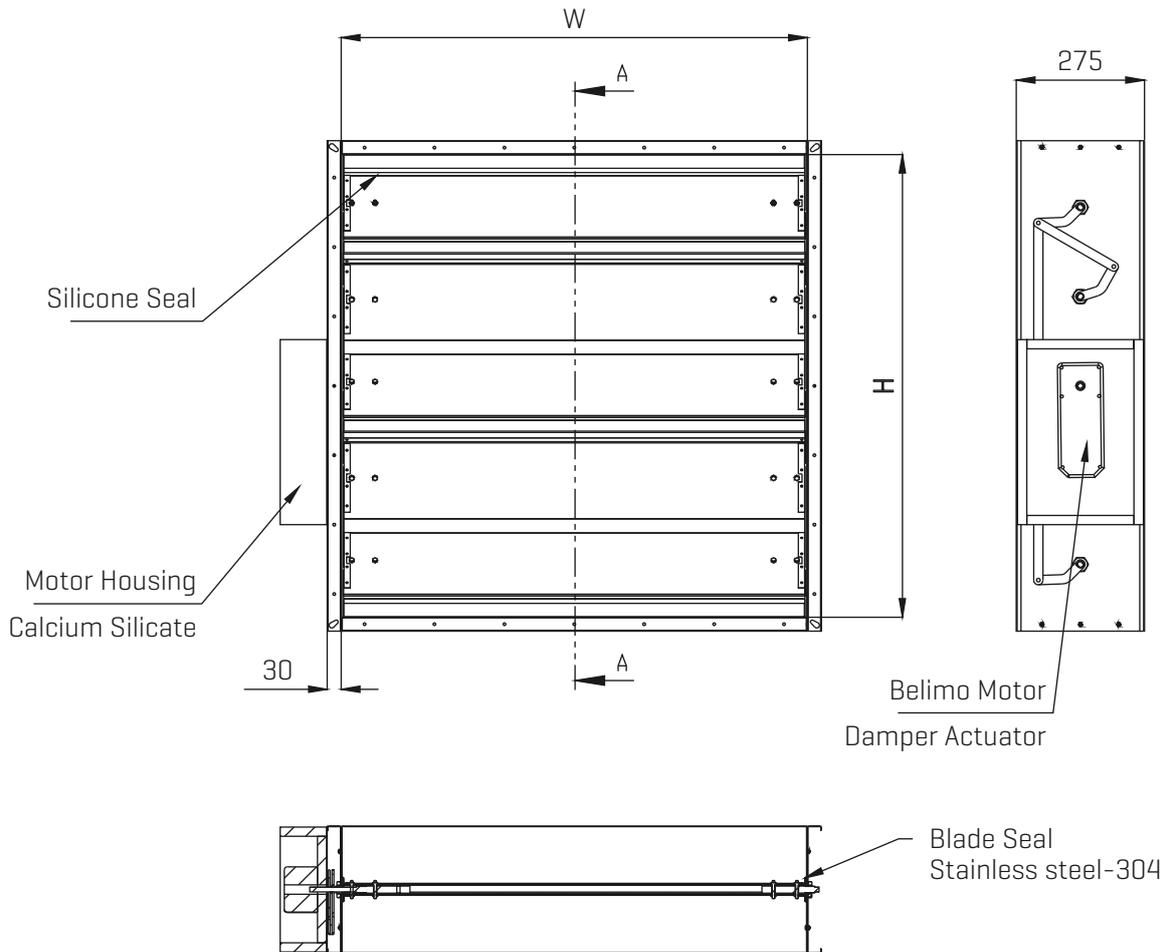
## 2. Damper Weight

W/H (m <sup>2</sup> )	200	300	400	500	600	700	800	900	1000	1100	1200	1250
200	14,1	15,3	16,9	18,1	19,7	20,9	22,6	23,7	25,4	26,6	28,2	28,8
250	14,7	15,9	17,6	18,8	20,5	21,8	23,5	24,7	26,4	27,6	28,3	29,9
300	15,3	16,5	18,3	19,6	21,3	22,6	24,4	25,7	27,4	28,7	29,5	31,1
350	15,8	17,1	19,0	20,3	22,1	23,4	25,3	26,6	28,5	29,8	30,6	32,3
400	16,4	17,7	19,7	21,0	22,9	24,3	26,2	27,6	29,5	30,8	31,8	33,5
450	16,9	18,3	20,3	21,7	23,7	25,1	27,1	28,5	30,5	31,9	32,9	34,6
500	17,5	18,9	21,0	22,4	24,5	26,0	28,0	29,5	31,6	33,0	34,0	35,8
550	18,1	19,5	21,7	23,2	25,3	26,8	29,0	30,4	32,6	34,1	35,2	37,0
600	18,6	20,1	22,4	23,9	26,1	27,6	29,9	31,4	33,6	35,1	36,3	38,1
650	19,2	20,7	23,1	24,6	26,9	28,5	30,8	32,3	34,7	36,2	37,5	39,3
700	19,8	21,3	23,7	25,3	27,7	29,3	31,7	33,3	35,7	37,3	38,6	40,5
750	20,3	21,9	24,4	26,0	28,5	30,1	32,6	34,2	36,7	38,4	39,8	41,6
800	20,9	22,5	25,1	26,8	29,3	31,0	33,5	35,2	37,7	39,4	40,9	42,8
850	21,4	23,2	25,8	27,5	30,1	31,8	34,4	36,2	38,8	40,5	42,1	44,0
900	22,0	23,8	26,5	28,2	30,9	32,7	35,4	37,1	39,8	41,6	43,2	45,1
950	22,6	24,4	27,1	28,9	31,7	33,5	36,3	38,1	40,8	42,6	44,4	46,3
1000	23,1	25,0	27,8	29,6	32,5	34,3	37,2	39,0	41,9	43,7	45,4	47,5
1050	23,7	25,6	28,5	30,4	33,3	35,2	38,1	40,0	42,9	44,8	46,7	48,6
1100	24,3	26,2	29,2	31,1	34,1	36,0	39,0	40,9	43,9	45,9	47,8	49,8
1150	24,8	26,8	29,9	31,8	34,9	36,8	39,9	41,9	45,0	46,9	49,0	51,0
1200	25,4	27,4	30,5	32,5	35,7	37,7	40,8	42,8	46,0	48,0	50,1	52,2
1250	25,9	28,0	31,2	33,3	36,5	38,5	41,8	43,8	47,0	49,1	51,3	53,3

### 3. Sound Power Level and Pressure Loss

	V[m/s]	h								
		200	300	400	500	600	700	800	900	1000
Pressure Loss [Pa]	2 m/s	<5	15	<5	5	<5	<5	<5	<5	<5
	3 m/s	<5	25	<5	8	<5	6	<5	<5	<5
	4 m/s	6	39	5	10	<5	8	<5	5	<5
	5 m/s	10	60	7	16	5	13	5	12	<5
	6 m/s	15	85	10	23	8	19	8	17	7
	7 m/s	19	>100	14	30	12	27	12	25	11
	8 m/s	25	>100	18	40	15	33	15	30	14
	9 m/s	31	>100	23	51	20	42	20	39	19
	10 m/s	39	>100	27	63	24	51	24	49	22
	Sound Power Level [dB]	2 m/s	41	46	41	44	41	42	41	42
3 m/s		49	55	49	53	49	51	49	51	49
4 m/s		56	62	56	60	56	58	56	58	56
5 m/s		62	68	62	65	62	65	62	65	62
6 m/s		66	72	66	70	66	68	66	68	66
7 m/s		70	76	70	73	70	72	70	72	70
8 m/s		73	79	73	77	73	76	73	76	73
9 m/s		75	81	75	79	75	76	75	76	75
10 m/s		77	82	77	80	77	76	77	76	77

### DIMENSIONS



H	200≤...<400	400≤...<600	600≤...<800	800≤...<1000	1000≤...<1200	1200≤...<1250
Kanat Sayısı	1	2	3	4	5	6

## MATERIAL AND SURFACE COATING

Name of Items	Material Type
Frame	1,50 mm Galvanized Sheet Steel
Sealed Damper Blade	1,20 mm Galvanized Sheet Steel
Blade Bearings	Brass Rod - Ø30 mm
Blade Inside	50 kg/m <sup>3</sup> Rock Wool
Blade Seal	1,00 mm Stainless Sheet Steel - 304
Joint Mechanism	4 mm Stainless Sheet Steel - 304
Seal	Fire Resistant Seal-EN 1366/10
Motor Housing	Calcium Silicate

Frame and blades of **VGC-Multi Blade Duct Type Smoke Damper** is manufactured from galvanized sheet steel without any welding process. Therefore it has a high corrosion resistance. Silicone based fire resistant gasket is mounted at the end of the blades. There is a 304 grade stainless steel sealing sheet between frame and blades. Damper blades are equipped with 50kg/m<sup>3</sup> density rock wool.

The blade shaft is manufactured from automat material and then galvanized and gets high corrosion resistance. Bearings are made of brass. Since these two materials are compatible, they do not require lubrication for many years and maintain their first day performance.

The joint mechanism ensures that the blades work in the opposite direction. It is made of 4mm 304 grade stainless steel. The union of joint mechanism parts is made with 304 grade stainless steel rods.

Damper actuator is located inside the box made of Ca-Si [Calcium silicate]



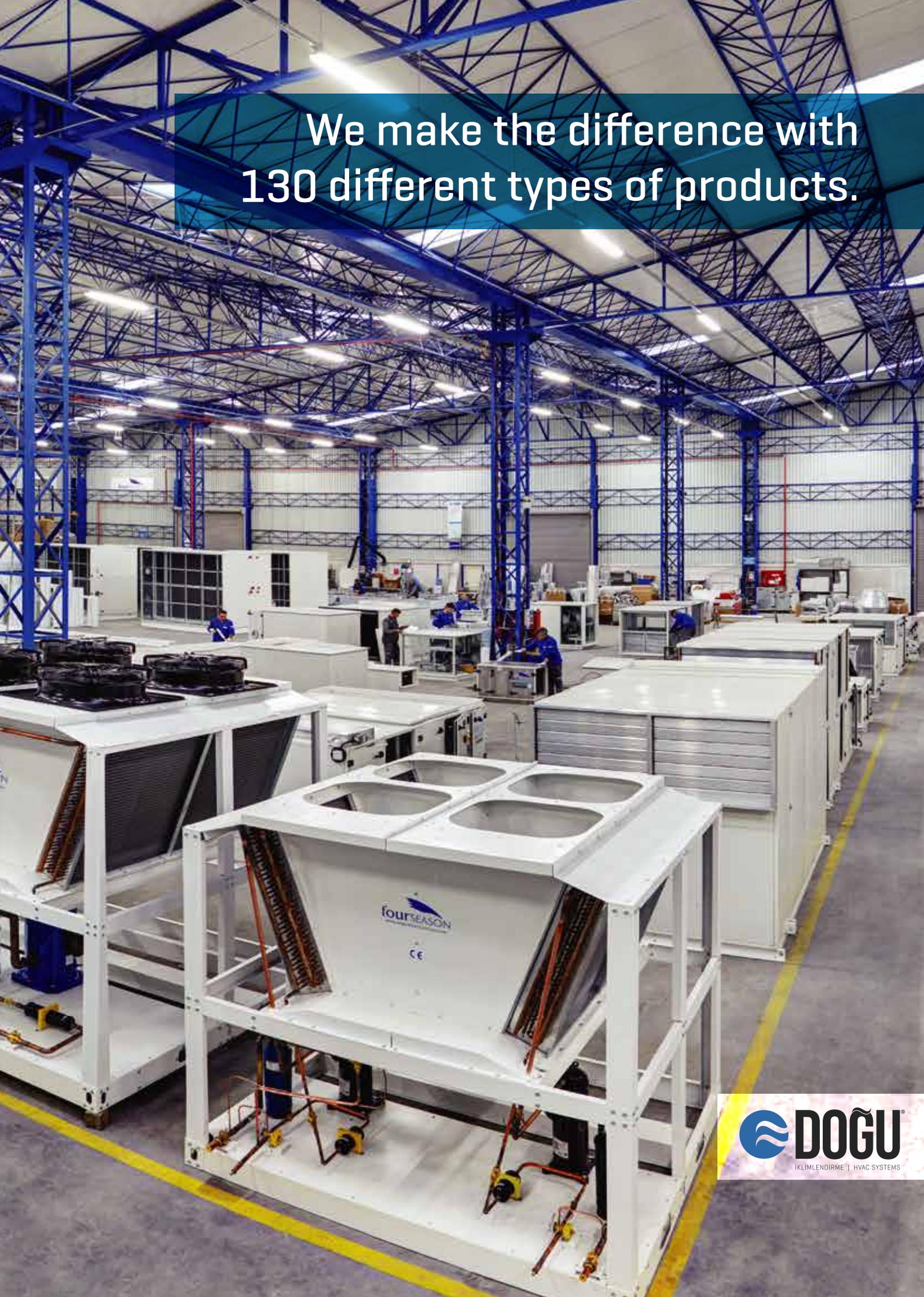








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