ADDINOL®

THE ART OF OIL · SINCE 1936

Injection Moulding Machines
Energy Consumption

Test target:

→ Impact of different hydraulic fluids on total energy consumption of an injection moulding machine

Test machine:

→ Engel Victory 1350h/500W/260 combi
→ 670 liter total oil volume of the hydraulic system

Tested hydraulic oils:

→ Competing HLP-type hydraulic fluid in ISO VG 46
→ ADDINOL HV Eco Fluid 46

Test duration:

→ Test machine was operated for about four weeks with each of both hydraulic oils (505oh with competing product and 549oh with Addinol HV Eco Fluid 46)

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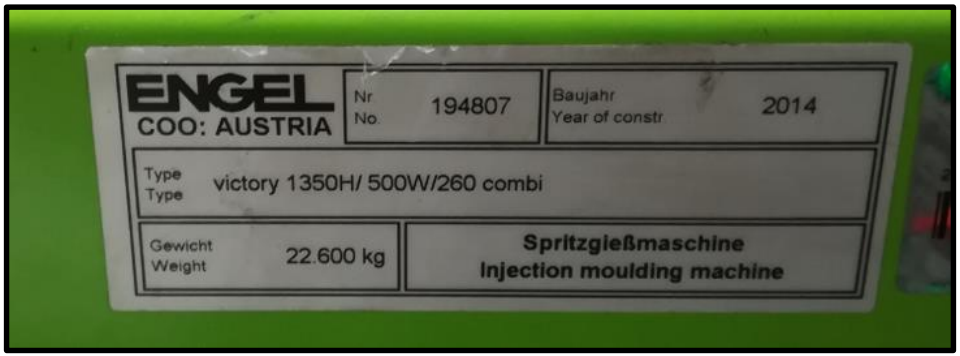
Test condition:

→ During both test sequences, the total energy consumption of the test machine was monitored carefully via integrated electronical control unit CC300.

→ During test sequence with the competing hydraulic oil and during test sequence with Addinol HV Eco Fluid 46 as well, the same mould was in use and the same parts were manufactured.

Nameplate of the test machine:



Manufactured parts:

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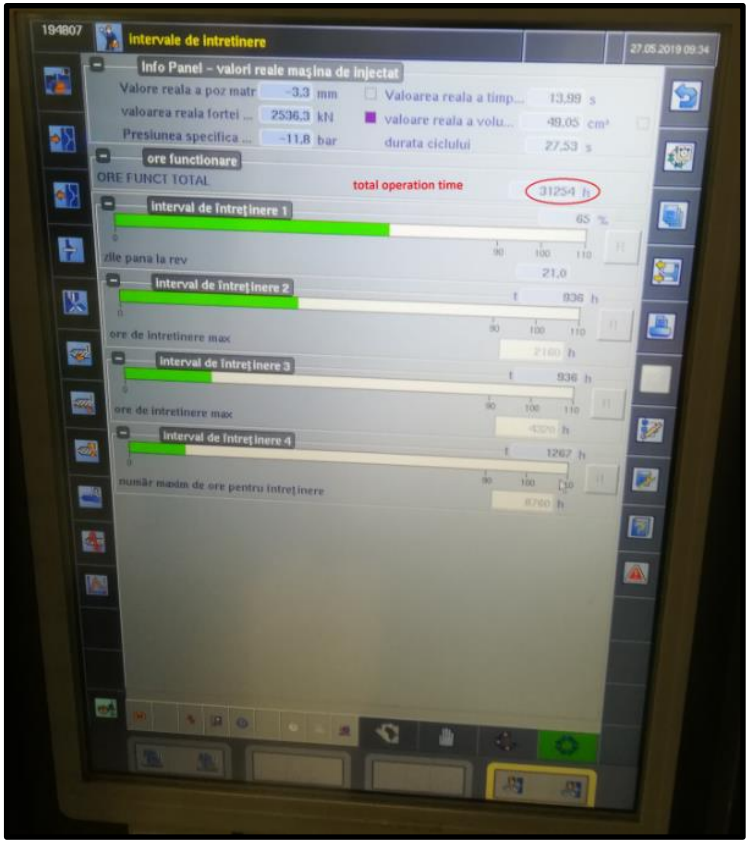
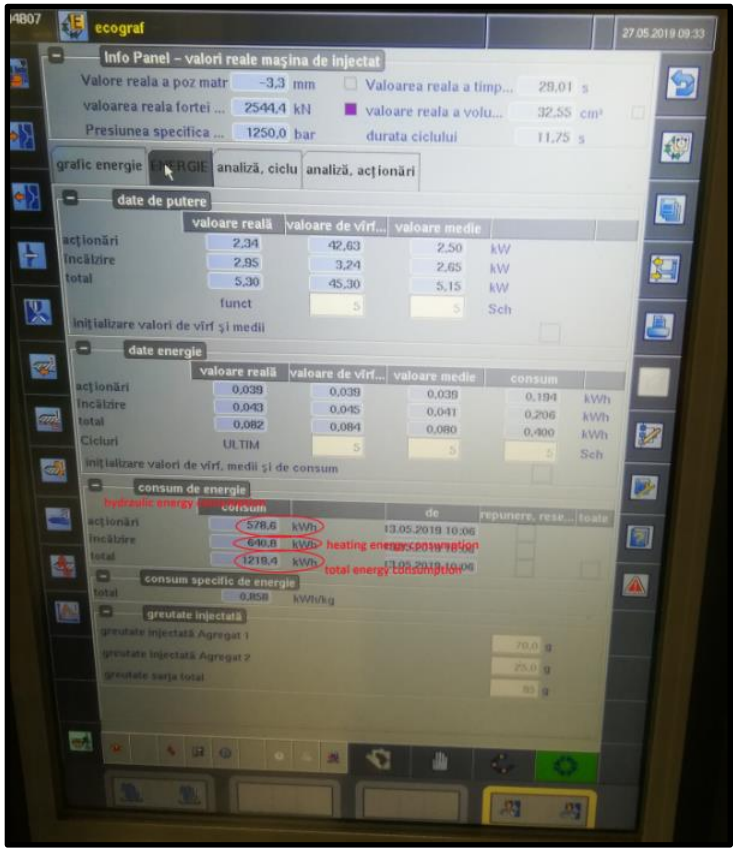
Electronical control unit CC300:





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Test results:

Test machines hydraulic system filled with competitor product			
Date	Machines Operating Hours		Total Energy Consumption in kWh
	Total	During Test Procedure	
04.04.2019	30311	0	0
08.04.2019	30409	98	544,4
15.04.2019	30577	266	1487,7
22.04.2019	30744	433	2433,6
25.04.2019	30816	505	2842,2

Test machines hydraulic system filled with Addinol HV Eco Fluid 46			
Date	Machines Operating Hours		Total Energy Consumption in kWh
	Total	During Test Procedure	
13.05.2019	31015	0	0
20.05.2019	31134	119	609,1
27.05.2019	31254	239	1219,4
03.06.2019	31374	359	1849,6
13.06.2019	31564	549	2864,9

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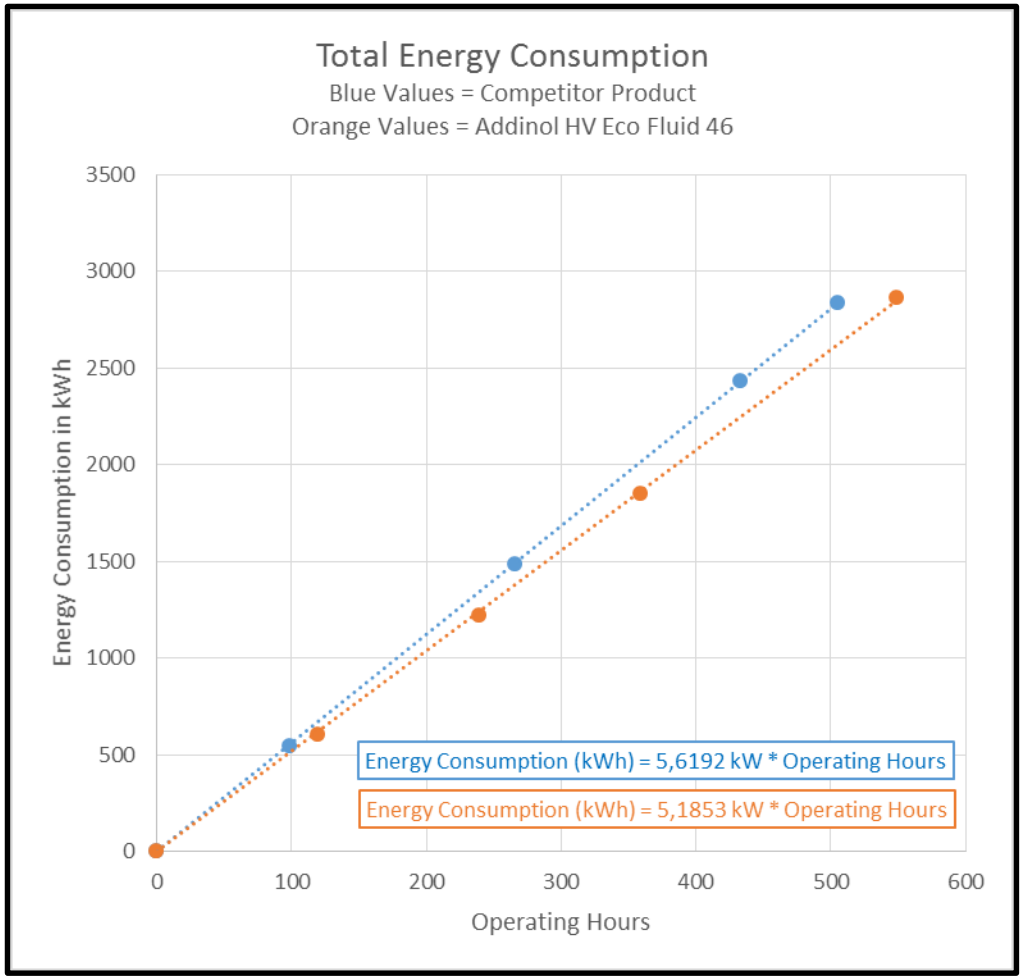
Test results:

- → Diagram illustrates the observed total energy consumption of the test machine in dependence of operating time for both tested hydraulic oils
- → By linear regression procedure a straight line can be fitted onto the both sets of measurement values
- → Shown equations for energy consumption in dependence of operating time are representing the dotted lines



Injection Moulding Machines
Energy Consumption

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Test results:

→ Energy consumption of a machine in dependence of its operating time can be described by following equation:

Energy Consumption in kWh = Power Consumption in kW * Time of Operation in h

→ Based on test results for the competing product it was found:

Energy Consumption in kWh = 5,6192 kW * Time of Operation in h

→ Based on test results for Addinol HV Eco Fluid 46 it was found:

Energy Consumption in kWh = 5,1853 kW * Time of Operation in h

The total power consumption of the test machine was found to be

(5,6192 kW – 5,1853 kW) / 5,6192 kW * 100% ≈ 7,7%

lower during usage of Addinol HV Eco Fluid 46 than during usage of the competing HLP-type hydraulic oil.

80 JAHRE YEARS GERMAN QUALITY WORLDWIDE

Injection Moulding Machines
Energy Consumption

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Test results:

→ Under consideration of both equations describing the observed energy consumption during usage of the competing product and Addinol HV Eco Fluid 46 as well, a forecast for the energy consumption of the test machine at different times of operation can be created and subsequently an expectation about potential energy savings due to usage of Addinol HV Eco Fluid 46 can be derived.

Operating Hours	Total Energy Consumption of Test Machine in kWh		Total Energy Saving by Addinol HV Eco Fluid 46 in kWh
	Competing HLP-type Hydraulic Oil	Addinol HV Eco Fluid 46	
1000	5619	5185	434
2000	11238	10371	868
3000	16858	15556	1302
4000	22477	20741	1736
5000	28096	25927	2170
6000	33715	31112	2603
7000	39334	36297	3037
8000	44954	41482	3471

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ADDINOL – Improve the performance!