NMS-8-25-6,3/2,5 and Cribrol 92/2,5 pump units are compared within three different cost categories. Diagrams were built (see Diagram 1, 2, 3) based on the data provided in the comparison table (see Annex 1). Projected costs on the maintenance, energy and total costs for 15 years of operation are presented in the comparison table (see Annex 1). Calculation unit is 1 year. Data provided in the costs table is theoretical (see Annex 1, 2, 3); all calculations were performed by SNC Promex As.

1. COMPARISON OF MAINTENANCE COSTS

Diagram 1 displays maintenance costs for NMS-8-25-6,3/2,5 and Cribrol 92/2,5 pump units for the period of 15 years (see Diagram 1). Jumps and steps of the chart show costs for the repair and capital repair works. Costs for the capital repair are quite high, which contributes to the step structure of the diagram. From the Diagram 1 it is clear that the maintenance of Cribrol pump unit is required once in 5 years, while NMS pump requires maintenance every year and the capital repair once in 2 years. It is envisaged that such a frequent maintenance will result in the additional labour costs and production downtime, followed by financial losses and reduced income.

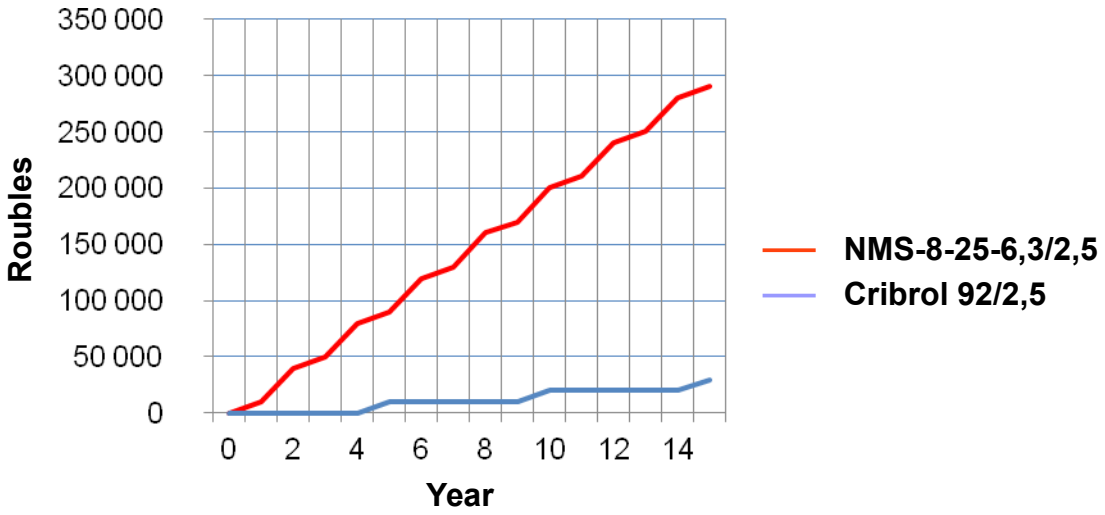

Diagram 1. *Maintenance costs in 15 years: NMS-8-25-6,3/2,5 compared with Cribrol 92/2,5 (prepared by SNC Promex AS).*

2. COMPARISON OF ENERGY COSTS

The Diagram 2 compares energy consumption of NMS-8-25-6,3/2,5 and Cribrol 92/2,5 pump units (see Diagram 2). Energy costs of NMS-8-25-6,3/2,5 pump are calculated on the basis of the peculiarities of the transfer liquid and pressure. Both curves consider an annual 5%-increase of prices for energy. The diagram shows that within the period of 15 years costs for the Cribrol pump unit are three times lower as compared with NMS-8-25-6,3/2,5. This cost efficiency is based on the differences in construction and production technology of the compared pumps.

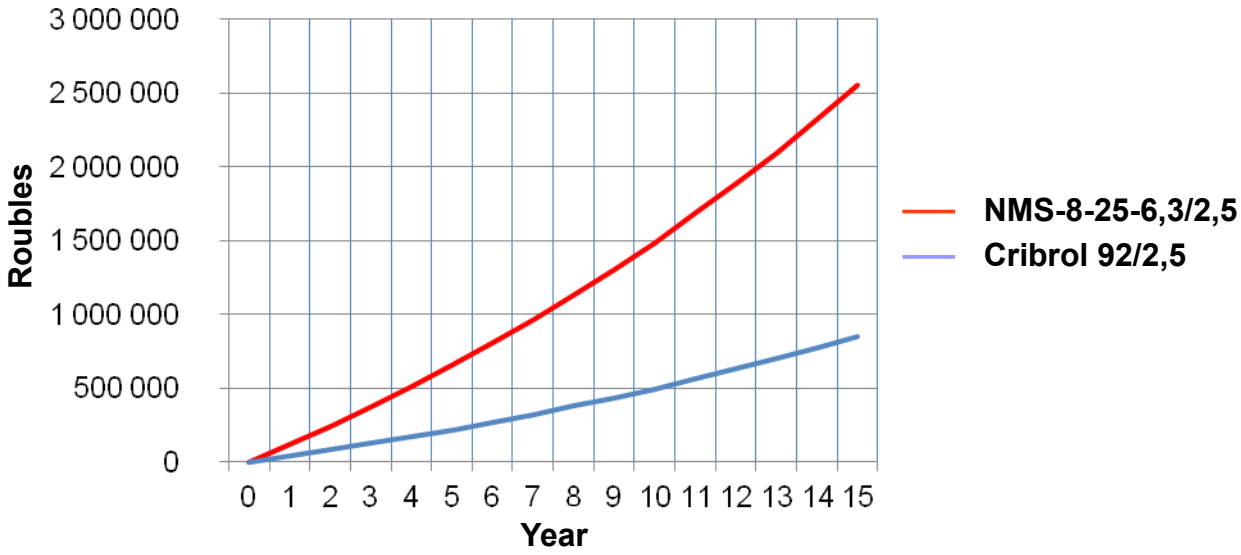

Diagram 2. *Energy costs in 15 years: NMS-8-25-6,3/2,5 compared with Cribrol 92/2,5 (prepared by SNC Promex AS).*

3. GENERAL COSTS

In addition to the maintenance and energy costs, the Diagram of the general costs includes the market price of the pump, which allows to calculate the break-even point of the pump (see Diagram 3). Purchase price of the Cribrol 92/2,5 pump unit comprises 130,000 roubles, and the price of the NMS-8-25-6,3/2,5 pump is 42,440 roubles. While considering costs over the break-even period, comparing purchase costs only, the costs for the Cribrol pump unit will be higher in 3.1 times. At the end of the first year of operation the difference will become 1.01 times, considering all incurred costs from the moment of purchase. The break-even point is achieved before the end of the 2nd year of the pump operation. At the end of the 2nd year of the pump operation, the costs for the Cribrol 92/2,5 pump unit will become by 1.5 times lower as compared with the NMS-8-25-6,3/2,5 pump. After the period of 5 years Cribrol pump unit will be more cost efficient by 2.2 times, after 10 years – by 2.7 times, and after 15 years – by 2.9 times.

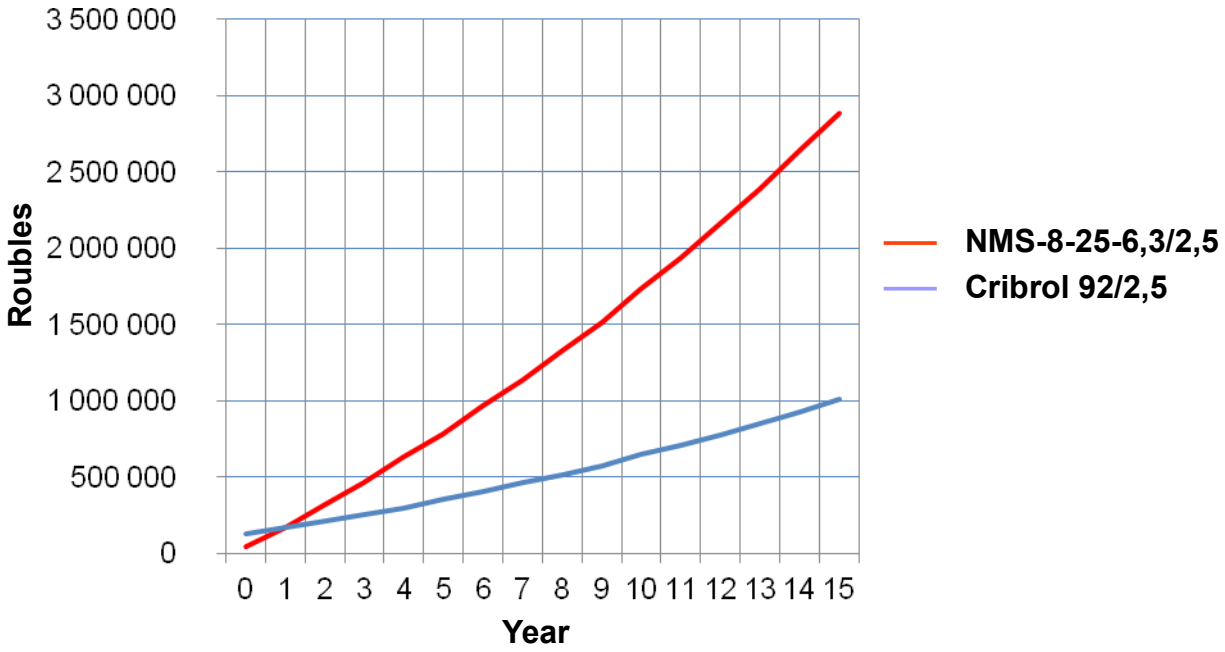

Diagram 3. *General costs in 15 years: NMS-8-25-6,3/2,5 compared with Cribrol 92/2,5 (prepared by SNC Promex AS).*

In the long run, more cost efficient pump will result in bigger efficiency. Estimated performance of the Cribrol 92/2,5 pump unit comprises nearly 85%, while performance of the NMS-8-25-6,3/2,5 pump is around 50%. The price per 1 cubic meter of the transfer liquid defines the pump efficiency in the best way. The Table 2 presents prices per 1 m^3 of

the transfer liquid, including energy and maintenance costs for the pumps within 15 years of operation. For the first year of operation the price difference is by 2 times. The largest difference is observed in the 14th year of operation – by 4 times: the price of the transfer liquid at the Cribrol pump unit is 0.8 RUB/m^3, and at the NMS pump – 4.6 RUB/m^3.

Table 2. Costs on pumping of 1 cubic meter of the liquid, including energy and maintenance costs.

Price per 1 cubic meter of the transfer liquid, including energy and maintenance costs, roubles																
Year	0	1	2	3	4	**5**	6	7	8	9	10	11	12	13	**14**	15
NMS-8-25-6,3/2,5	0,0	2,3	2,8	2,5	3,0	2,8	3,3	3,1	3,6	3,3	3,9	3,7	4,2	4,0	**4,6**	4,4
Cribrol 92/2,5	0,0	0,4	0,4	0,5	0,5	0,6	0,5	0,5	0,6	0,6	0,7	0,7	0,7	0,7	**0,8**	0,9

Source: Calculations by SNC Promex AS

At the end of the first year of operation of the Cribrol pump, the cost reduction will comprise 1,280 roubles, at the end of the second year – 114,062 roubles, at the end of the 5th year – 428,081 roubles; at the end of the 10th year – 1,084,081 roubles; at the end of the 15th year – 1,873,694 roubles (see Annex 2). These calculations and the diagrams presented below do not include all costs incurred at the purchase of the pumps.

Experience and practice have proven that it is not possible to put cheaper pumps into operation right after their purchase. The reason for this is the low reliability of these pumps, which increases risks and in its turn causes high expenditures for repair and downtime. In order to avoid this, new pumps are examined and repaired before commissioning (if necessary). Preliminary control is an economically feasible precautionary measure, as costs for the preliminary examination of the pumps are less than that in case of the possible failure of operation or lost profit in case of the production downtime. However, costs for this examination are considerable, and the pump manufacturer warranty will be no longer valid, thus in case of a breakdown the client will have to pay for the repair of the pump (man power, spare parts, repair works) by his own means.

In the diagram given below (see Diagram 4) that was prepared based on the data of the Annex 3, the purchase price of the NMS-8-25-6,3/2,5 is added by the costs for the preliminary examination and repair. In the table (see Annex 3) all costs for the preliminary examination of the NMS-8-25-6,3/2,5 pump are summarized and reflected as maintenance costs for the break-even period. Approximate estimations show that 5,000 roubles will be

required for the preliminary examination, and 10,000 roubles – for the repair works. Specified additional costs for the NMS-8-25-6,3/2,5 pump are presumable, and the costs are estimated. However, these costs incur quite frequently.

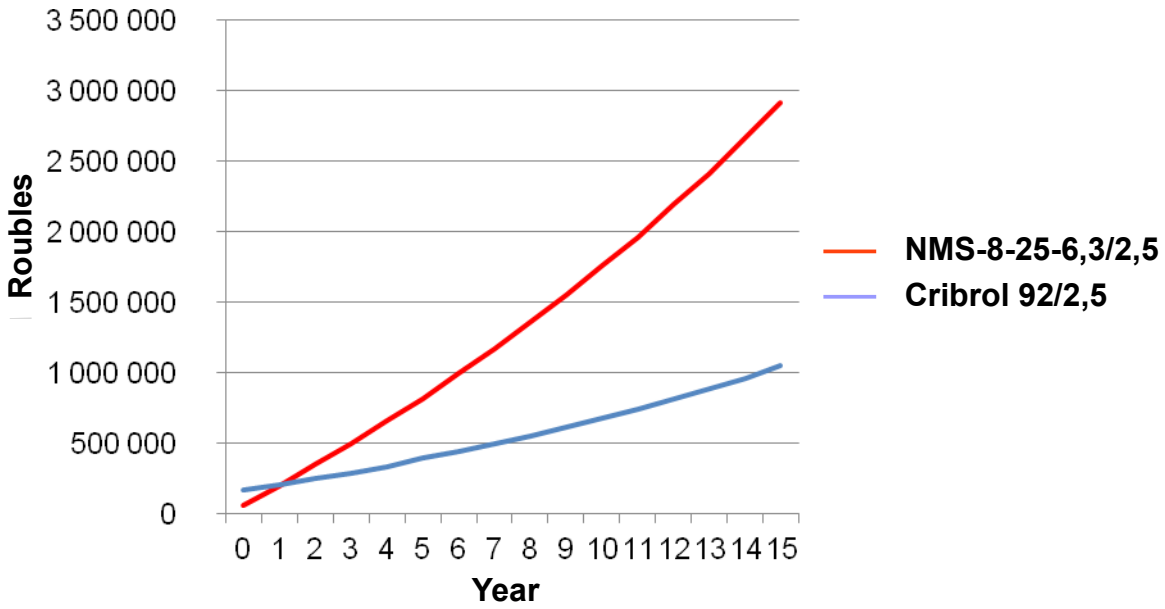

Diagram 4. *General costs on the NMS pumps including preliminary examination costs (prepared by SNC Promex AS).*

From the Diagram 4 it is clear that the cost recovery is achieved earlier as compared to the Diagram 3. Considering additional costs before commissioning of the pump, the Cribrol pump unit is more expensive at the moment of the purchase - by 2.3 times, and at the end of the first year of operation it is more profitable – by 1.1 times. By the end of the second year of operation, the Cribrol pump unit is more cost efficient than NMS pump – by 1.6 times.

ANNEX 1. MAINTENANCE, ENERGY AND GENERAL COSTS WITHIN 15 YEARS OF OPERATION: NMS-8-25-6,3/2,5 AND CRIBROL 92/2,5

NMS-8-25-6,3/2,5						
Period (year)	Maintenance costs	Total maintenance costs	Energy costs	Total energy costs	Annual costs	General costs
0	0	0	0	0	0	42 440
1	10 000	10 000	118 260	118 260	128 260	170 700
2	30 000	40 000	124 173	242 433	154 173	324 873
3	10 000	50 000	130 382	372 815	140 382	465 255
4	30 000	80 000	136 901	509 715	166 901	632 155
5	**10 000**	**90 000**	**143 746**	**653 461**	**153 746**	**785 901**
6	30 000	120 000	150 933	804 394	180 933	966 834
7	10 000	130 000	158 480	962 874	168 480	1 135 314
8	30 000	160 000	166 404	1 129 278	196 404	1 331 718
9	10 000	170 000	174 724	1 304 001	184 724	1 516 441
10	**30 000**	**200 000**	**183 460**	**1 487 462**	**213 460**	**1 729 902**
11	10 000	210 000	192 633	1 680 095	202 633	1 932 535
12	30 000	240 000	202 265	1 882 359	232 265	2 164 799
13	10 000	250 000	212 378	2 094 737	222 378	2 387 177
14	30 000	280 000	222 997	2 317 734	252 997	2 640 174
15	**10 000**	**290 000**	**234 147**	**2 551 881**	**244 147**	**2 884 321**
Cribrol 92/2,5						
Period (year)	Maintenance costs	Total maintenance costs	Energy costs	Total energy costs	Annual costs	General costs
0	0	0	0	0	0	130 000
1	0	0	39 420	39 420	39 420	169 420
2	0	0	41 391	80 811	41 391	210 811
3	0	0	43 461	124 272	43 461	254 272
4	0	0	45 634	169 905	45 634	299 905
5	**10 000**	**10 000**	**47 915**	**217 820**	**57 915**	**357 820**
6	0	10 000	50 311	268 131	50 311	408 131
7	0	10 000	52 827	320 958	52 827	460 958
8	0	10 000	55 468	376 426	55 468	516 426
9	0	10 000	58 241	434 667	58 241	574 667
10	**10 000**	**20 000**	**61 153**	**495 821**	**71 153**	**645 821**
11	0	20 000	64 211	560 032	64 211	710 032
12	0	20 000	67 422	627 453	67 422	777 453
13	0	20 000	70 793	698 246	70 793	848 246
14	0	20 000	74 332	772 578	74 332	922 578
15	**10 000**	**30 000**	**78 049**	**850 627**	**88 049**	**1 010 627**

Source: Calculations by SNC Promex AS

Annex 2. Maintenance, energy and general cost savings with Cribrol 92/2,5 pump

Maintenance cost savings			Energy cost savings			General cost savings		
NMS-8-25-6,3/2,5	Cribrol 92/2,5	Maintenance cost savings, roubles	NMS-8-25-6,3/2,5	Cribrol 92/2,5	Energy cost savings, roubles	NMS-8-25-6,3/2,5	Cribrol 92/2,5	General cost savings, roubles
0	0	0	0	0	0	42 440	130 000	-87 560
10 000	0	10 000	118 260	39 420	78 840	170 700	169 420	1 280
40 000	0	40 000	242 433	80 811	161 622	324 873	210 811	114 062
50 000	0	50 000	372 815	124 272	248 543	465 255	254 272	210 983
80 000	0	80 000	509 715	169 905	339 810	632 155	299 905	332 250
90 000	**10 000**	**80 000**	**653 461**	**217 820**	**435 641**	**785 901**	**357 820**	**428 081**
120 000	10 000	110 000	804 394	268 131	536 263	966 834	408 131	558 703
130 000	10 000	120 000	962 874	320 958	641 916	1 135 314	460 958	674 356
160 000	10 000	150 000	1 129 278	376 426	752 852	1 331 718	516 426	815 292
170 000	10 000	160 000	1 304 001	434 667	869 334	1 516 441	574 667	941 774
200 000	**20 000**	**180 000**	**1 487 462**	**495 821**	**991 641**	**1 729 902**	**645 821**	**1 084 081**
210 000	20 000	190 000	1 680 095	560 032	1 120 063	1 932 535	710 032	1 222 503
240 000	20 000	220 000	1 882 359	627 453	1 254 906	2 164 799	777 453	1 387 346
250 000	20 000	230 000	2 094 737	698 246	1 396 492	2 387 177	848 246	1 538 932
280 000	20 000	260 000	2 317 734	772 578	1 545 156	2 640 174	922 578	1 717 596
290 000	**30 000**	**260 000**	**2 551 881**	**850 627**	**1 701 254**	**2 884 321**	**1 010 627**	**1 873 694**

Source: Calculations by SNC Promex AS

Annex 3. Maintenance, energy, general and preliminary costs within 15 years of operation: NMS-8-25-6,3/2,5 and Cribrol 92/2,5

NMS-8-25-6,3/2,5 including preliminary costs						
Period (year)	Maintenance costs	Total maintenance costs	Energy costs	Total energy costs	Annual costs	General costs
0	**15 000**	0	0	0	15 000	57 440
1	10 000	10 000	118 260	118 260	128 260	185 700
2	30 000	40 000	124 173	242 433	154 173	339 873
3	10 000	50 000	130 382	372 815	140 382	480 255
4	30 000	80 000	136 901	509 715	166 901	647 155
5	**10 000**	**90 000**	**143 746**	**653 461**	**153 746**	**800 901**
6	30 000	120 000	150 933	804 394	180 933	981 834
7	10 000	130 000	158 480	962 874	168 480	1 150 314
8	30 000	160 000	166 404	1 129 278	196 404	1 346 718
9	10 000	170 000	174 724	1 304 001	184 724	1 531 441
10	**30 000**	**200 000**	**183 460**	**1 487 462**	**213 460**	**1 744 902**
11	10 000	210 000	192 633	1 680 095	202 633	1 947 535
12	30 000	240 000	202 265	1 882 359	232 265	2 179 799
13	10 000	250 000	212 378	2 094 737	222 378	2 402 177
14	30 000	280 000	222 997	2 317 734	252 997	2 655 174
15	**10 000**	**290 000**	**234 147**	**2 551 881**	**244 147**	**2 899 321**
Cribrol 92/2,5						
Period (year)	Maintenance costs	Total maintenance costs	Energy costs	Total energy costs	Annual costs	General costs
0	0	0	0	0	0	130 000
1	0	0	39 420	39 420	39 420	169 420
2	0	0	41 391	80 811	41 391	210 811
3	0	0	43 461	124 272	43 461	254 272
4	0	0	45 634	169 905	45 634	299 905
5	**10 000**	**10 000**	**47 915**	**217 820**	**57 915**	**357 820**
6	0	10 000	50 311	268 131	50 311	408 131
7	0	10 000	52 827	320 958	52 827	460 958
8	0	10 000	55 468	376 426	55 468	516 426
9	0	10 000	58 241	434 667	58 241	574 667
10	**10 000**	**20 000**	**61 153**	**495 821**	**71 153**	**645 821**
11	0	20 000	64 211	560 032	64 211	710 032
12	0	20 000	67 422	627 453	67 422	777 453
13	0	20 000	70 793	698 246	70 793	848 246
14	0	20 000	74 332	772 578	74 332	922 578
15	**10 000**	**30 000**	**78 049**	**850 627**	**88 049**	**1 010 627**

Source: Calculations by SNC Promex AS