Return On Investment

Systemic Contamination Control℠ program using Vickers products leads to cost savings in a variety of areas:

- Lower total fluid costs
- More machinery uptime
- Lower production costs
- Lower maintenance costs
- Lower equipment replacement costs

The route to these savings is:

- Set a target cleanliness level
- Achieve the target with appropriate filter selection, placement, and by limiting ingression
- Monitor to assure target cleanliness is maintained.

This worksheet assists in calculating how your investment in Systemic Contamination Control will quickly pay for itself.

Proactive Maintenance Return on Investment Worksheet

Cost Factors *(See notes for explanation of factors)*	**Current Annual Cost**		**Proposed Cost**
Annual Fluid Disposal Cost[1] Cost ____ L/Gal. x ____ L/Gal. / System x ____ Systems x ____ Changeouts / Year		÷ 4	=
Annual Fluid Replacement Cost[1] Cost ____ L/Gal. x ____ L/Gal. / System x ____ Systems x ____ Changeouts / Year		÷ 4	=
Annual Production Downtime Cost (Due to contamination)[2] ____ Hrs. Down / Month x ____ Cost Lost / Hrs. Down x ____ machines x 12 months			= 0
Annual Pump/Motor Replacement Cost[3] Cost ____ Pump/Motor x ____ Replacements / Year x Machines		÷ 2	=
Annual Valve / Coil Replacement Cost[3] Cost ____ Valve / Coil x ____ Replacements / Year x Machines		÷ 2	=
Annual Cylinder Replacement Cost[3] Cost ____ Cylinder x ____ Replacements / Year x Machines		÷ 2	=
Annual Bearing Replacement Cost[4] Cost ____ Bearing x ____ Replacements / Year x Machines		÷ 2	=
Maintenance / Repair Labor Cost[3] ____ Hours / Repair x ____ Labor Cost / Hour x ____ Repairs / Year		÷ 2	=
TOTAL COST OF FACTORS			

Proactive Maintenance Return on Investment Worksheet

Proactive Maintenance Product And Installation Cost

(________ Cost + ________ Cost + ________ Cost) x ________ $

products fluid analysis labor machines

Return On Proactive Maintenance Investment

Monthly Savings = (_________ Total Annual Current Cost – _______ Total Annual Proposed Cost) ÷ 12

= _______ ***Savings/Mo***

Return on Investment = __________ Product & Installation Cost ÷ _______ Monthly Savings

= _______________ ***Months Pay***

TABLE I HYDRAULIC SYSTEMS: REQUIRED NEW MACHINE CLEANLINESS				
Current Machine Cleanliness (ISO)	**Target**	Target	Target	Target
28/26/23	25/23/21	25/22/19	23/21/18	22/20/17
27/25/22	25/23/19	23/21/18	22/20/17	21/19/16
26/24/21	**23/21/18**	22/20/17	21/19/16	21/19/15
25/23/20	**22/20/17**	21/19/16	20/18/15	19/17/14
25/22/19	**21/19/16**	20/18/15	19/17/14	18/16/13
23/21/18	**20/18/15**	19/17/14	18/16/13	17/15/12
22/20/17	**19/17/14**	18/16/13	17/15/12	16/14/11
21/19/16	**18/16/13**	1715/12	16/14/11	15/13/10
20/18/15	**17/15/12**	16/14/11	15/13/10	14/12/9
19/17/14	**16/14/11**	15/13/10	14/12/9	14/12/8
18/16/13	15/13/10	14/12/9	13/11/8	–
1715/12	14/12/9	13/11/8	–	–
16/14/11	13/11/8	–	–	–
1513/10	13/11/8	–	–	–
14/12/9	13/11/8	–	–	–
Life Extension Factor	**2 X**	3 X	4 X	5 X

1. Oil Life Extension = 4:1 with implementation of contamination control, referenced from “Control of Contamination within Airline Mobile and Fixed Cargo Container Handling Hydraulic Systems”, by Fiumano, Hellerman and Krotz, 1984, SAE Technical Paper Series 840716

2. Average Industrial Production Costs $200.00/hour, in the United States. Adjustment for specific machines, industries and regions may be applicable.

   Approximately 70-90 % of component failures are due to fluid contamination.

3. Field and laboratory testing have led to the publication of life extension charts, such as the charts listed (adapted from Diagnetics of Tulsa OK published Life Extension Factors, 1991). For the purpose of an estimate of Return On Investment, Vickers recommends using the highlighted information in the 2X factor category. This recommendation is based on the fact that there are factors other than contamination that will affect component life. For example, type of fluid, operating temperature, and duty cycle.

TABLE II ROLLER CONTACT BEARINGS: REQUIRED NEW MACHINE CLEANLINESS				
Current Machine Cleanliness (ISO)	**Target**	Target	Target	Target
28/26/23	25/22/19	22/20/17	20/18/15	19/17/14
27/25/22	**23/21/18**	21/19/16	19/17/14	18/16/13
2624/21	**22/20/17**	20/18/15	19/17/14	18/16/13
25/23/20	**21/19/16**	19/17/14	17/15/12	16/14/11
25/22/19	**20/18/15**	18/16/13	16/14/11	15/13/10
23/21/18	**19/17/14**	17/15/12	15/13/10	14/12/9
22/20/17	**18/16/13**	16/14/11	15/13/10	13/11/8
21/19/16	**17/15/12**	15/13/10	13/11/8	–
20/18/15	**16/14/11**	14/12/9	–	–
19/17/14	15/13/10	13/11/8	–	–
18/16/13	14/12/9	–	–	–
17/15/12	13/11/8	–	–	–
16/14/11	13/11/8	–	–	–
15/13/10	13/11/8	–	–	–
14/12/9	13/11/8	–	–	–
Life Extension Factor	2 X	3 X	4 X	5 X

4. Field and laboratory testing have led to the publication of life extension charts, such as the charts listed (adapted from Diagnetics of Tulsa OK published Life Extension Factors, 1991). For the purpose of an estimate of Return On Investment, Vickers recommends using the highlighted information in the 2X factor category. This recommendation is based on the fact that there are factors other than contamination that will affect component life. For example, type of fluid, operating temperature, and duty cycle.

The Systemic Approach to Contamination Control

In Systemic Contamination Control^{SM} the goal is to clean the fluid to the point that contamination is not a factor in the failure (catastrophic, intermittent or degradation) of any component in the system during the desired useful life of that system. The first step towards this goal is the setting of a target cleanliness level that takes into account the specific needs of the system.

Once the target has been set, the next step is to select and position filters in the system so that the target can be achieved in a cost effective manner. This requires an understanding of filter performance, circuit dynamics and filter placement.

Your Vickers Representative can assist you with your application in terms of filter placement and system dynamics.

Each grade of Vickers high efficiency filters with V-pak construction is thoroughly multipass tested (B_x=100) and then rated with the system cleanliness level expected to be achieved with the use of that product.

Vickers high efficiency air breathers which limit particle and water ingression will also assist to achieve and maintain cleanliness levels.

After Systemic Contamination Control^{SM} is implemented, the last and ongoing step is to confirm the target cleanliness level is being maintained. This is most often accomplished by sending a fluid sample to a particle counting laboratory that gives ISO cleanliness code data to established “three digit” standards. Vickers can provide laboratory services or in field testing which will monitor the machine fluid performance.